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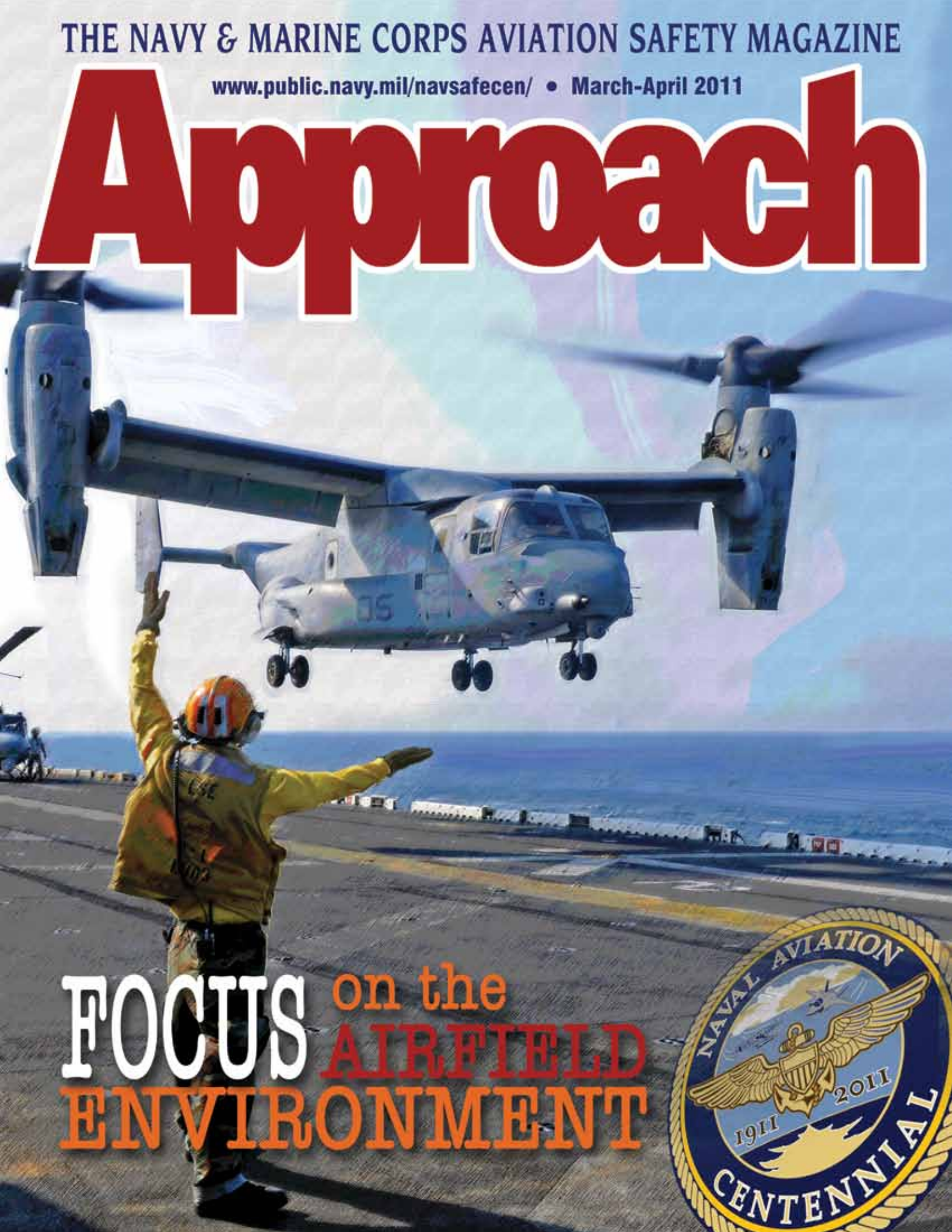
Approach



FOCUS on the AIRFIELD ENVIRONMENT

NAVAL AVIATION 1911 2011 CENTENNIAL

The Navy & Marine Corps Aviation Safety Magazine
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Mishaps cost 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. 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; the time to learn to do a job right is before combat starts.

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CON

Features

Naval Aviation—100 Years

The Centennial of Naval Aviation is celebrated in 2011, and *Approach* continues to present articles to commemorate our legacy. This issue features another article by Peter Mersky highlighting the first landing on a ship. Eugene Ely landed on the USS *Pennsylvania* in January 1911, just a couple months after making the first shipboard takeoff from the USS *Birmingham.*

3. **Ely's Flights—Part 2, The First Recovery**
By Peter Mersky
Shortly after making history with the first takeoff from a ship, Eugene Ely made the first shipboard landing. This pioneering event in aviation took place in the waters just off San Francisco. Naval Aviation was born.

Focus Topic

The airfield environment puts aircrew in higher risk situations. How you handle communications, see-and-avoid measures and high-traffic areas is critical because of the risks. Here are three stories, depicting different situations that may trigger ready-room discussions.

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By LCdr. Jake Staub
An EA-6B on deck, with helos in the air, and the holes in the cheese were lining up.

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By Lt. Matt Headley
A Haiti assistance mission goes from helping others to just trying to avoid a mishap.

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By Lt. Peter Eudy
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Photo by MC2 Barry R. Hirayama. Modified.

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Cover: ABH2 Mark Hernandez signals an MV-22 Osprey, assigned to VMM-266, to take off from the flight deck of USS *Kearsarge* (LHD 3). U.S. Navy photo by MC3 Scott Pittman.

Back cover: HH-60H Seahawk helicopters assigned to HS-15 pass a rainbow while delivering mail to USS *Carl Vinson* (CVN-70) during a vertical replenishment at sea. U.S. Navy photo by MC2 James R. Evans.

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Every transpac brief covers, or should cover, the twin dangers of tanking and get-home-itis.

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The Initial Approach Fix

Mission First, Risk Management Always, Safety Results

Fewer resources ... Safety is the priority.

Sound familiar? Whether you're a nugget aviator or graying at the temples, the struggle with budgets and resources will continue to be tempered by the overriding need to complete the mission and to protect lives and resources. As we move forward in Naval Aviation, our leaders face this challenge and are expected to achieve both mission success and safe operations.

For those of us in the aviation safety arena, this dual challenge must be viewed as a compatible way of operating. Experience and knowledge are critical to our success: More flight and simulator time and more training means a more competent aircrew. We can agree on that. Each aviation community has performance requirements for minimum proficiency: Number of takeoffs, landings, traps and hours are factored in to qualifications and readiness standards. This translates into mission success. But, at what point, or threshold, do we raise the safety flag and stop operations? When do the risks outweigh the benefits?

When do the risks reach the point where a commanding officer, the mission commander or the flight lead calls "knock it off," when safety is the issue? When does the maintenance officer make the same call when meeting the flight schedule?

We have operational risk management to help guide our decisions. Understanding risk management must be part our aviation culture. Instilling ORM principles in the training command gives each generation a good start in their careers. Making risk management a part of every activity (on and off duty) and every mission will allow for mission accomplishment. By making the right decisions, we will also take care of our people—the priority.

