THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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Approach

Loud Bang at 50 Degrees AOB, p.27

How **Not** to Fly Like a Professional Aviator, p.14

A Mission-Success and Risk-Management Metrics Plan, p. 8

The Navy & Marine Corps Aviation Safety Magazine
May-June 2006, Volume 51 No. 3

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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The Initial Approach Fix

From the Director, Aviation Safety Programs: *I recently reviewed a mishap that made my heart sink. An aviator was killed because he went flying while feeling ill, and then lost consciousness because of hypoxia. The problem I had in reading about this tragedy was flight leadership failed to recognize an aviator in extremis. The information below highlights the types of errors I read about in this mishap report, and suggests ways to prevent these hazards from taking our most valuable assets from us. Keep your head on a swivel.—Capt. Ken Neubauer.*

Skill-based errors and decision errors continue to be the primary unsafe acts performed by aircrew. While we are familiar with the terms, it may be helpful to provide examples of what we're talking about.

- *Skill-based errors:*
  - Improper use of flight controls
  - Failure to recognize extremis
  - Poor technique
  - Improper use of equipment
- *Decision errors:*
  - Poor decision-making
  - Execute improper procedure
  - Failure to take specific necessary action
  - Accepting unnecessary risk

Adverse mental states and crew-resource-management failures continue to be the primary contributing factors to aircrew errors. To understand these unsafe acts, we must look at the preconditions for these errors.

- *Adverse-mental states:*
  - Inattention or distraction
  - Loss of situational awareness
  - Complacency
  - Channelized attention or fixation
- *CRM failures:*
  - Failure to communicate or coordinate
  - Failure to exercise leadership
  - Failure to backup
  - Failure to conduct an adequate brief

ROBD

- Instructors at the Naval Survival Training Institute (NSTI) now provide improved hypoxia-recognition training to refresher jet aircrew using the *reduced-oxygen-breathing device* (ROBD), coupled with flight simulation. ROBD instructors are trained to simulate actual flight-related duties, such as radio calls, interpreting flight instruments, and evaluating basic flying skills. This realism allows them to play the role of a wingman, backseater, or air-traffic controller (ATC) during ROBD flight scenarios. The ROBD scenarios will give the student a more realistic experience that is much closer to an actual hypoxia episode in their aircraft. For more information on ROBD visit: **http://safetycenter.navy.mil/aviation/articles/ROBD.htm**.

ROBD was featured in the May-June 2005 *Approach*, and the article can be viewed at: **http://safetycenter.navy.mil/media/approach/issues/mayjun05improvedtraining.htm**.

Best Practices

- *Fighting Complacency*

The Gunfighters of HMLA-369 have identified complacency as the No. 2 hazard the squadron faced during their OIF deployment, second only to anticoalition forces. To mitigate this hazard, the squadron generated an LOI with a comprehensive plan to keep complacency in check. This instruction applies not only to aircrew but touches practically every aspect of squadron operations. While some of the measures are specific to the operating environment or squadron organization, others may be adaptable for use by USMC or USN squadrons. For a copy of the LOI, visit the Safety Center website best practices page: **http://www.safetycenter.navy.mil/bestpractices/aviation/complacency_avoidance.htm**.

- *Turnover binders*

A common problem the Safety Center sees on safety surveys is lack of an effective turnover binder for the safety officer and the ASO. A good turnover binder is especially important for a safety officer who has not been a previous ASO and has not been to ASO school. VFA-14 has a good example of safety turnover notes that makes a good starting point for any squadron safety office to build a turnover binder. The attached VFA-14 turnover notes would make a good starting point for any squadron safety office to build a turnover binder. Squadrons with a good turnover binder already in place may want to compare theirs against this one on our website: **http://www.safetycenter.navy.mil/bestpractices/aviation/ASO_turnover.htm**.

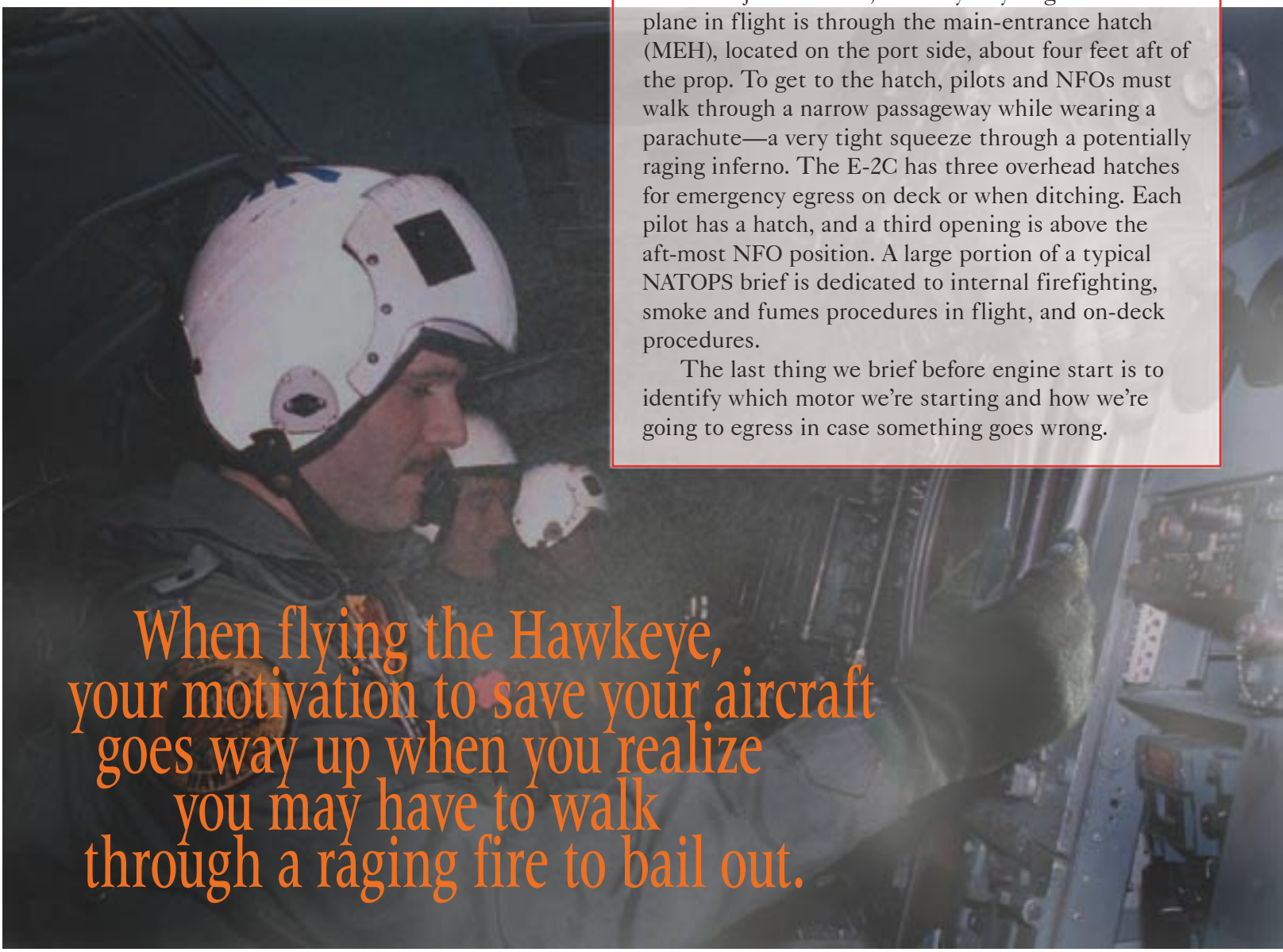
Common Sense Would Dictate

By Lt. Sam Kesler

Everyone entering the E-2 community quickly learns that the mighty War Hummer lacks some hardware jet guys sometimes take for granted. I'm not talking about afterburners or missiles, though. Here's a hint: It's got a yellow and black striped handle attached to it and lets you give a jet back to the taxpayers in record time.

When flying the Hawkeye, your motivation to save your aircraft goes way up when you realize you may have to walk through a raging fire to bail out. Without ejection seats, the only way to get out of the plane in flight is through the main-entrance hatch (MEH), located on the port side, about four feet aft of the prop. To get to the hatch, pilots and NFOs must walk through a narrow passageway while wearing a parachute—a very tight squeeze through a potentially raging inferno. The E-2C has three overhead hatches for emergency egress on deck or when ditching. Each pilot has a hatch, and a third opening is above the aft-most NFO position. A large portion of a typical NATOPS brief is dedicated to internal firefighting, smoke and fumes procedures in flight, and on-deck procedures.

The last thing we brief before engine start is to identify which motor we're starting and how we're going to egress in case something goes wrong.



When flying the Hawkeye, your motivation to save your aircraft goes way up when you realize you may have to walk through a raging fire to bail out.

A typical brief would go, "OK, this will be a huffer start of the left motor. In the event of a fire or other emergency, egress will be out the overhead-ditching hatches. Everybody run upwind. Beware of the Hornet turning on our right side…any questions?"

I don't think I've ever heard anyone ask a question, but I wish I'd asked a few on this day.

We'd been trying to do the acceptance flight on the newest Hawkeye in the fleet. This Hawkeye 2000 was brand new, straight from the factory, and it had been blowing up emergency generators (E-Gens) all week. Our crew of four knew that, at a certain point in the profile checklist, something could happen to the hydraulically powered E-Gen, and the whole center section of the plane would fill with smoke. The maintenance brief went smoothly, and everybody thought we finally had fixed the problem. We manned up in good spirits, and I performed a more-thorough-than-usual inspection of the E-Gen for any warning signs. Everything was impeccably clean in the new plane; even the seats were comfy—for a Hawkeye.

We got the engines online and started running our checklists. I sat in the radar-officer (RO) seat, which is the forward-most NFO seat and next to the small door that leads to the forward-equipment compartment (FEC). The E-Gen is immediately forward of the door in a rack on the right. While we were getting the radar and computer turned up, we listened on ICS as the pilots completed their checklists.

I was setting up my scope when the ACO called out, "Smoke! Smoke! Smoke!"

I glanced through the window in the FEC door and saw the compartment quickly filling with smoke. "Oh well, I guess they didn't fix it," I said.

For a split second, I completely was calm. I even contemplated going back to my scope, when one of the pilots yelled a few choice four-letter words and started waving hand signals at the ground crew. I gave my ACO—who has 1,000 more hours and two paygrades on me—a "What do we do now" look and realized he was giving me the same look. Meanwhile, the FEC continued to fill with smoke. I knew it was the same E-Gen problem we'd been having. Right? Why was everybody yelling? "Oh $#!+!," I thought, we must be in trouble."

"Let's get the hatch out."

"Forget the checklist, pull the T-handles."

Expletives deleted.

"It's still smoking!"

More expletives.

"Do you still want the checklist?"

"Are we getting out or what?"

"Grab the hatch, we'll go out the overheads!"

A few more expletives.

"It's still smoking, but I can't see a fire."

"A fire, where is it… is it on fire or not?"

"The smoke is thinning a little."

"Who said 'fire'?"

After a few more choice words, we got the motors shut down and exited through the MEH but not before taking time to grab our oxygen masks and helmet bags.