It comes down to leadership, as it should. Leaders who will do their best to accomplish the mission, but who are also empowered, throughout the chain of command, to call it the way they see it. If that means, "Knock it off," then so be it. We have to keep a level of performance that is linked to safety standards and have the courage to make the tough call. Come to think of it, it really isn't a tough call if safety is the priority—Capt. Mike Zamesnik, Director, Aviation Safety Programs.

THAT FIRST TRAP—EUGENE ELY CROSSES THE "ROUNDDOWN" OF THE PENNSYLVANIA'S SHORT FLIGHT DECK. TALK ABOUT LINEUP. THE DECK WAS BARELY 30 FEET WIDE AND 120 FEET LONG, WITH A 30-DEGREE SLANT AT THE AFT END OF THE PLATFORM.

ELY'S FLIGHTS—

Part 2, The First Recovery

BY PETER MERSKY

Almost as soon as he had finished the flight off USS *Birmingham* (CL-2), Eugene Ely began campaigning for support to land back aboard another ship. There had been plenty of postflight publicity, but the powers-that-be in Washington were still hard to convince about further "experiments." Everyone wanted to get their hand in, whether in thinking about another operation, or providing laboratories for testing. Even Capt. Washington Irving Chambers, head of the Navy's newly created aviation section, came under suspicion for possible empire-building.

Ely also received his share of congratulatory notes, including one from Secretary of the Navy George Meyer, who had not supported Ely's and Chamber's plans. Ely threw the Secretary's letter away in disgust. He hadn't looked at the letter closely enough to realize that the initials "WIC" indicated that Capt. Chambers had actually composed the letter for the secretary to sign.

Several weeks later, Chambers asked Ely if he was still willing to try landing aboard ship. Ely cabled his willingness to do so and suggested San Francisco as the venue. Ely planned to be in the city attending another air meet in January 1911.

The Navy chose the armored cruiser USS *Pennsylvania* (ACR-4), which was nearly four times as large as the *Birmingham*. Ely and his wife Mabel arrived in San Francisco on January 4. The ship had moved up to Mare Island that morning and the crew was preparing to receive Ely, constructing a platform that was 37 feet longer and seven feet wider than the one built on *Birmingham*.

Ely chose a Model D-IV Military Machine, a utilitarian pusher that featured a forward-placed elevator and extendable wings that allowed a 30-inch insert to be placed between the outboard panels to increase the overall span to 280 square feet. One of the advantages of this aircraft was that it could be knocked down for shipment within 33 minutes; reassembly took about 55 minutes.

It should be remembered that these first decades of powered flight allowed the greatest range of invention, often with one specific aircraft, and by any imaginative pilot who had the brains and constructive skill to carry his vision through. Everything was new, the field was wide open, and the audience was most receptive.

Two things concerned Ely about his flying onto *Pennsylvania*. First, avoiding an imposing steel mast forward of the platform. Second, the device or system that would

For his part, Ely had outfitted himself with inner tubes criss-crossing his chest, a padded football helmet and goggles.

bring his aircraft to a safe stop. Even then, at this embryonic stage of the ongoing endeavor of safely operating from ships, lineup and trapping were two main concerns.

There are several ideas about where Ely got his solutions, especially for the second problem: arrestment. The idea of stringing wires across the landing surface somehow appeared, and the basic concept has never changed. Avoiding the mast would be—and always has been—a matter of pilot skill and training.

Unfortunately, as with the first-launch flight the previous year on the East Coast, weather conspired to cause problems. Rain and fog blanketed the San Francisco Bay area, which made conditions hazardous for the *Pennsylvania* as she steamed to her position, striking a channel buoy on the way. Although original plans had called for the ship to be underway, it was decided to anchor in the channel, hoping she would swing into the wind, affording Ely and his little biplane a stable target.

The Elys, accompanied by Glenn Curtiss and Lt. Theodore C. Ellyson (Naval Aviator No. 1), checked on the evolving flight deck and conditions at the ship. Curtiss was concerned about safety, not wanting to have one of his star pilots hurt or killed in a Curtiss machine. But, the weather improved by January 17, and with the ship pointing into the wind toward the Golden Gate Bridge, Ely decided to make the flight the next day at 11 a.m. to allow any fog to burn off.

The skipper of the ship, Capt. Charles F. Pond, stationed crews in lifeboats as well as swimmers at the rails, ready to jump in should the intrepid pilot encounter trouble. For his part, Ely had outfitted himself with inner tubes criss-crossing his chest, a padded football helmet and goggles. Today his flight "gear" looks hopeless and forlorn, but this early period of aviation allowed for a high degree of pilot invention (and overconfidence).

ELY TOOK OFF FROM THE RACETRACK at Tanforan, south of the city, at 10:48 a.m., right on schedule. He climbed to 1,200 feet, skirting the San Francisco waterfront before pointing his little craft over the water. A lineup of ships assembled for the purpose of pointing the way to the *Pennsylvania*, their smoke showing him the wind direction.

Down to 400 feet, Ely flew over the cruiser's stern, flying up her starboard side. Coming around the bow, he flew down the port side. Entering "the break" (as it were), Ely banked sharply, reduced power and aimed for the platform. The approach was good, but just as he was settling down, an updraft lifted Ely and his machine up over the wires strung below him. He quickly dove for the deck. Mothers and kids, don't try this at home! His hooks snagged the eleventh and following wires, pulling him to a safe stop.

A frantic celebration followed, led by an elated Capt. Pond. Photographers snapped away and Sailors cheered. Ely reportedly directed a crewman to "Let me know when the plane is respotted and ready for take-off," thus originating the phrase, "respot the deck."

Toasts were the order of the day. Ely and his wife (who had watched the whole event) were the center of admirers' attention until noon when he climbed back into his seat. He quickly launched and headed back to land to close out one of the most exciting days in the very young field of military aviation.

Unfortunately, Eugene Ely wasn't able to enjoy his fame for very long. He was killed in a crash in Macon, Georgia, only nine months later, on October 21. He was just 25 years old. In 1933, Mabel accepted one of the first Distinguished Flying Cross awards in posthumous recognition of her husband's feat. Gene Ely had demonstrated what was possible for all the navies of the world, and his legacy is still with us today, 100 years later.

MR. MERSKY IS A FORMER *APPROACH* EDITOR AND AUTHOR OF SEVERAL BOOKS ON NAVAL AVIATION.

Part 1 ("Ely's Flights—The First Launch") appears in the January-February 2011 *Approach*.

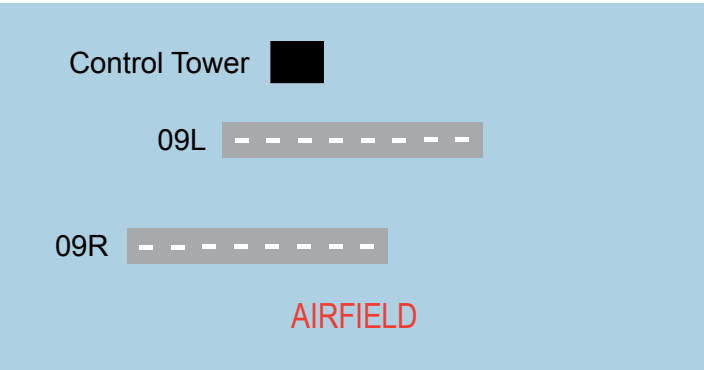
Runway incursions, midairs, near-midairs, unclear communications with tower and ATC—in and around the airfield, there's ample opportunity for a mishap. The next few stories show how a flight can quickly degrade and put aircrew in danger just when you think all is OK. Just following instructions isn't enough. Use your experience, on-wings, the controllers, and your aircrew, along with their extra sets of eyes, to spot traffic and create a see-and-avoid posture. Make sure all communications are understood and followed—with a sanity check to ensure they make sense. Keep the pucker factor high until you're debriefing. — Editor

Dude! We Almost Died Last Night

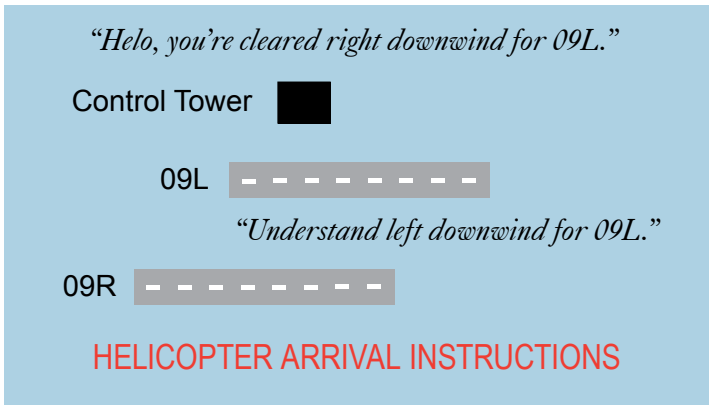
BY LCDR. JAKE STAUB

I saw it coming while we were position-and-hold on the runway, but I didn't say a thing; that was a mistake.

On departure, I wanted to scream over the radio, "Left-to-left," and turn in. But, ECMO 1 grabbing my arm and yelping like a man with his back fur on fire was too big a distraction to overcome.



An EA-6B crew was given permission for back-taxi and hold runway 09R. With the Prowler in position-and-hold on 09R, a flight of helicopters was given instructions for a right downwind entry to land on runway 09L. The Prowler pilot suspected this action would result in a flight-path conflict on departure by forcing helicopter traffic into the 09R departure corridor, but he did not broadcast his reservations to tower.



Here's a basic diagram of the expeditionary airfield to help orient you.

The lead helicopter pilot didn't understand their arrival instructions after the first transmission—they were nonstandard—and queried tower. However, the lead helicopter pilot accepted the instructions, after tower repeated them.

"Negative, Helo, you're cleared right downwind 09L."

Control Tower

09L

"Cleared right downwind 09L."

09R

REPEAT OF HELICOPTER ARRIVAL INSTRUCTIONS

The Prowler was cleared for takeoff.

"Prowler, you're cleared take off 09R, switch departure."

Control Tower

09L

("This is going to be good.")

09R

"Cleared for takeoff. Switching."

("This is going to be good.")

TAKEOFF INSTRUCTIONS

At 2.5 DME, accelerating through 300 knots, and maintaining 1,000-foot MSL to comply with field-boundary-altitude restrictions, the Prowler was issued a traffic advisory by departure control that described traffic at 12 o'clock and three miles. No information was given regarding helicopter-traffic altitude. ECMO 1 meant to request traffic altitude, but instead requested traffic azimuth. Departure again responded with traffic at 12 o'clock.

The lead helicopter pilot, hearing the radio exchange and most likely seeing a set of anti-collision lights closing at 400-knots relative, turned on his navigation and anti-collision lights. The Prowler, and not ground fire, was the closest alligator to the boat. The Prowler pilot saw the helicopter about 1.5 miles off the nose and maneuvered hard right 45 degrees to avoid it. After rolling wings-level, he initiated a 20-degree climb to avoid the formation aircraft.

THIS WAS A VERY THREATENING situation that could have been prevented by tower issuing the helicopter traffic a left downwind entry for a landing on 09L, tower holding the Prowler on 09R until the helicopter traffic was established in the pattern, or the Prowler pilot rejecting takeoff clearance.

Was this a colossal breakdown in time critical risk management on the part of the Prowler aircrew? Perhaps. A key piece of information (the helicopter position relative to the airfield), was missing, preventing an accurate real-time determination regarding the level of risk in taking off. This information rested in the hands of air traffic control (ATC) but was not requested by the aircrew. Unfortunately, the aircrew assumed ATC had the big picture via radar and would not set up a departure end beak-to-beak rendezvous. That assumption was not warranted.

Although helicopter aircrew were not contacted post incident, it was evident that based on the confusion generated, the arrival instructions were outside the norm. I'm certain the helicopter aircrew saw the same train wreck developing. Why ATC could not see the same conflict developing, given their ability to generate overall situational awareness, is unknown.

Based on postflight discussions with base-operations personnel, one explanation for the departure and arrival instructions issued was that ATC controllers were operating within a certain level of risk and responsibility. They were simply following a set of regulations and procedures built with reference to known risks.

Unfortunately, dynamic situations have a nasty way of trashing regulations and procedures applied in the wrong way at the wrong time. When that not-so-fresh feeling hits, you're most likely operating in a higher level of risk. When that happens, it's best to take a step back if time allows and watch the accident-waiting-to-happen go by. From there, an amended set of regulations and procedures should be applied to deal with the situation. That's exactly what happened at our expeditionary airfield. A climb restriction was lifted such that departing aircraft would be well above the helicopter pattern altitude by the departure end of the airfield. All we've got to do is watch out for fixed-wing traffic at twice the helicopter pattern altitude. And the beat goes on.

LCDR. STAUB FLIES WITH VAQ-133.

A Near Midair Collision—On Deck?

Photo by MC2 Barry R. Hirayama. Modified.

BY LT. MATT HEADLEY

As pilots, we are taught to always look out for the other guy, because someone out there is trying to kill you. But, how often do we expect it to happen while we're on deck? I had such an experience while taking part in the international humanitarian assistance/disaster relief (HA/DR) effort in Haiti. Our detachment moved 416 troops and other personnel, conducted 107 medical evacuations, and delivered more than 90,000 pounds of food, water, and other supplies as part of Operation Unified Response. However, I'll forever remember another event in Haiti that could have had disastrous consequences. Here's why I'll always look out for the other guy.

As part of HSL-46 detachment 3's Screamin' Seagulls, I was preparing to go out for a Group Sail workup in January 2010. A call came from the wing operations officer on Wednesday, sending us instead to Haiti. We had to assist with the disaster-relief mission after the 7.0 magnitude earthquake that had hit the day before.

On Saturday morning, we were aboard USS *Normandy* (CG-60), sailing south toward Haiti at max speed.

En route, we conducted in-depth ORM analysis of the potential hazards we might encounter. We also conducted training on mountain flying and reviewed SAR procedures, so we'd be ready to handle whatever challenges might arise. On Sunday, we arrived on-station in the Gulf of Gonave, inside Haitian territorial waters. We were briefed on the operations, locations of active landing zones, and what our role would be. That evening, we had a crew airborne to survey the area and locate the landing zones. A representative from each crew went on this flight to improve situational awareness among all of our flight crews.