Notwithstanding that we never got airborne, this scenario was one of the best aviation-learning experiences I've had. At some point during the evolution I fully had expected to have another E-Gen eat itself. When it did happen, I barely reacted. In fact, I was so comfortable with the FEC filling up with smoke that I almost went back to my scope setup. To this day, that initial sense of calm, instantly followed by the realization we were all in deep trouble, still scares me. There is an appropriate emergency procedure (EP) that covers electrical fire on deck, and two of the steps are:

- Condition levers-GRD STOP.
- Abandon aircraft.

Even without an EP to guide you, common sense would dictate you should kill the motors and get out of the plane. We not only didn't do that, but, when we recognized we should be doing something, we couldn't decide what. From day one at the FRS, the instructors impress upon every Hawkeye aviator how deadly serious an internal fire or smoke is, and how you instantly must react to have any chance of saving yourself and the plane. Dealing with fires comprises a major portion of our NATOPS and never is far from our thoughts when flying.

In hindsight, we immediately should have secured both motors and evacuated the plane through the hatches like we always brief we're going to do. If this had been an actual hydraulic fire, we could have burned a brand new, straight-off-the-assembly-line Hawkeye to the ground in the time it took us to make up our minds.

Having a plan is good, briefing it is better, and quickly executing that plan can keep you from doing an unplanned opeval of your survival gear, donating body fluids, losing an airplane, or having your name stamped on a death certificate.

Lt. Kesler flies with VAW-113.

Open Season *at* Pax River

By Lt. Matt Maxwell

Our TACAMO crew just had come off a high op-tempo exercise the previous week, and we looked forward to a short, four-hour, air-refueling flight. After more than 30 hours of flying in three days, the crew was feeling the effects.

As a team, we ORM'd the evolution and agreed we had had the required crew rest for the mission at hand. Air refueling is one of the most exciting things you can do in the E-6B. If we took on this mission, we figured, the Ops O might be inclined to give us some much needed R&R on the back end.

Our flight would take off slightly after sunset, a time when all our crews had noticed increased deer activity around the NAS Patuxent River airfield. So, before we completed the brief, we addressed the concern of deer in the vicinity of the runways. The previous month, another crew had submitted a BASH (bird animal strike hazard) report for a near-miss after having to offset 20 feet left of centerline to avoid two deer paralleling their path down the runway. That crew reported the two deer actually had passed between their No. 3 and 4 engines.

Since fall brings a change in white-tail deer behavior, when the passiveness of spring and summer are replaced with the frenzy of the breeding season, it appeared we may be dealing with suicidal deer at our forward-operating base; I didn't want to assist in their quest. Again, we used risk analysis and focused on what we would do in the event of a deer strike below our V1 speed. Satisfied with our brief, we pressed with the before-start checklist.

Engine starts were uneventful, and, within 15 minutes, we were ready to go. Winds at Pax River were favoring runway 32, so it was going to be a long taxi. Our flight-deck crew had plenty of experience to go around: I was an instructor pilot; my flight engineer also was an instructor; and my copilot was a transition lieutenant and prior S-3 FRS instructor.

Because we had seen deer moving around on previous nights while taxiing, we kept watching for them. I had been calling all week for deer sweeps before takeoffs and landings. When tower personnel were unable to assist in spotting deer, I would back-taxi down the runway before takeoff or fly a low approach before landing.

As we arrived at runway 32, we were told to hold short for arriving traffic; two P-3s in the pattern were doing touch-and-goes. With a couple of planes beating

Then, all of a sudden, there he was: a nice 8-to-12-point buck, running from right to left across the runway—dead ahead.

up the pattern, I figured there could be no better way to do a deer sweep. Satisfied with the situation, our flight engineer (FE) called for the before-takeoff brief. I spouted out the standard blurb, adding the caveat of what we would do in the event of a deer on the runway during takeoff roll. If deer were spotted before our decision speed of 131 knots, I would abort. After V1, I would continue unless I thought we couldn't take off or risk putting ourselves in a worse situation. In our minds, there was no question about what we were going to do in the event of a Bambi sighting.

We waited for one of the planes on landing rollout to clear the runway, so tower would allow us to take off. Tower cleared us; I stood up the throttles, and held the brakes until the engines were stable. I then called for takeoff thrust, and away we went. Airspeed was increasing, and everything looked good: 80, 100, 110 knots. Then, all of a sudden, there he was: a nice 8-to-12-point buck, running from right to left across the runway—dead ahead.

Just as I started to execute the abort procedures, I heard the flight engineer call, "Abort!"

A second later, we heard a loud thud, followed by a bump, as if we had hit a pothole. I pulled back the throttles to idle, put out the speed brakes, and pulled up the reversers. I followed with a "four green" call.

The engines appeared to function normally, which was a huge relief. I had feared the worst of what could have been a severe hit on one of our low-hanging motors. I had the engineer keep an eye on the engines as a precaution, and I applied max reverse. I was encouraged as they spun up and provided max-reverse thrust.

I also was curious if the deer had done any damage to our nosewheel steering and was relieved to find I had full control over the aircraft. As we decelerated, the copilot called out our distance remaining and speed, and the engineer said the hydraulics checked good. As the plane slowed with about 4,000 feet of runway remaining, I came on the brakes and brought us to a stop.

I had the copilot tell tower we had aborted the takeoff and would taxi off at the end to check the extent of our damage. We also told tower there was a good possibility of a fouled runway because of a deer strike, and other aircraft should wait until an inspection could be performed. Once we cleared the active, I sent the engineer overboard to see if there was any damage and if we should be towed back to our parking spot. After a brief inspection, he said everything looked OK… except for the blood and guts over all the aircraft.

Once everyone was back on board, we had a nice, long taxi to our spot, and I had time to reflect on what had happened. We just had performed a high-speed abort on takeoff roll because of a deer strike. Anyone who flies knows that a high-speed abort is a high-gain event, but, in a heavy jet, it's even worse.

Good CRM definitely played a factor in a positive outcome that night. We had talked about what

we would do if this happened, so the plan was fresh in our minds as we took the runway. Once the strike occurred, everyone's role was almost second nature. I continued to control the aircraft, the copilot advised the tower of what had happened while simultaneously backing me up, and the flight engineer let me know if I had lost any systems. It's funny though, because we had a lot of experience on the flight deck, and even with all the preparation about a possible deer strike (normally perfect preparation for a non-event), the strike still happened. This situation proves that anything can and will happen.

Once we finally got in the spot and shut down, I jumped out to take a look at the mess. I saw blood, guts and fur from the nose of the aircraft, all the way down the left side to the underside of the wings, and a bit even was on the horizontal stab. Amazingly, the aircraft suffered no damage. We did, however, change the nose tires because they were covered in deer meat and fur. After a tire change and a good washing, aircraft 409 was as good as new. I guess a 290,000-pound aircraft will win a bout with a 180-pound deer anytime.

Lt. Maxwell flies with VQ-4.

I am the station POC for BASH-related issues at NAS Patuxent River. We have a very active BASH program that was started more than 20 years ago. The station BASH committee, with members from air operations, air traffic control (ATC), air field facilities (AFD), and the environmental department, meets quarterly to discuss current and upcoming issues. We also discuss options for corrective actions. Those actions may be to reinforce the reporting requirements, to increase dispersal efforts by AFD, or even to lethally remove problem wildlife with the use of federal or state permits.

The local recreational-hunting program is very closely tied to the BASH program and is the method by which the air station manages its deer population. An annual harvest quota is calculated, using a model developed and implemented in the early 1990s. This model uses deer-spotlight-count data to establish a 90-percent confidence range, resulting in a deer population that doesn't increase from year to year.

Since 1995, a couple of years after the model was implemented, there have been three deer-aircraft strikes, and the strike described in this story was only the second one in the last five years. This count gives us an average deer-strike rate of .3 deer per year from 1995 to 2005, down from a rate of 2 per year from 1985 to 1994—a significant decrease.

Here's other bit of information pertinent to this story. The first and second week of November is the peak time for rutting (deer-breeding-season) activity for the station. Accordingly, bucks travel more often and farther to find a receptive doe. They also run on a one-track mind, and their usual wariness goes out the window, or, in this case, between the tires.

Based on the account from the pilot, this deer was oblivious to the approach of the aircraft and never once looked up to see what that bright light was—typical for a buck during the peak of the rut. Managing deer during this time is difficult, and we have to increase the awareness of the tower and the pilots.

—Jim Swift, environmental department conservation division, NAS Patuxent River, email at: james.swift@navy.mil, or phone: (301) 757-0006

Scheduling for Success

"If it doesn't feel right, it's time to slow things down," and, "Half the speed, twice the caution." That's fine, but we needed something concrete.

By LCdr. Scott Troyer

Two days before departing for Air Wing Fallon, the War Party of VFA-87 held a change of command. While the color guard barely had finished posting the colors, and the ink still was wet on the new SOP, we felt way behind in our preparations to make sure the detachment was successful.

The demands associated with a change of command had taken their toll. The squadron was in the heart of work-ups, a new skipper was at the helm, and, incidentally, we were the first 15-aircrew FA-18 squadron (normal complement is 18). The ceremony was Friday, and the flyoff was Sunday. With only two days remaining to focus on the tactical pinnacle of the turn-around cycle, the War Party was primed to fail in the eyes of many.

Upon arrival in Fallon, a department-head meeting was convened to discuss the hazardous detachment. The skipper addressed the statistics involving mishaps that often follow a change of command and occur during Air Wing Fallon detachments. Determined not to be another statistic, he challenged us to brainstorm how we were going to lethally and safely execute the events of Air Wing Fallon. He encouraged open discussions, and the brainstorming began with what I'll call "squishy" ways to mitigate risk. I heard, "We need to keep our heads on a swivel out there," "If it doesn't feel right, it's time to slow things down," and, "Half the speed, twice the caution." These inputs sounded great but lacked concrete, actionable direction.

It wasn't long before the new boss gave "the look"— you know, the "you're wasting my time" look. Shortly thereafter, he'd had enough and said, "Here's what I want. I want a quantitative process to write the flight schedule that provides our highest probability of mission success over the entire flight schedule and automatically identifies where the highest risk elements are in the schedule." Finally, we had some direction that wasn't "squishy."

With tasking in hand, the squadron began a joint safety-and operations-department initiative designed to create the preconditions for mission success, while also identifying risks during the writing of the daily flight schedule. The goal was to create a flight schedule that had an acceptable mix of aircrew with regard to experience, skill level, proficiency, and human factors within every element. While operations always builds a schedule with these factors in mind, the goal was to create a formalized, quantitative process that achieved more consistent results and sped the evaluation process. The process VFA-87 developed places mission-success and risk-assessment metrics on each flight event. Then, the event metric is compared to a predetermined threshold, or trigger, that, once breached, requires additional assessment.

Metrics and Thresholds

When the squadron began to look for ways to ensure mission success and identify risk on the daily

Photo by PHA Stephen Early

schedule, our primary consideration was that the analysis method be quickly and easily implemented. The last thing ops needed was yet another tracking spreadsheet requiring time and manpower—that didn't exist. The Ops O needed a way to "sanity check" the schedule without unnecessarily delaying the end product.

The process we developed assigns two separate values to each aircrew: one for mission success and another for risk. These values are based on their ability to execute a mission of average complexity. The two values assigned to each aircrew are decided upon at the end of every department-head (DH) meeting.