Time slowed down for me as I watched the aircraft's tail rotor sliding toward our main rotor.

Monday morning was our first mission, and I was excited to be part of the first crew to fly into Port-Au-Prince. Once inbound, we contacted the E-2 and were directed to the airport for supplies. This tasking was exactly what we expected. As we closed within visual range of the airport, we watched how everything worked. Because the control tower was out of commission, we carefully sequenced in for a landing. This action showed us how the operations worked. We saw a line of aircraft in the grassy area south of the runway. The far right aircraft would be loaded with supplies and directed to take the load to one of the landing zones for drop off. Because of problems keeping the zones clear on previous days, troops were also transported to the zones. The troops would secure the zone and take charge of the distribution of supplies once they were delivered. Once a delivery was made, the aircrews would fly back to the airport and load up again.

After making a delivery, we headed back to the airport. When we got there, we found the front line of aircraft completely full. We were directed by an LSE to land behind the front row. I was on the controls and remained on them after landing. A helicopter in front of us had finished loading and didn't need to wait in line anymore. They lifted and started sliding back toward our position. Time slowed down for me as I watched the aircraft's tail rotor sliding toward our main rotor. As they slid backward, they were clearly oblivious that we were right behind them. They were about to intermingle their tail rotor with our main rotor.

Thoughts raced through my head. I wanted to call them, so I checked to see if my radio selector was on the right channel to yell for them to stop. I also considered lifting up and moving out of their way. I decided against that because I was sitting left seat and needed to slide right, and I couldn't clear us properly. I knew no one in the aircraft was expecting to get airborne right then. While I was going for my radio selector, my HAC noticed what was happening and immediately took the controls, lifted up, slid to the right, and set the aircraft back on deck. All this happened in a manner of seconds.

A commotion erupted from the cabin. One of our crewmen was standing on the right side of the aircraft as we lifted, and did not make the short trip with us. The crewman who was still in the aircraft demanded to know what had just happened. I looked out my window and saw our other crewman was now on the left side of the aircraft, ducking down, and looking quite bewildered. In true James Bond fashion, he heard the power coming on, dove to the deck, unhooked his ICS cord, and laid on the ground until we had passed over him. Once we landed, he jumped up and ran back to rejoin us and find out what was going on.

The aircraft in front of us had stopped, and I finally saw a head poke out of its side. They departed without further incident, and we moved up to the front line to continue our mission.

ONCE OUR HEARTS STOPPED POUNDING, we discussed how to mitigate similar risks. We decided that if we could not land in the front line, then we would stay a lot farther back to allow more room in case the situation happened again. We also briefed the incident to all other crews on our detachment.

I know that our fellow naval aviators in the other helicopter were not trying to kill us, but it is a reminder that it only takes a moment of negligence for disaster to strike. The likely scenario, had we not moved, would have been a hovering helicopter with a loss of tail rotor drive surrounded by three other helicopters and a number of troops on the ground.

Never let your guard down, no matter what phase of flight you are in, and always be ready for the unexpected. This is especially true when operating outside of the "norm." Think of what can go wrong, and how the other guy might get you. We were very proud to take part in Operation Unified Response and aid the Haitian people, and just as proud that we brought everyone in our detachment home safely.

LT. HEADLEY FLIES WITH HSL-46.

When Positive Control Is Not So Positive

BY LTJG. CHRIS KRUEGER

"Holy crap!" I yelled over ICS, banking sharply to the left as two FA-18s roared by, with maybe 100 to 200 feet of lateral separation to my right.

"Why didn't GCA tell me about these guys?" I thought, as I wrapped up my turn.

I had several more questions to ask the controller, but rather than debate with him, I thought he should be telling me and/or doing something. My crew and I decided these questions were better answered on deck. We knocked-off our approach training and went home. Here's our story.

Having completed a typical SH-60B ASW training mission in the Sagami Wan (Bay) south of NAF Atsugi, Japan, we called ATC and requested practice PARs to finish the flight per our NATOPS brief. Atsugi tower gave us a discrete squawk and switched us to Atsugi GCA for the approaches. So far, everything was going according to plan.

We checked in under positive control and were vectored into the GCA pattern. It was congested with another helicopter and several P-3C Orions under positive control. My copilot and I glanced at each other when the controller said we were under the control of a student controller. "No big deal," I thought. I've had several student controllers in the past, and they had all done fine jobs. I had no reason to think today would be any different.

The first PAR went without a hitch. During climb-out, we kept a close eye on the helo in front of us and followed our vectors into a downwind. The controller then vectored us to 210 degrees for a dogleg heading for final to runway 19. He also had us descend from 3,000 to 1,500 feet. He said there was a flight of two FA-18s at 2,300 feet, 10 miles to the north. He instructed us to climb and maintain 2,000 feet for traffic separation. I looked to the right, but couldn't see them. I had my aircrewmen search for them, while I maintained an instrument scan. I was unsure why he had me climb to avoid the traffic above me, but he still was giving me positive vectors, so I complied.

All of this happened within seconds. As I passed the runway centerline from left to right, I was about to challenge the controller for additional vectors when he told me to turn right to 090.

I thought about it for a split-second and verified, "You want me to come right to 090?"

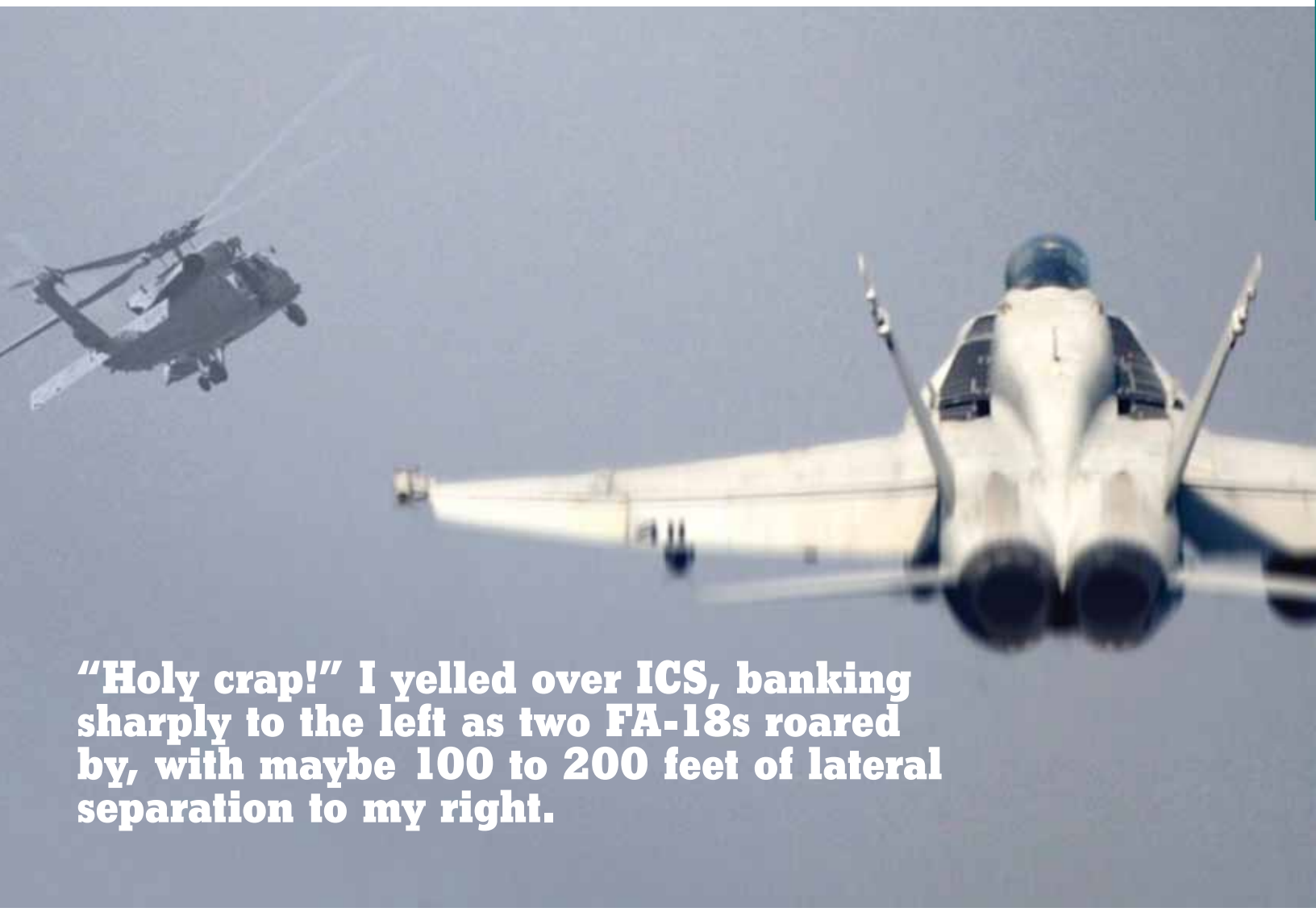
I was concerned for several reasons. First, I wanted to confirm I heard correctly from my Japanese controller. It can be difficult at times to understand their accent or phraseology. Second, it didn't make sense to come right the long way around, it would have been shorter to turn left. Third, and most importantly, I knew there was FA-18 traffic a few miles to the north.

He corrected himself and replied, "Come left to 090."

As I started to turn, I saw out of the corner of my eye, at our 4 o'clock, two FA-18s flying in close formation rapidly closing from behind me, and level with our altitude. I immediately wrapped up my turn and got the heck out of there.

We all acted calm, but I could tell that all three of us were a little shaken on the inside. I informed the controller, as respectfully as I could, what just had happened. Our crew discussed the near midair and decided to make this approach a full stop.

I did my follow-through on deck. I immediately reported the incident through my chain of command and the base-operations office. I wanted to know what happened and make sure it didn't happen again. I had several big questions. Why didn't GCA vector us away sooner?



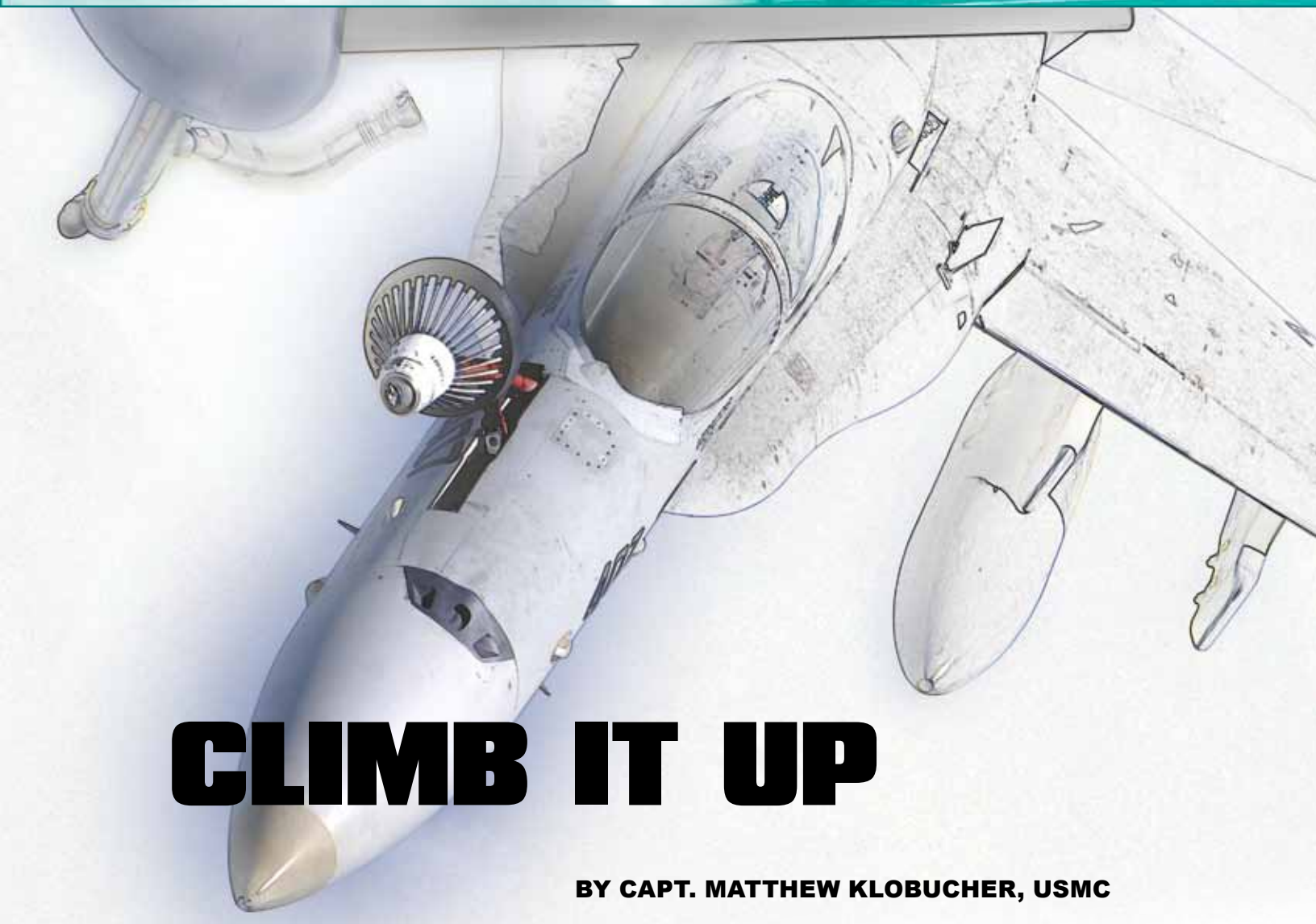
"Holy crap!" I yelled over ICS, banking sharply to the left as two FA-18s roared by, with maybe 100 to 200 feet of lateral separation to my right.

Why didn't he give me progressive traffic calls about the FA-18s? Why did he have us climb from 1,500 to 2,000 feet when the FA-18s were at 2,300 feet, even though we later found them at 2,000 feet?