Mission-Success Value

The training officer starts the mission-success-value assignment process at the department-head meeting by giving a quick recap of current squadron proficiency. He then provides a preview of the complexity of future planned training. The training officer then makes his value recommendation by writing a number next to the name on the whiteboard. Discussions follow concerning each aircrew's recent flight performance. Department heads concur or make recommendations for upgrade or degrade, based on information the training officer might not have had. Individual currency and proficiency also enters into the equation. The values range from 1 (highest probability of achieving mission success) to 5 (lowest probability of achieving mission success). To achieve adequate levels of qualification in each event, all values must meet the requirements in the following chart.

Mission-Success Values

1. Must be at least SFWT Level IV (combat-division-lead) qualified.*
2. Must be at least SFWT Level IV (combat-division-lead) qualified.*
3. Must be at least SFWT Level III (combat-section-lead) qualified.*
4. No minimum qualification requirement.
5. No minimum qualification requirement.

*An aircrew's mission success value may be lower than SFWT (strike-fighter weapons and tactics)-qualification level. For instance, an SFWT level III-qualified aircrew may have a mission success value of 4.

The mission-success values are made available to the schedules officer for use in writing the daily flight schedule.

Risk Value

The risk-value-assessment portion of the DH meetings has the feel of a high-speed, human-factors council. Chaired by the safety officer, the session starts with the most junior aircrew and works its way through the commanding officer. The risk-value-assessment portion takes about 10 minutes to assign individual values. The risk values are whole numbers, ranging from 1 to 5 (with 1 being the lowest risk value). The values are based on experience, innate skill level, human factors, recent performance, and proficiency. The values are not made available to anyone else within the command. The risk-value-assignment process is QA'd by adding the sum of all values and dividing by the total number of aircrew; the average should be around 3.0. Fluctuations to that value may be a result of an influx of new aircrew, or an increase or decrease in overall squadron proficiency.

Threshold Values and Assessment

The schedules officer builds the flight schedule, using the individual aircrew-mission-success values. The goal is to make sure the sum of each aircrew's individual-mission-success value within each flight element (section or division) does not exceed the threshold value. The schedules officer also reviews the rough schedule to make sure the mission-success-threshold value has not been exceeded. Then the Ops O does the same calculation for each element, based on risk-assessment value, making sure the threshold has not been crossed.

In our squadron's numbering system, the mission-success and risk-threshold values are the same: 7.5 for a section and 12.5 for a division. For mission success, if the schedules officer is unable to schedule every element below the threshold value, it is brought to the attention of the Ops O during his review of the rough schedule. The Ops O either makes recommendations for changes or acknowledges the lower probability for mission success.

If the risk-assessment sum breaks the threshold, the Ops O then decides whether to change the lineup, implement additional controls, or just brief the commanding officer of the threshold issue before he signs the schedule. For example, an O-4, with an average skill level and proficiency for his paygrade and a 2 risk value, leading the nugget with a 5 risk value, results in an overall 7 risk value for that element. In the threshold comparison, the section maximum of 7.5 is not exceeded, so the flight element does not require additional risk assessment for scheduling purposes.

If an element exceeds the risk assessment threshold and the decision is made to implement controls, the Ops O has several ways to mitigate risk in the scheduling process. One risk control is to change the ordnance from live to heavy inert. Another control is to change the mission from low-altitude, pop-up attacks to medium-altitude, circle-the-wagons attacks. Yet another option may be to slide the schedule to the left to make sure the event lands before sunset. The takeaway is that, once the threshold is exceeded, the Ops O has the flexibility to keep the lineup unchanged, yet, mitigate risk.

Avoid Operational Paralysis

The business of naval aviation is mission success. With mission success being the requirement, the squadron starts the flight-schedule writing process by first applying mission-success values. However, this process does not mean operations *always* can avoid breaking the mission-success threshold.

I must point out that the mission-success and risk-assessment technique is not infallible. By its very nature, assessing an individual aircrew's risk level is subjective; human beings are not machines with a predictable mean-time-between-failure. Also, any attempt to rigidly apply the numerical values to the threshold may lead to unnecessary operational paralysis. Certainly, a night CAS mission may very well warrant additional mission success or risk assessment when a day FCLP, with the same aircrew, may be acceptable.

Finally, high-tempo operations often require the squadron to knowingly schedule beyond the threshold. The commanding officer does so, knowing where the lower probability for success and the higher risk elements are in the schedule, and with additional controls already in place.

LCdr. Troyer flies with VFA-87.

Danger Lurks

By Capt. Matt Vogt, USMC

The morning brought with it my annual egress drill from the AV-8B Harrier. I was wearing all survival gear required for flight, as briefed by the safety officer. Upon strapping into the aircraft, I realized I wasn't wearing gloves. Further, I was wearing my wedding ring. The egress was going fine until I went to release my grip from the aircraft's canopy rail to get down. My ring caught on the large, rearward facing canopy hook, and held fast as the rest of my body continued descending.

I felt a jerk, heard a ripping sound, and looked down to discover my ring finger was totally severed and hanging by a thread perpendicular to its normal position.

It looked as if a sock had been rolled off the finger and left only a bloody bone remaining; my top knuckle was completely torn off.

The emergency-room doctors and hand specialists determined that all tendons, nerves, and blood vessels of the finger had been destroyed and were beyond repair. A few hours after the accident my finger was amputated a half-inch above its base.

An important and costly lesson learned is that no task in naval aviation is routine. A simple egress drill for me turned into a finger amputation. No matter your experience level, there is always an unforeseen danger lurking in the shadows to take advantage of the unsuspecting aviator or maintenance person. Fight complacency. Wear the required safety gear. Remove all jewelry before work. Spread the word.

Capt. Vogt flies with VMA-542

I Remember This

By Lt. Don Clemons

"I've done this before. It's an easy mission. All I have to do is hover."

I remember saying these words to myself in the early morning of a late fall day as I briefed my crew on our naval-surface-fire-support (NSFS) mission. I had flown nearly half a dozen NSFS missions in the past as a young copilot, but this flight was to be my first as the SH-60B aircraft commander.

We took the helicopter as a hot seat from the early morning SSC/range-clearing crew, and took off on time without a hitch. The weather was beautiful but was forecast to deteriorate through the morning. This cruise was my first as a helicopter aircraft commander. I had a brand new copilot fresh from the FRS, a well-seasoned aircrewman, and two spotters on board for the morning's gun shoot.

After spending almost an hour trying to persuade a fisherman to leave the area, in our best attempt at a foreign language, we finally were ready to proceed with the mission. We found a good position to hover: a spot which kept us away from the island, about 1,000 feet from the water, and well outside the gun-target line from the ship. Knowing that the gun shoot was going to take some time because of the late start, I checked our fuel every 10 minutes. When the ship was not ready to shoot or needed a break, we flew in small orbits to minimize our burn rate. Exacerbating the fuel problem, our beautiful morning weather slowly deteriorated, as predicted. It started to rain; the ceilings began to lower.

"ASTAC, ATO. Two hours left on the gas. Weather still is doable. Ceiling is broken at 2,000 feet and pockets of rain. We can keep going."

"Roger, sir. Ship is moving into position for the next event."

With that, I knew I had time to fly around a bit,

get out of holding the hover, and save what little gas I could. After one lap of my orbit, and on the downwind of the second orbit, the ship said they were ready to send rounds down range.

I took the controls from my copilot and set us up on-station as quickly as possible. We were on the downwind, so my plan was to do a quick one-eighty and establish the 1,000-foot hover for the spotters. As I smoothly pulled back on the cyclic to quickly slow down, I watched my altitude to maintain 1,000 feet. As the airspeed bled down through 50 knots, I added left pedal to pull the tail through the one-eighty to help the spotters see the range out the cabin door.

My copilot and I simultaneously caught the first signs of trouble. We had lost 100 feet in the turn, and he called for power. I slightly pulled up on the collec-

As I watched my instruments, I saw my VSI go from 0 to 1,000 to 2,000 fpm—all the while passing through 700 feet AGL.

tive to get back on altitude. That move didn't correct the descent, so I figured I hadn't added enough collective and tweaked in a little bit more. He again called for power. This time, at 850 feet, I saw the VSI show a 1,000-fpm rate of descent; the instrument finally had caught up with the aircraft. While I called for power, this time, with the help of my aircrewman, I pulled in a good tug of collective. As I watched my instruments, I saw my VSI go from 0 to 1,000 to 2,000 fpm—all the while passing through 700 feet AGL.

It struck me at that very instant: Despite smoothly pulling the aircraft around, we had entered vortex-ring state. I had turned the helicopter and demanded lift so quickly that the helicopter began pulling dirty air through my rotor system. Not only did I fly through my rotor wash, I tried to hover in it. At that moment, I thought, "I remember this."

Truthfully, I didn't remember the vortex-ring state discussion in NATOPS. I didn't remember when we were taught this situation in ground school. What I remembered was going through flight school, sitting in the ready room one night after being cancelled, and talking with one of my buddies. He talked about how he had entered vortex-ring state that same night while trying to do a steep approach. We had discussed how it happens, how he had gotten into it, what it feels like, and how to get out of it.

Flash forward to the situation at hand: We still were falling like a rock. Pulling power only aggravated the situation. While both crew members called for power, and I guarded the collective from going up any farther. I swore, and told everyone to "Hang on!"

I immediately bottomed the collective and pushed the nose over to about 20-degrees down to get airspeed. My scan went back and forth from the radalt to the airspeed. Airspeed still read zero as the altitude continued to diminish.

I finally got airspeed after what seemed an eternity. I slowly pulled back the nose, added collective to stop the descent, and leveled off at roughly 400 feet AGL. About 15 seconds had passed from the time I had turned the helicopter around and started falling until the time I was flying at 400 feet—grateful I had started this maneuver at 1,000 feet. Everyone was OK and nothing was damaged. I don't think the spotters realized we were in extremis. We climbed to altitude and flew the rest of the mission without incident.

I made a withdrawal from our "luck bag" and made a significant deposit in our "experience bag" that day. I had tried to expedite the evolution and, in doing so, put the aircraft and crew in a compromising position. In a hurry, we pushed the aircraft beyond its envelope. Fortunately, during one of those typical ready-room bull sessions we've all had, I learned about vortex-ring state and how to get out of it. I always will remember this valuable lesson, as will the rest of my crew. A lot of altitude and some learning from others combined to bring us back that day.

Lt. Clemons flies with HSL-51.

The SH-60B NATOPS discusses vortex-ring state in Chapter 11. Although full-down collective and forward cyclic produced a recovery in this case, the crew was fortunate to have had enough altitude. A similar profile starting at a lower altitude might not have produced a favorable outcome. —LCdr. Bruce Bicknell, H-60 analyst, Naval Safety Center.

The "luck" and "experience" bags [buckets] the author mentions were discussed in an Approach *article titled, "Three Buckets of Naval Aviation," by Cdr. Steve Baxter, in the November 2001 issue. The story also includes a third bucket, "knowledge." Read this story online at:* ***http://safetycenter.navy.mil/media/approach/issues/nov01/threebuckets.htm****. —Ed.*

Remember My MISTAKES

By Lt. Christopher Alexander

To say our passes over the target area were low would be an extreme understatement.