I GOT SOME OF THE ANSWERS during the investigative process. As far as having us climb to 2,000 feet, the student controller had terminated our approach but retained us under positive control. He didn't know what to do with us, so he simply vectored us to the minimum vectoring altitude (MVA) for the area, without regard to the traffic on his scope, before he figured out a heading for us. As far as the progressive traffic calls and other issues, apparently there were miscommunications between our controlling agency and Yokota approach control (the controlling agency for Yokota AFB north of NAF Atsugi), which was transferring control of the jets to Atsugi GCA. I can only assume what transpired between the two controllers. But, if there were indeed miscommunications, it stands to reason the responsibility for controlling the flight of FA-18s was in question during that critical time of near proximity to us. The response from ATC to all of this was that they would conduct some training.

The ambiguity of that responsibility leads to the point of my story. We were under positive control and receiving vectors from GCA. While he was responsible for traffic separation in his zone of control, as the pilot in command of my aircraft, I was responsible for the safe and orderly conduct of my flight. I feel that we as a crew did everything correctly and safely: we exercised great CRM. This situation brought home the point to never be complacent and abdicate any safety of flight responsibilities, regardless of the situation. Nothing can take the place of that vigilant VFR scan.

LTJG. KRUEGER FLIES WITH HSL-51.



CLIMB IT UP

BY CAPT. MATTHEW KLOBUCHER, USMC

Our squadron was making a long-awaited return home from a WestPac deployment. After six months, Thanksgiving, and Christmas away from families and friends, we were excited to return home. Our first two legs from MCAS Iwakuni to Wake Island, and from Wake to Hawaii went without a hitch. However, on our first attempt to fly home, one aircraft broke off its probe in the basket of a KC-10 WARP pod (notorious for a so-called "dead hose," or one without fuel and therefore prone to the sine wave that has overstressed many refueling probes). My aircraft was to fly back with the broken jet, while the rest of our cell continued.

As we watched the probe, we noted that the hose, instead of curving away from our aircraft, had slowly kinked up over our nose.

The probe was quickly replaced by our trail maintenance element at Hickam AFB, and after a few good-deal vacation days of waiting, we were tasked with a KC-135 tanker to finish our trip. As a two-ship on the tanker, we would make our final flight from Hawaii home to MCAS Miramar.

We briefed a standard transpac leg, emphasizing the dangers inherent in tanking and the lack of diverts between Hawaii and the mainland. All our squadron aircrew had made multiple transpac flights during our deployment, so the four of us knew the drill. We had to carry nearly full tanks of fuel to reach land if we couldn't tank. We would have to cycle constantly on and off the hose to keep everyone topped off.

After our brief, we walked to the jet, packed our bags, started-up and taxied with our tanker just behind us. We took off on time, eager to get back to our loved ones.

The flight conditions nearly were perfect. The formation was easy to keep with only two aircraft on the tanker. The weather was great, and the first couple of refueling points occurred without any problems. As we approached the portion of the route where we'd need to cycle constantly through the basket, the tanker began the refueling procedures as it had done several times: it slowed down and dropped the boom. Our lead moved into the astern position.

As lead began taking gas, he commented over the radio, "We're going to California, boys!"

We knew that meant we were now exactly halfway home, and the most fuel-efficient divert had just changed from Hawaii to California. Despite the jovial nature of the remark, it turned out to be a good reminder.

Our lead topped off, then moved off the tanker to the right side, exactly per the brief and the last several refueling evolutions. We moved to the astern position from the left side of the tanker, stabilizing about 10 feet behind the metal KC-135 basket. My pilot made the mandatory "precontact" call, received a "cleared to contact" in reply, and set the prescribed two knots of closure to place our probe tip in the center of the basket. As soon as contact was made, he nosed the jet slightly up and to the right to bend the short hose into the desired "C" shape, which in turn would create the 90-plus degree "knuckle" required to receive fuel.

As we watched the probe, we noted that the hose, instead of curving away from our aircraft had slowly kinked up over our nose. Such an occurrence is not unusual, and typically occurs after a slight pilot correction away from the boom. The hose is supposed to rotate away from the aircraft to set the desired geometry. However, this time the hose snapped violently around the bearing which attached it to the basket. Suddenly, fuel poured over our canopy.

An instant before I called, "Get back!" I heard the engine noise change as the throttles were pulled back. We separated from the tanker, and the fuel flow over our canopy decreased. I saw the hose flailing wildly at the end of the boom with no basket attached. Then, as the canopy cleared in the wind stream, I saw that the fuel basket was still attached to our probe.

Without that basket, our tanker couldn't give us fuel, and we couldn't top off our tanks. Without full tanks, we might not reach land. With that large metal basket attached, the increased drag on the aircraft would increase our fuel consumption. It was a bad situation.

"Put Moffett on the nose," I heard my lead command, "and prepare to climb."

My pilot responded, "I have it in mil." Moffett Air Base sits at the south end of the San Francisco Bay and was the closest divert option available to us.

Lead said over tanker frequency, "We are now diverting to Moffett as an emergency flight. Please coordinate with Oakland Center. We'll contact you with details when we get on our way."

We were passed the tac lead and began to climb to a higher, more fuel-efficient altitude.

I called, "Confirm Mach 0.8."

I wanted to make sure we were at or near our most efficient climb profile, knowing the attached basket made precise calculations impossible.

My pilot responded, "Already getting there."

I said, "I have Moffett on the nose, 1,150 miles to go."

I looked at the fuel. We had 13,300 pounds, far less than the roughly 15,000 pounds required from our position as specified in our preflight planning. Fuel would be a major issue. But, at that moment, there were other things to consider.

"Engine look OK?" asked lead. When we had separated from the tanker, a piece of the basket might have broken off and been ingested into our right engine.

I pulled up the engine page, as my pilot replied, "No problems so far."

I scanned both columns looking for discrepancies. The right engine was running a little hotter than the left, with higher rpm and oil pressure. That had been our engine-indicator trend all flight, so I concluded our engines had no problems. Because indications still made me nervous, I mentioned it to my pilot. We resolved to keep a close eye on it.

EVERYTHING STARTED TO CALM DOWN. We passed 30,000 feet and headed direct toward the nearest divert. We decided the best altitude for cruising with three tanks, an extended refueling probe, and the unwelcome basket was 33,000 feet. We got there and trimmed out, then discussed the advantage of using various autopilot modes.

Recalling some long-mothballed NATOPS knowledge, we knew that the waypoint-couple option calculated a great-circle route. This route was more direct and more fuel-efficient than flying a heading-direct profile, especially over the 1,100 miles we had yet to fly. When my pilot set the auto-throttles at our best-cruise Mach, he noticed some slight throttle movement as the aircraft constantly adjusted the power settings to maintain the specified airspeed. Because any jockeying of the throttle would consume excess fuel, he manually set the throttle. Then he trimmed and set-up in stable flight.

Would we have enough fuel to make it home? I calculated fuel in two ways. The first was from the computer-predicted fuel remaining upon reaching Moffett, the current navigation waypoint. It showed 2,300 pounds remaining over the airfield. However, a well-known piece of Hornet-system knowledge is that the computer overestimates fuel-remaining by about a pound of fuel per mile.

Doing the math, our real prediction was more like 1,200 pounds, 300 pounds below the NATOPS emergency-fuel threshold of 1,500 pounds on landing.

The second method was to take the indicated-fuel consumption and multiply by computer-estimated time remaining, manually calculating how much fuel it would take to get to Moffett. This method confirmed what the computer predicted: An uncomfortably low 1,300 pounds of fuel upon reaching the field.

We knew that our calculations did not account for an increase in the already-present headwinds, or the possibility of having to shoot an approach, or any other problem with the aircraft or the field. We had very few options if we had problems landing at Moffett. We continuously updated our calculations and made sure we flew the most fuel-efficient profile possible. We adjusted our airspeed as our gross weight decreased through fuel burn, and our best-cruise airspeed incrementally decreased. We also monitored the right engine for damage.

THE POSSIBILITY OF EJECTION crossed my mind once or twice during the remaining two-hour transit. My pilot and I had nothing to do but sweat, wait and recalculate everything as often as we could. The silence was broken only by transmissions from the tanker telling us that Oakland Center was aware of our situation, communicating the current weather over Moffett (which was clear), and relaying center's request that we approach the bay area from the south.

Our lead responded to center's request by telling the tanker to relay that we were a fuel emergency, and we would proceed direct to Moffett until it was time to align to the runway. After that call there was a lot of silence on the radio.

We got a break about 400 miles from the coast, as the headwind gradually became a tailwind of about 40 knots. Slowly, our fuel on-deck calculations grew until we were looking at a much more acceptable 2,000 pounds at Moffett.

Just over 100 miles from the coast we began talking to San Francisco Center, who cleared us direct the field—which we would have done anyway. We also heard our first ATIS information at the field, which called for clear skies and great visibility, and landing to the north. It looked to be as easy an approach as possible with the basket attached to our aircraft. We adjusted course slightly to go direct to a 10-mile south initial to facilitate an easy turn to our final approach.

We saw the field as soon as we were in sight of the coast. Because of the descent, we "made up" fuel and showed 2,500 pounds over the airfield. We lowered the gear as we crossed the coast over the unpopulated coastal hills that separate the bay from the ocean. In case the basket came off as the gear came down, we didn't want it to land in a populated area. The gear came down smoothly, while the basket stayed solidly attached. Our relief was cut short by the realization that our flight path took us over nothing but pleasant suburban neighborhoods until the actual field boundary.

Just after we switched to tower, my pilot and I took separation from our lead. He landed first in case the basket fouled the runway. As we began slowing the airplane for touchdown, we noticed the basket start to vibrate as our airspeed decreased below 200 knots. My pilot reacted quickly and accelerated, reseating the basket on our probe. Uncomfortably fast for landing, we delayed slowing to landing speed until we had reached the airfield boundary. My pilot had to select idle and aerodynamically brake the jet to make an on-speed landing. Despite some vibrations, the basket stayed on the probe all the way through landing, taxi, and shutdown. Our final fuel on deck was 2,500 pounds.

A quick inspection of the basket showed that the bearing that connects the hose to the basket had sheared. We could recall no difference between that particular approach to the basket and any of the five which preceded it, except maybe the hose had snapped around more quickly and broken off the basket. The best explanation we came up with was something in the airflow and the hose position at plug-in had caused an unusual motion between the hose and the basket, causing the bearing to rotate violently and shear—a catastrophic failure. The bearing sheared cleanly, and no metal shards were ingested into our right engine.

We found out the hard way that plugging into a tanker is essentially a controlled mid-air collision. Even if you keep it very controlled, you still are vulnerable to malfunction.

By the time the fuel had completely emptied out of our external tanks, our expected fuel on deck meant we didn't need to jettison. While fuel was the biggest concern most of the flight, once we had the field "made," the emergency wasn't over. We could have dropped a metal basket, so we had to transition from a fuel-emergency mindset to a TFOA (things falling off aircraft) prevention mindset.

Every transpac brief covers, or should cover, the twin dangers of tanking and get-home-itis. Ours did and it paid off, because we made good decisions once the emergency occurred. This incident demonstrates that you must anchor on those dangers every time, regardless of the experience level of the aircrew. Without that tailwind, or if we'd been single engine, the scenario might have turned out quite differently. Having a plan regarding what to do in an emergency at each point of those long, boring flights might make the difference between making a divert or an ejection over water. Boring becomes exciting in an instant when something goes wrong, and when left dry 1,000 miles from land, every instant and drop of fuel counts.

CAPT. KLOBUCHER FLIES WITH VMFA(AW)-121.

Please send your ORM questions, comments or recommendations to: Cdr. Duke Dietz, Code 16
Naval Safety Center
375 A St., Norfolk, VA 23411-4399
(757) 444-3520, ext. 7212 (DSN-564)
E-mail: duke.dietz@navy.mil

Mishap-Free Milestones

VR-62	67,341 Hours	25 Years
HMM-262	60,000 Hours	13 Years
VFA-86	70,000 Hours	14 Years, 6 Months

Bird Strike Over Tokyo

BY LT. PETER EUDY

I am a first-tour SH-60B Seahawk pilot at HSL-51, based out of Atsugi, Japan. As a senior lieutenant, I was assigned to conduct an area-familiarization flight with our squadron's newest department head. Because this flight was his first in our command, we conducted an in-depth VFR chart study on how to best navigate the local airfields and corresponding airspace. Our flight was scheduled for three hours—plenty of time to tour the Tokyo metropolitan area. Weather was not a factor with the ceiling broken at 6,000 feet and unlimited visibility.

The flight began smoothly. I sat right seat as we toured the local area. We knocked off some rust bouncing at a few of the outlying fields and even got in some great sightseeing around Mt. Fuji and downtown Tokyo. With 30 minutes left until pit time, we traveled south down the Tokyo Wan (Bay) at 500 feet. We set up for one last low approach into Tateyama, a Japanese airfield, before returning home.

While transiting, my copilot called out, "Birds, 11 o'clock high."

There's always a fair amount of bird traffic along the coastline, so this wasn't unusual. I immediately saw three birds traveling the opposite direction, just above the horizon, about a half-mile out. They appeared to be large brown hawks, maybe four feet from wingtip to wingtip. I later learned these birds, known as Japanese black kites, are so common along parts of the coastline surrounding the Tokyo area that signs warn beachgoers to "Beware of Hawks." They don't fear people and are apt to snatch food right out of your hand.

It looked like they easily would pass down the left side of the aircraft, but I began a shallow right turn to increase separation. As I turned, I saw the birds also alter course; maybe they thought we had food. They made a sharp turn toward us and quickly descended. The scenario was getting interesting. On their new course, we would collide if I didn't move fast.

I immediately turned back to the left to cut behind the birds and take them down our right side. When I saw them still closing, I increased my turn and started a healthy climb. I didn't want the birds to fly directly over the top of our rotors. I know that birds often dive when spooked, so I avoid flying directly beneath them whenever possible. I was confident we had done all that was possible to separate ourselves from the suicidal hawks. While still in my climbing turn, it looked like they would pass down our right side.

Two hawks passed down the right side with room to spare. Then, thump! A light thud passed through the entire airframe. Out of the right corner of my eye I saw the large brown blur of what used to be a winged creature—imagine for a second a cloud of feathers exploding in the air.