A series of events took place during a flight, all of which entirely were preventable, completely avoidable, and eventually resulted in my probationary flight status. A senior officer and close friend also permanently lost his flight status.

The flight demonstrated almost every example of what any CRM course teaches us to guard against. Our breakdown of flight discipline epitomizes everything we teach our students, subordinates, and peers not to do. Here's how *not* to fly like a professional naval aviator.

Composite

I had been an instructor at VF-101, the F-14 Tomcat FRS, for almost two years. I fully was qualified in every phase of instruction and had served as a phase leader for multiple areas of our CNO-directed student syllabus. I was a qualified mission commander, instrument-ground-school (IGS) instructor, and crew resource management (CRM) instructor. I had flown with the VF-2 Bounty Hunters for two combat tours, during which I specifically was chosen to fly almost exclusively with nugget pilots.

My entire aviation background was one of building a reputation as a knowledgeable, competent, and talented radar-intercept officer (RIO).

A couple months before the incident, my operations officer, a very senior lieutenant commander, had approached me and asked if I would be willing to act as the VF-101 officer in charge (OinC) for our squadron's role in upcoming GBU-38, Mk-82, JDAM testing. With only a couple of refresher students remaining at VF-101, and no new students coming in, our squadron was in a unique position to supply Tomcat support to VX-31 and VX-9. We were to help test the new 500-pound JDAM for use by the last two F-14 Tomcat squadrons. As a former JDAM mission-planning, subject-matter expert (SME) for VF-2, and with experience deploying the Mk-84 JDAM variant in combat, I was excited about taking a lead role in the tests.

Fast-forward two months. After successfully completing the developmental testing at NAS Patuxent River, we were on detachment and preparing for the final operational-test flight and weapon launch at NAWS China Lake.

It was a June morning when my operations officer (also my pilot) and I met at the VX-9 ready room and briefed our test flight. The overall brief was conducted by VX-9, with my pilot and I completing our crew brief immediately afterward. During both briefs, the testing points and profiles were covered ad nauseam, with much discussion. We very quickly discussed the possibility of flying a couple bomb-damage-assessment (BDA) passes around the target

area in a left-hand, racetrack pattern, if our range time allowed. No minimum altitude was briefed for the post-test BDA passes.

Walk, start-up, and pretakeoff were uneventful. Even the test itself went almost entirely as planned, with only a couple very minor hiccups. When we finally released the weapon, and I watched it hit the target on my LANTIRN video, I was ecstatic. Not only was I immensely happy at having led VF-101's part in the testing efforts to bring an important weapon to the remaining Tomcat squadrons, but I also was pleased that all the hard work, long hours, detachments, and difficulties of the past two-and-a-half months finally had reached fruition.

With just under five minutes of range time remaining, our area controller cleared us to descend for BDA passes in the vicinity of the target. Normally, not having a radar altimeter in the back seat, I would have selected a repeat of the pilot's HUD on one of my displays. I then could have monitored the above-ground-level (AGL) altitude of the aircraft in any regime of flight below platform (5,000 feet). However, having flown with my pilot on many occasions, including low-altitude training, combined with my elation at the completion of our testing, I did not select the HUD repeat or monitor our AGL altitude other than visually.

After completing a circuit around the range, we descended and commenced an extremely low-altitude flyby of the target. Climbing as we passed the target, we maintained our left-hand, racetrack pattern and began a second very low-altitude flyby of the target. As we approached the target area during the second pass, our area controller said our range time had elapsed. After completing the second pass, we climbed to break altitude and returned to the field. At no time during the two passes did I say anything to my pilot about our altitude.

The debrief was uneventful and focused entirely on the testing points we had covered in the brief. Neither of us mentioned the low passes. Elated at having completed the testing, I just wanted to start my weekend and looked forward to a great month of flying when I returned home.

As it turned out, I almost never flew again.

The following week, I was called into my CO's office, and I could tell at once it was not a celebratory occasion. My skipper was one of the most relaxed and composed COs I had served under, and it was abundantly clear that he was not happy.

After answering questions about the event, I was asked if I knew anything about a video of our flight. I replied that, yes, I had a copy of the video from our flight, which had been filmed by the range video cameras. I hadn't viewed the video, but I soon got to preview it with my CO and XO.

To say our passes over the target area were low would be an extreme understatement. Had our landing gear been down, they might have been called touch-and-goes. The tape was confiscated, and our field-naval-aviator-evaluation boards (FNAEBs) were convened the next day.

Going through the process of an FNAEB is something I vehemently recommend against if you have any means of avoiding it. Accidents happen, and sometimes the process is necessary. But when a FNAEB is convened because of flight violations or aircrew judgment, the board always could have been avoided.

I learned profound lessons throughout the course of the FNAEB. The most surprising lessons I have learned were those that I never had considered.

As professional aviators, it's easy for us to see the obvious mistakes—starting with the brief. While we focused on the test portion of the flight, we allowed ourselves the inexcusable luxury of completely disregarding the indispensably important briefing of every other portion of the flight, including the post-test BDA passes, the flight parameters, and, most notably, altitudes.

Anytime we plan operations at low altitudes, which are defined as anything below 1,500 feet by OPNAVINST 3710, then low-altitude-training rules must be briefed without exception.

Allowing ourselves to focus only on one aspect of our mission, was an egregious error in basic pre-flight

planning and briefing. No matter how cursory or standard, every part of a flight must be covered during the brief in some manner.

During the post-test portion of our flight, someone should have stated our intended and minimum altitudes for the BDA passes. Because altitudes were not covered during our brief, we should have discussed and agreed on them in the cockpit. Crew communication helps to get everyone's head in the game and makes sure each crew member has a complete understanding of the intended flight profile. You can't perform copilot duties if you have no idea what altitudes or airspeeds your pilot should be maintaining.

Third, my failure to monitor the aircraft's AGL altitude resulted in my inability to question or correct my pilot about our flight parameters. This failure was a basic breakdown of my copilot responsibilities, something that we hammer home to our new students and an infraction for which we mercilessly would punish a student. Once the flight was over, we should have debriefed the event thoroughly, to include the post-test BDA passes and altitudes.

As a crew member without flight controls, and without the exact duplication of instrumentation in the back seat, I often must choose to trust or not trust what my pilot is telling me. For example, in the F-14, I have no way of knowing what altitude the pilot has set in his radalt, other than to listen to what he tells me—there is no way to check it in the back seat. This is why the issue of credibility is so important in a multiseat aircraft.

However, this communication is also two-way. I must listen to what my pilot is telling me, make note of it, and question anything that is outside of parameters. If I'm missing an important piece of information, I must be proactive and assertive in getting an answer.

Likewise, my pilot must trust what I am telling him and my ability as a copilot. Whether I remind him of the heading of a vector, monitor his altitude during low-altitude flight, or select the correct target on the LANTIRN, the pilot has to believe I have the ability to do my job and the intelligence to do it well.

By not selecting a repeat of the HUD in the back seat during our flight, I trusted my pilot and his ability. In so doing, I failed in my most basic copilot duties. My trust in him was not misplaced; rather, I didn't live up to the trust he placed in me. I had turned into a complacent passenger, who only was along for the proverbial ride. I completely forgot about every good CRM principle ever mentioned, even though I have taught the course on several occasions.

Flight discipline is the responsibility of every member of the flight, regardless of rank, age, or experience. In moments when I would have harshly corrected a student, I allowed my pilot a margin of freedom I had no business allowing. I owe it to my pilot, to myself, to the Navy, and to the taxpayers who pay for me to fly that airplane, to remain vigilant, maintain my professionalism as an aviator, and make sure my aircraft is being operated within established standards.

When the FNAEB proceedings were completed, I was debriefed by my commanding officer. I admitted to him that while I am thankful and consider myself fortunate to have been retained in a flight status, I felt like I was suffering from survival guilt, because my pilot's flight status had been revoked.

My CO told me, "Well, yeah, in many ways, I think that's accurate. If you had done your job, what you were supposed to do, you probably would have saved not only your career, but his, too."

For me this was the consummate moment of the entire process. At the end of the day, it comes down to looking out for the other guy. Not only should I have backed him up to make sure we complied with established rules, regulations, and professional flight discipline, but I should have backed him up because we both love to fly, and we both want to do it for as long as possible. At many points before and during the flight, I could have acted with decisiveness, assertion, and professionalism, ensuring not only our safety and that of our aircraft, but of our continued flying careers, as well.

As aviators and members of our nation's military, we are entrusted with a sacred duty. I perhaps never have been as keenly aware of this fact as I am today. I urge you to consider all of this before your next brief, or as you walk to your aircraft. Remember my mistakes, and do whatever is necessary to make sure nothing similar ever happens to you.

Lt. Alexander is with NEPO Air Logistics, C6F Naples, Italy.

A Quick Change of Fortune

By Maj. Ted Martin, USMC

Our crew was having just another day in paradise. Our mission was to support the Naval Surface Weapons Center (NAVSWC). This flight was a good opportunity for us to leave the heat of the high desert in the middle of summer for the cool offshore breeze of San Diego. We had planned on doing helocast and recovery operations, followed by soft duck operations, where we deploy SEALs and inflatable boats. With this in mind, the brief thoroughly covered ORM, emergencies, and degraded power from salt buildup.

Our transit to the landing zone (LZ) just north of Imperial Beach pier was uneventful. We completed 25-hour, single-point plots on all three engines and found we had power to spare. We arrived in zone and shut down to conduct a detailed brief of the day's events. The students then would familiarize themselves with the helicopter and practice rigging the aircraft. After completing our safety briefs and ground training, we again strapped in, started up, and went through our checklists in preparation for the helocast and recovery mission.

Immediately after takeoff, we spotted the safety boats less than a mile off the coast and checked in on the radio. We made one dry pass and then came around to deploy the SEALs.

I took the first cast and recovery; it seemed as though it was going to be another easy day. We all commented on how the real work was being done by the guys in the water—they were being beaten by our rotor wash as we hover-taxied at 10 knots, at 10 feet. Crew coordination was textbook: My copilot gave me airspeed, altitude and heading calls, while the crew in the back let me know the status of the guy on the ladder. Our confidence was running high as we completed the

We heard a loud bang, and the mighty CH-53E sharply yawed.

first cast and recovery without incident. How quickly our fortunes changed.

I transferred controls to my copilot, and we came around for another pass. As I read off airspeed and altitude calls, I also scanned the engine instruments for any anomalies. Although it was early in the evolution, I wanted to note our engine-operating temps for any increases that would indicate salt buildup—the temps looked good.

Everything would change as we came in for our recovery pass. Once again, I read off airspeed and altitude as we decelerated and descended to make our pass. At 10 feet and 10 knots, with a man passing under the chin bubble, our troubles began. We heard a loud bang, and the mighty CH-53E sharply yawed.

"What was that?"

"Sir, you just lost No. 3 engine."

I quickly scanned our engine instruments and saw No. 3 Ng winding down and T5 increasing. As I proceeded with engine-shutdown procedures, my copilot already had started to wave off and climb out on the remaining two engines—no big deal. We all breathed a sigh of relief, as NAS North Island only was 10 miles out. We had plenty of power on paper to fly dual engine. As I monitored the remaining two engines, T5 continued to climb on No. 3—now exceeding 1,000 degrees Celsius. As the crew chief jumped up on the troop-commanders seat and went through the pocket NATOPS, I selected "Emergency Start" and energized the start motor to cool off the engine. T5 started to wind down, we contacted tower, and declared an emergency. My copilot flew an uneventful running landing to a full stop, short of the arresting wires on the runway. That was enough excitement for today, I thought.

As we taxied off the runway, tower called, "Roadhog 48, you have smoke coming from the left side of the aircraft."

Left side? He must mean right side, I thought, because No. 3 engine is on the right side of the aircraft. My copilot then caught a glimpse of the smoke and called to shut down No. 1. I could not believe my eyes as another glance of the engine instruments showed the No. 1 engine Ng winding down and T5 increasing.

"This can't be happening," I thought, as I reached up to secure the No. 1 engine. What else can go wrong?

With the fire trucks in position, I brought the APP on line and continued shutting down the aircraft. Once the rotor stopped turning, the aircrew quickly evacuated our passengers and turned to inspecting our smoking engines.

The quick post-flight revealed the compressor blades of both engines had shot forward into the EAPS barrels. On the van ride home we reflected how we were only a few seconds from being uninvited guests for lunch at the Hotel Del Coronado—or something far worse.

Our assessment of the day's events include these highlights:

• While engine failures or seizures are relatively rare, the loss of a second engine, within 10 minutes of the first one failing, is extremely rare and probably without precedent.

• Our decision to immediately discontinue the soft duck operations, turn toward land, and then handle the emergency en route made all the difference. Had both engines failed while over the water, we could have faced a dangerous water landing, with a risk to aircrew and passengers and the loss of an aircraft.

• The tower personnel's quick call to the aircrew that they saw white smoke from the left side of the aircraft—the No. 1 engine position—after landing on the runway was critical. Our prompt actions to shut down the No. 1 engine and to discharge the engine compartment fire extinguisher, averted a possible engine fire from further spreading.

This incident is a good reminder that just because you have successfully handled one emergency does not mean the danger is over. Another emergency can be lurking around the corner. Maintain constant vigilance, good CRM, and prompt action until the flight is over—completely.

Maj. Martin flies with HMH-769.

Imperial Beach NOLF, a helo airfield, is closer to the pier than NASNI.—Ed.

Pop the Tires, Light the Fires

By Ltjg. John Nelson

Newly graduated from the fleet-replacement squadron (FRS), I was excited to head back to the boat for 10 days of carrier qualifications (CQ) and about a week of cyclic ops. Strangely, the boat wasn't the most dangerous part of this detachment; runway 36 at NAS North Island held that distinction. It was on that runway that my EA-6B blew both mainmount tires and dragged their burning remains down the runway.

This event illustrated how a nugget, six weeks removed from the FRS, must adopt a more proactive role within the crew, instead of using the right seat as a crutch. I learned that being the new guy, fresh out of the training commands, is no excuse to check out from ORM and decision-making.

The day started with a hot-switch into a Prowler for CQ on board USS *Abraham Lincoln* (CVN-72). After the required two traps and two touch-and-goes, we were shot to the beach for the afternoon, with plans to return later that evening for night CQ. Our crew consisted of a brand new pilot; ECMO 1, the senior O-3 ECMO (electronic-countermeasures officer) in the squadron in the right seat; ECMO 2, who had one cruise under his belt; and ECMO 3, who was a former FRS instructor settling into his department-head tour; and me.

After day CQ, we launched from the ship several hundred pounds above hold-down fuel, figuring we would be on deck and soon eating fish tacos. Just when we thought things were about to work out just right, about 50 miles from North Island, we heard a Hornet on a bingo profile declare an emergency. LA Center vectored us west, out of the way. As we orbited 30 miles from shore, watching our fuel count down, we became concerned.

Ten minutes later, after a short discussion inside our jet, we declared min fuel. Immediately, LA Center asked us if we wanted to divert to Miramar. Knowing this change in plan most likely would prevent us from returning to the boat later that night, we persisted in asking for North Island. Finally, with 3,000 pounds of gas remaining, we were given vectors back to North Island and told to proceed VFR.

Even though gas was now our top concern, the situation still looked good. Pointed at our destination airfield, we had 2,800 pounds of gas, enough for 25 minutes of flight, and were only 15 miles away. ECMO 1 told the North Island tower we would like to land on runway 36, as the Hornet in front of us just had done. This request meant we would be on deck several minutes sooner, but we also would be landing with a 10-knot crosswind. We quickly discussed the risks involved with our plan and proceeded.

At 10 miles, we double-checked our ship-to-shore checklist and briefed the landing. A crosswind landing meant we couldn't aero brake. We briefed flying the VASI a little low to maximize the runway available, and we'd gingerly use the brakes because of our carrier-pressurized tires.

ECMO 1 advised me to use a min-rate-of-decent landing because of the higher pressurized tires, and I agreed. On touchdown, the left wing came up in the

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left-to-right crosswind. ECMO 1 then called "negative pops," meaning that our flaperon popups had not activated. In my mind, negative pops equated to not being able to stop, so I lightly tested the brakes.

Although we couldn't hear it in our jet, the rest of NAS North Island was treated to a spectacular "boom, boom!" Both main landing-gear tires had popped in quick succession. The jet began to swerve, and I feverishly worked to maintain centerline.

Passing the 5 board, tower came over the radio with, "503. Your right wheel is on fire."

Our backseater reported seeing flames, and, panicking, I decided to shut down the right motor. In the process, fuel from the engine manifold was expunged overboard, directly above our burning wheel. Hot-brake procedures be damned; today was shaping up to be quite the *Approach* article.

Shortly after we were told about our fire, I called for the hook. We decelerated as the tires shredded down to the rims, and, fortunately, we ground to a stop 500 feet before the long-field arresting gear. Did I mention it wasn't rigged at the time? Had we been unable to stop in the remaining 2,500 feet of runway, the jet might have wound up in San Diego Bay.

Once we finally were stopped, we safed our ejection seats, and I shut down the left motor. With flames growing on the right side of the aircraft, everyone egressed through the left side.

The finishing touch to the afternoon was when the first responding firefighter called to ECMO 1, now standing on my boarding ladder, "Sir, you're on fire! You're going to have to jump onto my truck!"

While trying to digest this piece of information, ECMO 1 lost his footing and fell eight feet to the tarmac.

Three fire trucks quickly extinguished our mini-conflagration. The ambulance crew told ECMO 1 he had a minor sprained ankle.

A dedicated crew of VAQ-131 maintainers worked two 20-hour days to put the ground-down wheel assemblies back together; 503 joined us on the boat 48 hours later.

The post-incident safety investigation revealed a failed anti-skid system. Because of a confluence of events (landing with a crosswind, failed anti-skid, negative flaperon popups, and pilot-landing technique), the old Swiss-cheese holes lined up perfectly for us.

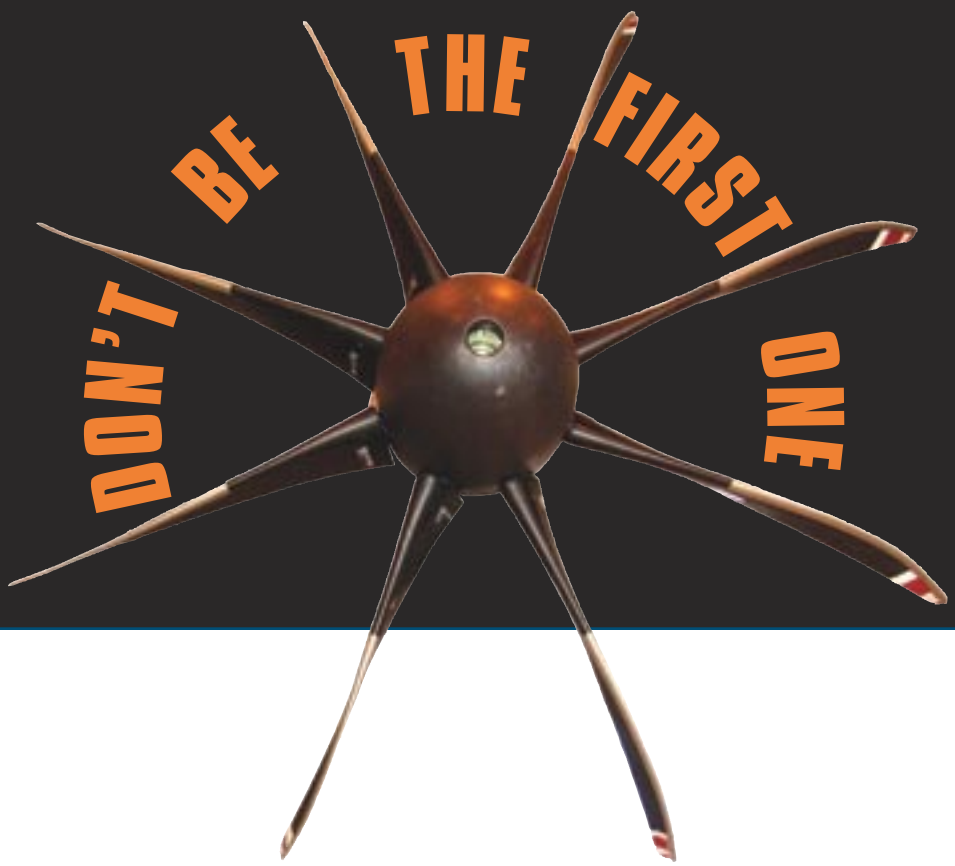
If asked about lessons learned, my first response would be, "Where do I start?" Fresh out of the FRS, I still was in the mindset that the right seat drove the show. Just because I'm junior and new in the fleet doesn't mean I get to throw good headwork out the cockpit. I'm still the pilot-in-command, and, ultimately, it is my responsibility to place the jet in the safest and most advantageous situations in all regimes of flight.

We discuss ORM every flight, and we need to take time to discuss the critical phases of flight. The CQ environment poses great inherent risks, even without the added jets with fuel concerns coming back to the beach. With plenty of gas remaining, I needed to fight off the urge to get on deck as soon as possible and, instead, land on the runway with the most favorable winds. I also should have used my past experience of landing in crosswinds to put the jet firmly on the deck and dissipate energy, rather than using a min-rate-of-descent landing.

Thanks to the professionalism and hard work of our maintenance personnel, the jet only was out of service for two days. With an assertive and proactive pilot-in-command at the controls, the jet never would have missed a cycle.

Ltjg. Nelson flies with VAQ-131.

DON'T BE THE FIRST ONE



By Lt. Matt Ventimiglia

Shortly before we accepted our first eight-bladed NP2000 aircraft in June 2004, our squadron received training on the new system. One of the aircraft's new safety features is the pitch-rate delay (PRD). If the propeller hydraulic-fluid pressure is lost, the PRD tries to limit the rate at which the blade angle increases against blade-counterweight force. If hydraulic pressure cannot be regained, then the last step in the NATOPS emergency procedure is to feather the propeller. If enough propeller fluid is left, the propeller should go to full feather.

During our initial training, we asked what the outcome of a PRD scenario would be if the prop did not go to full feather; the answer was vague. No one was sure of the exact blade angle and drag to expect, and there is no chart similar to the pitchlock-decision chart in the four-bladed NATOPS. *[See what happens when the* Approach *editor is a former P-3 NFO: a prop article mentioning pitchlock gets printed.—Ed.]*

I remember saying to myself, "I do not want to be the first guy to have PRD." Well, I jinxed myself.

I just had fired the port engine back up during a functional check flight (FCF) B. Before I could advance the power lever to match the starboard engine, the port main-pump light illuminated. I immediately advanced the port power lever to max, and the rpm climbed to 103.9 percent. Normal governing of 100 percent was not maintained. I was concerned if I waited for the second pump light to come on, then not enough fluid would be left to get full feather. With my hand on the condition lever to feather the prop, the second pump light came on.

As the copilot broke out the checklist, I turned for home. We were puzzled, though, because NATOPS says an EPC-fail light should accompany this condition, but we didn't get the light. To confirm I was in PRD, I slightly pulled back the power lever, and the rpm tracked as I expected. But, when I put the power lever back to max, I only got 100.2-percent rpm, and it quickly started to decay.

NATOPS says engine operation should be continued until 91-percent rpm no longer can be maintained. However, NATOPS also says that failure to continue engine operation may result in high asymmetric drag and loss of directional control. At 91-percent rpm, our 5th- and 10th-stage compressor bleed-air valves open, which we thought would cause our engine to flameout. When we reached 91 percent, we were surprised to see 800 IHP; this reading was low but still positive horsepower. We didn't see any propeller hydraulic fluid on the nacelle; everyone in the plane was a bit confused.

I kept the engine online until 68 percent. I then

decided to feather it with the condition lever—mostly in an effort to control the situation, even though the engine still was producing about 600 IHP. The propeller feathered, and we made preparations for a single-engine trap at home. Not only was this PRD emergency the first in the NP2000, it also was the first single-engine emergency for everyone on the crew. We were anxious to get on deck. To make matters worse, approach had us set up for an arrested landing on the wrong runway. Eventually, tower redirected us to the runway with the short-field arresting gear. We trapped without further difficulties and spent the rest of the day debriefing maintenance and the crew.

Our systems knowledge definitely helped us, even though no one ever had seen this emergency before, and the outcome was not what was expected. It pays to get in the weeds on systems knowledge, especially with an immature system. Our squadron has studied NP2000 in great detail, and we still are learning new aspects about it. The better we understand our systems and the procedures, the better we can assess the scenarios that aren't covered in NATOPS.

Everyone in the plane was confused.

If a procedure is not in NATOPS but should be, do something about it. I think each community has systems problems or quirks that everyone knows how to handle but that are not written anywhere. Even though this single experience provided a lot of data on pitch-rate delay, the subject still is somewhat of a mystery.

Lt. Ventimiglia flies with VAW-124.

Crew Resource Management

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

The Good, The Bad, The Ugly

By Lt. Josh Filbey

On every NATOPS check, one of the mandatory discussion items is crew-resource management (CRM). For any airborne situation, good CRM can prevent problems and help you deal with emergencies better and more efficiently. Many assume its principles are designed for multicrew aircraft; however, crew-resource management is readily applied to single-piloted aircraft. Whether it is between two airborne pilots, or a pilot and a squadron rep, good communication is essential for dealing with any emergencies. The pilot in command must realize he alone may have the best situational awareness and not to allow CRM to put him in a box.

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I recently was involved in a situation where good, bad, and too much ugly CRM played a role in the outcome.

The Good

I launched on a night mission in support of Operation Iraqi Freedom while deployed aboard USS *Theodore Roosevelt* (CVN-71) in the Gulf. Passing through 10,000 feet in my fully combat-loaded Hornet, my night took a turn for the worse.

I was greeted with, "Bleed air left, bleed air right," and two, big red warning lights.

I executed my boldface procedures and contacted the squadron rep on board the carrier; my good-deal mission was over. After communicating my situation, the rep calmly talked me through all the remaining non-boldface steps associated with the emergency. Then we discussed my options. Without bleed air, I was left without normal oxygen, no ECS pressurization or cooling, no throttle boost, and 3,400 pounds of trapped fuel in my external fuel tanks. I would have to head to our primary divert field or jettison the external fuel tanks for a CV recovery.

The decision was made on the ship to keep the external tanks and head to our primary divert field 150 miles away. The rep brought up one piece of important information to consider that had slipped my mind: usable fuel versus actual fuel. My instruments indicated 12,500 pounds total fuel, but I only had 9,100 pounds of usable gas. This first exchange of the evening with the rep was an example of how CRM was designed to work.

The divert was uneventful until I arrived at the five-mile final and tried to configure my aircraft for landing. When I lowered my landing gear, only two gear indicated down and locked. My left main-landing gear indicated unsafe. I was now alone; over an unfamiliar, foreign divert field; out of radio range with any friendly aircraft; and already in a land-as-soon-as-practical aircraft.

Tower cleared me to orbit overhead, so I could troubleshoot the landing gear. As I climbed to 3,000 feet, I got out my PCL for the second time that evening and, in a moment of clarity, asked tower to rig the arresting gear at the approach end. I followed the extensive "Landing Gear Unsafe/Fails to Extend" procedures in the Hornet PCL (pages E25-E33). I arrived at the point where I needed to jettison ordnance and hoped for the best on a min-rate-descent arrested landing. With no one around to discuss options or to get a visual inspection, I asked approach for a vector over water to adjust weight for landing.

The Bad

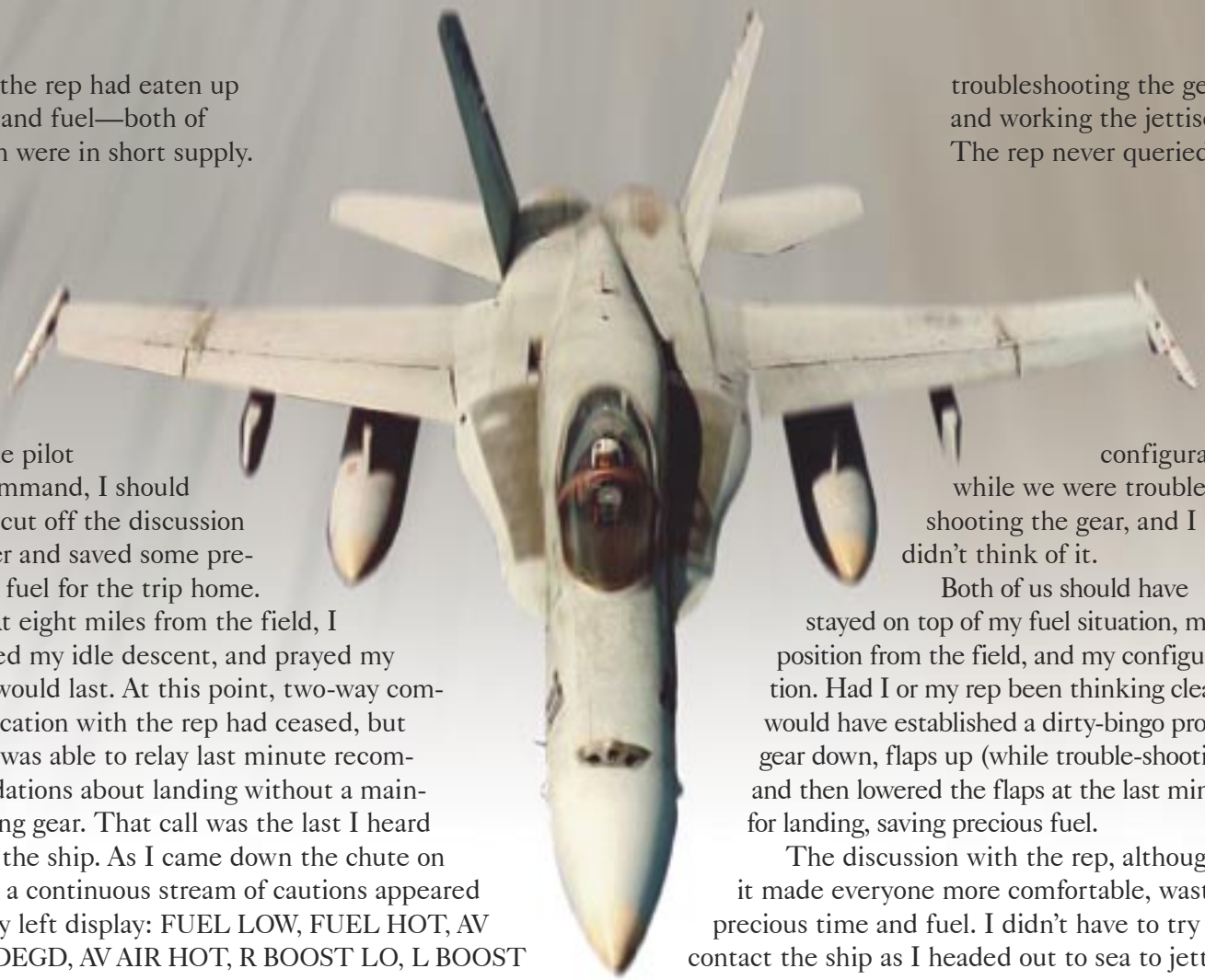
Although I was headed out to sea to jettison my stores, I felt uneasy about doing so without any guidance from outside my cockpit. On the way to the beach, I searched up and down the air-wing comm card, looking for any aircraft that could help—no luck. The only frequency I could reach anyone on was strike. I asked strike to get a squadron rep (again) ASAP to the radio. The initial two frequencies the rep came up with were unusable. The Bear Aces of VAW-124 came to the rescue; their airborne E-2 had followed me through my misery and, on their own initiative, provided a radio relay.

I just was reaching the beach line as workable communications were established, and I reported a usable fuel state of 2,900 pounds. Mistakenly, my rep and I immediately focused on the gear problem, neglecting the big picture: my configuration, fuel state, fuel burn to get back to the field, and several other issues. The rep, having just learned of my landing-gear dilemma, was hesitant to jump right into the jettison procedures without exhausting all possible troubleshooting options.

After my rep and I calmly went through all the procedures for unsafe-gear indications, he again talked me through jettisoning my external stores. I followed the steps, cleared the sea-space beneath me, and pushed the select-jettison button—nothing happened. There had been a recent hazrep about select jettison not working with the gear down, but neither my rep nor I recalled it until after our attempt failed. The rep calmly then asked me to again clear below and initiate emergency jettison. I distinctly remember hearing the "fuel low" caution as I pushed the emergency-jettison button. I felt the jet shudder as it now was free of more than 5,300 pounds of stores.

The Ugly

Following the jettison, I immediately turned back toward our divert field. As I crossed the beach line, my airplane-generated, fuel-on-deck estimation shrank from 500 pounds to 200 pounds and then to XXXX—the computers' nice way of showing the unthinkable zero. I then realized that all the extra troubleshooting



with the rep had eaten up time and fuel—both of which were in short supply.

As the pilot in command, I should have cut off the discussion earlier and saved some precious fuel for the trip home.

At eight miles from the field, I started my idle descent, and prayed my fuel would last. At this point, two-way communication with the rep had ceased, but Bear was able to relay last minute recommendations about landing without a main-landing gear. That call was the last I heard from the ship. As I came down the chute on final, a continuous stream of cautions appeared on my left display: FUEL LOW, FUEL HOT, AV AIR DEGD, AV AIR HOT, R BOOST LO, L BOOST LO—all indicating an impending flameout.

I tried my best to execute a min-sink-rate landing on the right side of the runway with my two good landing gear. I held the left wing off the ground as long as possible. Touching down about 500 feet before the arresting gear, my fortunes finally changed: My left main was down and locked. As my jet slowed to a stop in the arresting gear, I looked down at my fuel indicator and saw the fuel remaining—200 pounds. The jet was safely on deck, and I was alive.

Although the event had a good ending, I most likely was within 30 seconds of ejecting and losing the aircraft. What happened, or did not happen, to lead me to a low-fuel state? Multiple factors played a role—some preventable and some unavoidable. In dealing with the dual-bleed warning, good CRM (situational awareness, communication, decision-making) helped us to successfully work through the emergency and get the jet headed in the right direction. However, once I had the second emergency, our CRM started to break down. I failed to raise the flaps while troubleshooting the gear and working the jettison. The rep never queried my configuration while we were troubleshooting the gear, and I didn't think of it.

Both of us should have stayed on top of my fuel situation, my position from the field, and my configuration. Had I or my rep been thinking clearly, I would have established a dirty-bingo profile: gear down, flaps up (while trouble-shooting), and then lowered the flaps at the last minute for landing, saving precious fuel.

The discussion with the rep, although it made everyone more comfortable, wasted precious time and fuel. I didn't have to try and contact the ship as I headed out to sea to jettison. I was nervous about pressing that button, in my configuration, over foreign waters, without permission from higher authority. My desire to get permission and the reps desire to exhaust all possible solutions drove me to a lower fuel state than I should have had that far away from the field.

CRM is a great tool for dealing with extremis situations. I saw many goods that night, such as my first discussion with the rep, the E-2 providing a radio relay, and the calm voice over the radio when I was getting frantic. But, at some point, you have to just rely on your personal knowledge of aircraft systems and procedures and do what is required.

Maintain the big picture and avoid working procedures that detract from awareness of basics, such as fuel state and fuel required. Although it is nice to have someone else confirm what you are doing, or to give you permission, you must be ready to cut off discussions and execute, even if it involves doing something—in my case, jettisoning stores—that you're not comfortable with.

Lt. Filbey flies with VFA-87.

Bumper Cars

By Lt. Jeffrey Strawn

September 23, 2002 is a day I never will forget; it was my first night-formation flight in the mighty Goshawk. I had been figuring out the complexities of the night rendezvous and sweating just trying to stay in a proper parade position. As we penetrated the multiple cloud layers that had developed on this southwest Texas night, we prepared for our recovery from the military-operating area (MOA) west of Kingsville. I was getting more comfortable maintaining parade position for our section approaches and the subsequent depart and reenter. Up to this point, my aviation career had been uneventful.

We completed our final section approach. As we made the turnout to the initial, I anticipated the end of the flight. When we approached the numbers for the break, a solo student pilot was cleared to take off. At that time, there was no standard operating procedure to deconflict break traffic from aircraft taking

As I got to 50 degrees AOB, I heard a loud bang—we had hit something.

Composite image

off (i.e. departure traffic maintain 1,000 feet until the upwind numbers). Controllers merely used timing to deconflict the arrival and departure traffic.

My instructor in the back seat asked, "Tower, did you just clear somebody for takeoff?"

We continued toward the upwind numbers as my lead broke away, and, four seconds later, I initiated my break. The lights of the sprawling metropolis of Kingsville were bright and at my 10 o'clock at three miles. I was positioned just in front of the upwind numbers, at 250 knots and 1,000 feet AGL, when I initiated the break. As I got to 50 degrees AOB, I heard a loud bang—we had hit something. We rolled back to the right and started to oscillate. I neutralized and checked the altimeter. Eventually, we regained control and stopped the oscillations.

Once we were straight-and-level and stabilized at 1,000 feet, my instructor took his hands off the ejection handle and took control of the aircraft. I looked over to my 9 o'clock and saw another T-45 within 500 feet of us initiating a climbing turn away from us. We climbed the opposite way and eventually managed to maintain VFR. We ended up several miles southeast of the field at 9,000 feet, which, coincidently, was the designated bailout and ejection area.

I broke out the T-45 book, and we configured the aircraft for a straight-in arrestment. The hair on the back of my neck started to stand at attention while I read the steps. Before my instructor moved the gear and flap handle, he said, "If we go out of control, you know what to do… ."

As we held our breath, the gear and flaps came down, and we were able to maintain control. The right wing of the solo's jet had hit the left side of our nose and fuselage next to my knee. I never saw the other jet, and my instructor just caught a glimpse of it. We trapped on the inboard duty, and the solo trapped on the right. Urine and blood sampling from all parties followed, making a lengthy evening even longer.

The mishap board concluded that the causal factors were:

- ATC negligence.
- The solo's failure to clear the space above him. (To clear above him would have been difficult because we were above and behind him but overtaking him.)
- Our failure to clear the airspace below us. (This action would've been a challenge, because he was below and ahead of us. The last time I checked, the T-45 doesn't have a glass floor.)
- Lack of a published arrival and departure procedure. (Elevating into the tower pattern over the runway while departing the field never was a common practice).

There were no major injuries, and the contact was equivalent to a bad hit when driving bumper cars. All I can say is it wasn't our time to depart this world. The old air-combat maneuvering (ACM) saying is true, "It's the guy you don't see who's gonna kill ya."

Lt.Strawn flies with VAQ-133.

Mishap-Free Milestones

HMM-774	36 years	75,000 hours
VP-40	39 years	249,000 hours
VAW-124	13 years	24,800 hours
HMLA-167	21 years	100,000 hours
HMM-164	9 years	40,000 hours
VP-47	33 years	190,000 hours
HSC-85	36 years	70,000 hours

I Don't Want to Walk Home

By Cdr. Doug Beal

I was stoked. I'd managed to get a good deal cross-country to NAS West Coast on a Friday, with a Saturday return to NAS Fort Worth. My plan? Drop off a part or two in Fallon and continue to the coast, where I had started my naval-aviation career. I'd renew some friendships and stop through Grand Junction on the way home, making it back to Fort Worth just in time to wrap up the first half of the drill weekend. Good deals don't come around every day in naval aviation, and I was happy to get this one.

The trip out was uneventful. On Saturday morning, I filed my return legs with base operations and put a weather brief on request. The forecaster and briefer went through the DD-175-1 with me and covered current observations and forecasts for Walker Field; Grand Junction, Colo.; and NAS JRB Fort Worth. The weather on my arrival at Walker Field was projected to be 6,000 feet overcast ceilings with five miles of visibility. Temperature-dewpoint spread would be about two degrees (first clue). A glimpse of the weather channel that morning made the forecast seem fairly reasonable, although I wasn't paying much attention as I packed. The weather office also pulled up satellite imagery—yep, overcast skies. I filed for FL270 and planned to finish the first 838-mile leg with 3,100 to 3,400 pounds of fuel remaining.

Because the weather was good in Colorado, I didn't consider the alternate weather to be a factor—after all, 3710.7 says that above 3,000/3, I didn't need to file an alternate. I did have Buckley Air National Guard Base in the back of my mind as an alternate though, in case I'd need arresting gear.

The en-route portion went well, and I looked forward to reacquainting with Doug Thompson at West Star Aviation in Grand Junction. I also planned to peruse his "museum" of aviation memorabilia. I must also mention his line personnel know Hornets and Hornet servicing, and his fuel truck is quick. I'd seemingly picked a good en-route stop. I started my descent out of altitude, and Denver Center switched me to Denver Approach. After the initial check in, they cleared me down to 15,000 feet.

I switched to Walker's ATIS on the back radio and heard, "Walker Field information Echo, time 1855Z. Ceiling and visibility will be reported by the tower. Runways 11 and 29 in use. Advise upon initial contact you have 'Echo.'"

Very helpful. I called the FBO, "West Star, Hunter 91."

"Go ahead, Hunter 91."

"On deck in about 10 minutes for a quick turn."

"Roger, Hunter 91, we'll see you when you get here."

Then some unknown corporate guy checks on with, "West Star, Flex Jet 77. We're going to go ahead and get out of here before the weather really starts to roll in."

What? That can't be good.

> If a corporate monkey is worried about weather with his dual-piloted aircraft, equipped with all the Gucci flight management—nav and ILS—then the single-piloted, TACAN-only Hornet may be in trouble. I switched to tower on the aux radio.

"Walker Tower, Hunter 91. What's your current sky condition?"

"Hunter 91. Seven hundred overcast and two miles of visibility."

Crap. Here I am at 15,000 feet with 3.2, in the clag. The weather mins for Grand Junction's TACAN-A circling approach are 1300/3 for Category C and D aircraft—not even close. I'm still 15 miles from Grand Junction. I know nothing about the weather in Denver, except that it probably will be better on the other side of the mountains. I don't even have a Buckley divert waypoint dialed in.

I dialed Buckley's lat-long into the system. The system said that Buckley is just over 200 miles away. The flight-performance-advisory system (FPAS) in my trusty FA-18A+ shows me that I'll be on deck in Denver with 665 pounds, if I continue to fly my present gas guzzling, straight-and-level profile. By the way, the number flashes when it gets that low.

OK, I needed to divert. Fortunately, the winds were out of the west. The bingo fuel in the pocket checklist was 3,270 pounds; I had 3.2 on the gauge. The decision was not hard.

"Denver Approach, Hunter 91. I don't have the weather to make it into Grand Junction today. I need to turn left to a heading of 060 and climb to FL390, present position direct to Buckley Air National Guard Base."

"Hunter 91, Denver Approach. Climb to FL190."

What? That won't work. I needed higher.

"Denver, Hunter 91. Let me rephrase my request, sir. Hunter 91 is declaring an emergency. I'm turning to 060, and I need an immediate climb to FL390."

"Roger, Hunter 91. Fly a heading of 060, climb and maintain FL230. Switch to Denver Center, 322.3"

Flight level 230? Who is he kidding?

I squawked emergency on the transponder and punched in the new frequency.

"Denver, Hunter 91. Emergency aircraft, passing FL200 for FL390. I'm emergency fuel, and I need to continue my climb right now for FL390 to get on my emergency-fuel profile."

"Hunter 91. For traffic, climb and maintain FL270."

I was climbing rapidly when I realized that, at some point, I was going to bust right through one of these altitudes doing 500 knots, transitioning to Mach .86.

"Denver, Hunter 91. Negative. I am an emergency aircraft, and I need to continue my climb to be on profile."

I blew through FL270. At some moment in the climb, the fuel-lo caution and accompanying aural caution annunciated. My right feed tank was at 700 pounds; total fuel was somewhere around 2,000 pounds. As I passed FL300 in the goo, Denver Center called me.

"Hunter 91, Denver Center. Say altitude?"

"Denver, Hunter 91. Emergency aircraft, passing FL320 for FL390."

"Hunter 91, Denver. You were assigned FL270. You have traffic, 9 o'clock, five miles, FL340. Level off immediately."

"Negative, Denver. I am an emergency aircraft. I am emergency fuel. I need to continue my climb to FL390 for fuel purposes."

In truth, I broke into the clear at about 32,000 feet and momentarily leveled off at about FL330. I looked everywhere and never saw the traffic, so I continued my climb. I'd been searching in front and above me with the radar during the entire climb but never saw a thing.

My squadron's SOP minimum on-deck fuel in the Hornet is 2,000 pounds. I was looking at 1,400 pounds on the gauge as I leveled off at 39,000 feet. Funny thing is, I had decided not to take the extra 1,000 feet of altitude because of the new domestic-reduced-vertical-separation-minimum (DRVSM)program and its associated westbound traffic.

I had about 50 or so miles to travel before my idle descent. The fuel gauge went up about 100 pounds after my level off. "Mmmm, makin' gas now," I thought. Denver then switched me to a new frequency.

The new controller said, "Hunter 91. You can secure your emergency squawk."

"Thank you, ma'am. I'll need to maintain altitude for now and then start a 250-knot descent at about 73 miles from Buckley."

From then on in, the ATC handling was perfect. I descended for the modified left base to a beautifully clear Buckley ANGB runway 32, and landed with 1,300 pounds. The bingo profile worked as advertised.

Now for the debrief. There were lots of Swiss-cheese holes lining up in this incident. The first one started with the weather folks at NAS West Coast. A quick post-flight weather check at Denver revealed the ceilings in Grand Junction had been below 1,000 feet for at least 12 hours. The current observation and the forecast that were briefed to me when I filed were grossly incorrect. The source of the error was undetermined. I found it interesting that the weather shop at Buckley seemingly had different METARS and TAFs than at NAS West Coast. A quick telephone call to a

very apologetic briefer and his supervisor facilitated some productive learning.

The second phone call I made was to the Denver Center quality-assurance supervisor. He also was very apologetic when I explained my incident and the controllers' reluctance to allow me to climb. Perhaps they underestimated the Hornet's climb performance. He explained that the controllers on duty may have been trying to maintain traffic separation—five miles laterally and 2,000 feet vertically from all other aircraft in the class A—during my bingo profile. Airliners have the traffic-collision-advisory system (TCAS) on board, which will provide them flight guidance away from all other squawking aircraft. He acknowledged that, during a no-kidding bingo profile, DRVSM goes out the window, and the controllers should be moving all other aircraft out of the emergency aircraft's flight path.

I also have to take myself to task. After all, a couple of those Swiss-cheese slices were mine. First, I never double-checked the weather with a separate source, such as the Internet. This added effort could have provided amplifying information and a sanity check to any forecaster's product. Second, I did not look at a surface-weather depiction chart, which might have clued me in that the forecaster's weather was inaccurate. Third, I did not update my destination weather en route. Any one of these actions might have caused me to alter my plan—speed, altitude, destination—and allowed me to avoid the minor seat pucker I experienced during this bingo profile.

When using full-service, military operations on a cross-country, it's easy to get lulled into complacency, but we need to QA the weather products we're given and to update them en route—especially when the temperature-dewpoint spread is two degrees or less.

High-altitude airline traffic will continue to increase as low-cost carriers continue to grow and regional jets continue to proliferate. This increased traffic, coupled with the relatively new DRVSM airspace, will cause the skies above FL290 to become increasingly more crowded. As the armed forces get leaner, air-traffic controllers may be less familiar with military-aircraft-emergency scenarios (like bingo profiles), and air-traffic-control facilities may be less understanding of our priority-handling requirements we must have in an emergency.

Don't be afraid to declare an emergency, and insist upon exercising your emergency authority with clear, concise communication. It may mean the difference between flying into your destination and walking home.

Cdr. Beal is the executive officer at VFA-201 and a pilot for American Airlines.

BRAVO Zulu

Warrior 23, a flight of one AH-1W and one UH-1N, was on a routine mission over the Al Anbar Province in western Iraq to conduct visual reconnaissance of the area. The UH-1N crew was Dash 2 of the mixed section. The crew was Capt. Clint R. Marshall, 1stLt. Karl C. Wethe, Sgt. Robert A. Murphy, and Sgt. Jacy L. Alexander.

Their first area of interest, 40 miles north of forward-operating base (FOB) Korean Village, was a town named Akashat. As the section maneuvered around the town, the UH-1N got a No. 1 engine chip light. Capt. Marshall quickly notified the section leader, while Lt. Wethe pulled out the pocket checklist, and began to read the procedures. As Capt. Marshall finished the radio call, the inner-turbine temperature (ITT) dropped to zero, and the No. 1 engine fuel flow began to fluctuate. However, the gas-producer (Ng) and free-turbine (Nf) indications still were within normal operating ranges. Once the aircrew determined the No. 2 engine still was producing power and operating normally, Capt. Marshall completed the emergency procedures and rolled the No. 1 engine to idle. The plan was to roll back the No. 1 engine to full open for landing.

This operating area provided a unique challenge for the UH-1N. On a normal day, the UH-1N requires 68-percent torque to land; however, it only has 63-percent torque available in a single-engine situation, which leaves a minus-five-percent-power margin in a single-engine emergency.

The Warrior flight continued to press home at 75 knots. The terrain had enormous valleys and ravines, which were unsuitable for a single-engine landing, especially considering no friendly patrols were in the area.

Forty miles north of the FOB, just as the flight encountered rising terrain in the area, lead reported smoke from the No. 1 engine exhaust area. Capt. Marshall left the engine on-line during the climb until they were clear of terrain. Sgt. Alexander inspected the engine area and confirmed the trail of smoke.

Because of terrain and weight considerations, the crew waited until clear of the terrain to expend the majority of their ammunition, then secured the No. 1 engine. The crew expended 300 rounds of .50 caliber, and 1,300 rounds 7.62, leaving only enough to provide security if they were forced to land outside a friendly location.

Sgt. Alexander then saw JP-8 leaking from the No. 1-engine area; the crew secured the No. 1 engine. Once the pilots completed the checklist, the fuel leak stopped, and the engine ceased smoking. The crew reviewed their single-engine parameters and computed the minimum airspeed for their weight, altitude, and weather conditions.

Once within radio range of the tower, the lead aircraft told tower of the situation and asked that any obstacles be removed for the UH-1N's single-engine landing. As the flight approached the FOB from the north, the aircrew jettisoned the remaining flares and dropped the remaining ordnance over the friendly perimeter, where it could be recovered later.

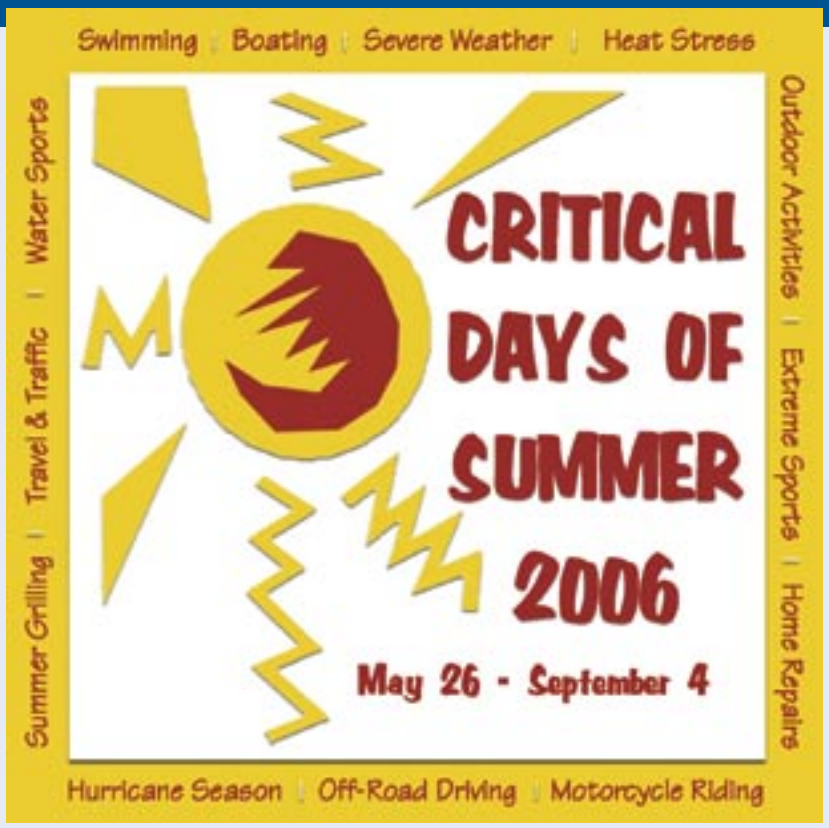
The aircrew made one pass over the FOB to determine the best single-engine approach, based on the wind. The pilots decided on a south-to-north approach, using the headwind to their advantage. They touched down on the gravel with 35 knots of groundspeed and slid to rest within the friendly perimeter.

On postflight, the crew discovered a 2-by-.5-inch hole in the combustion section of the engine, which appeared to have been caused by a power-turbine blade that broke in half. The hole explained the fuel leaking from the engine and the loss of ITT indications in the cockpit.

The aircrew's quick thinking, good headwork, and adherence to NATOPS procedures prevented the possible loss of life and aircraft, and demonstrated the importance of good crew coordination.

1stLt. Karl C. Wethe, Capt. Clint R. Marshall, Sgt. Robert A. Murphy, Sgt. Jacy L. Alexander

"24/7—Operation Summer Force Preservation"



That's the name of a new outreach campaign developed by the Navy and Marine Corps safety team to remind Sailors and Marines of their responsibility to be alert, aware and able to manage risk all day, every day, now that the "Critical Days of Summer" have arrived. The Memorial Day weekend traditionally signals the beginning of summer activities, such as picnics, beach parties, and travel. The 24/7 campaign encourages Sailors, Marines and civilians to take care of each other and to make the summer season enjoyable.

The "Critical Days" pose greater risks for several reasons. It's when service members go on family vacations and travel longer periods than they should without rest or a break. It's when the weather is ideal for outdoor and water activities. And, it's also a time for cookouts and picnics, many times including alcohol consumption. During the summer periods of 2002 through 2005, we lost 220 Sailors and Marines, 166 to PMV crashes. Seventy-three percent of these victims were between 18 and 26 years old.

The Naval Safety Center website (**www.safetycenter.navy.mil/seasonal/criticaldays/**) offers the 24/7 planner, containing materials to help safety leaders focus their efforts. Besides the planner, you can download a media kit and multimedia resources. We urge you to use these materials and develop your own local campaign.

Introducing ***Traffic5100***, a special supplement to ***Sea&Shore*** *and* the newest addition to our award-winning safety publications.

This traffic-safety handbook is your partner in the driver's seat. It's chock-full of information, best practices, and resources for developing your Navy and Marine Corps traffic-safety program.

Don't wait. Get your copy today at your nearest safety office or contact (757) 444-3520, Ext. 7312 or e-mail **SAFE-PAO@navy.mil**.

PLUS: Let us know how to better serve you by telling us what you think of the handbook. Take the online reader's feedback

@ **www.safetycenter.navy.mil/media/seashore/traffic5100/feedback.cfm**

Good judgment comes from experience. Good experience comes from someone else's bad judgment—but, only if the experience is shared.

The Naval Safety Center website has information from two valuable resources that can improve the way we do business. To access the Naval Aviation Safety Program instruction, OpNavInst 3750.6R (Chapter 4 and Appendix L discuss hazard reporting), and the WESS Aviation Hazard Users' Guide, go to our Aviation Directorate webpage at: **www.safetycenter.navy.mil/aviation/**.