I smoothly rolled level and took a moment to note any changes in how the aircraft flew. Vibrations, noises, and engine instruments all seemed normal. I mentally was "winding the clock," wondering if the rotor system just above my head was about to rip apart or if everything was OK.

The conversation with my copilot could have been a snippet from an old Abbot and Costello bit, "Who's on first?"

My copilot asked, "Did we just hit that bird?"

I replied, "Who, us? That bird? Pretty sure we did."

I scanned all the gauges again. Everything was OK, but the few bloodspots splattered on my windshield where undeniable.

I slowed to a safe airspeed and turned toward the nearest landing site, which can be few and far between in the densely populated landscape of Japan. I wasn't sure what kind of damage this bird strike had caused, and the helicopter was keeping that mystery a secret.

I voiced my plan to head to the closest helipad, which was coincidently located in the direction of Atsugi, our home field. We would divert to the helipad if we experienced anything unusual, with the idea of continuing onto Atsugi if everything remained normal.

The crew agreed, and my copilot broke out the pocket checklist to see if there was anything that might apply to our situation. We settled on the "Unusual Vibrations" EP. Although we weren't experiencing any indications, we read the procedure and knocked out the first few steps of the checklist.

As we approached the helipad and slowed down, our crewman took a look out the cabin door and reported

no signs of damage. We agreed it was safe to proceed past the helipad for the five-minute transit to Atsugi.

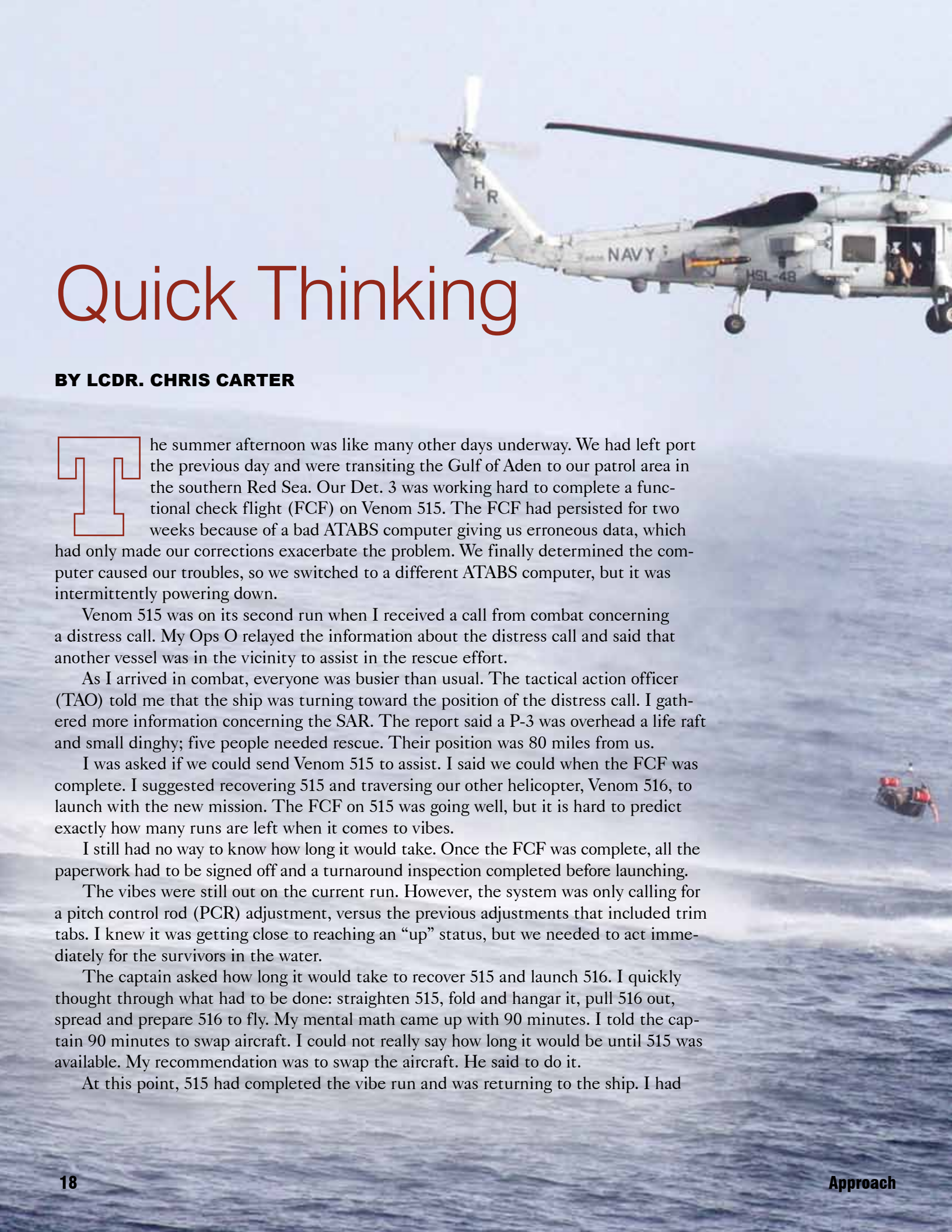
We landed without incident. The bird had created a three-inch by one-inch hole in the top of the blue blade-tip cap. A three-inch crack ran down the bottom of the blue blade, starting at the tip and moving inward longitudinally along the chord. Couple that with the telltale black indication on the BIM (blade pressure gauge), and it was obvious that the blade would have to be replaced.

I've been told that rotor blades are tough; I had never wanted to test their resilience myself. I am relieved that when put to the test, the blade held together, even after such a significant impact.

A big lesson that I've taken away from this incident is that even with all of our ORM discussions, proper visual scans, and safety procedures in place to minimize pilot error and risk, sometimes stuff is just going to happen. I saw the birds heading our way and took measures to avoid the collision, but one of the birds still wanted to play chicken with the rotor blade. Just one more foot of separation and you probably wouldn't be reading this; a few feet closer and things could have gone much worse.

I also have a renewed respect for how unpredictable and dangerous birds are. Avoiding bird traffic is a standard part of most flights and can be a huge danger. Avoiding routine dangers like bird traffic will often result in complacency, especially when you've flown for years without ever experiencing the dangers firsthand. Besides the damage to equipment, when struck at high speeds birds are lethal. I will always give them a wide birth, even if I have plenty of room. You never know what is going to happen on any given fly day.

LT. EUDY FLIES WITH HSL-51.



Quick Thinking

BY LCDR. CHRIS CARTER

The summer afternoon was like many other days underway. We had left port the previous day and were transiting the Gulf of Aden to our patrol area in the southern Red Sea. Our Det. 3 was working hard to complete a functional check flight (FCF) on Venom 515. The FCF had persisted for two weeks because of a bad ATABS computer giving us erroneous data, which had only made our corrections exacerbate the problem. We finally determined the computer caused our troubles, so we switched to a different ATABS computer, but it was intermittently powering down.

Venom 515 was on its second run when I received a call from combat concerning a distress call. My Ops O relayed the information about the distress call and said that another vessel was in the vicinity to assist in the rescue effort.

As I arrived in combat, everyone was busier than usual. The tactical action officer (TAO) told me that the ship was turning toward the position of the distress call. I gathered more information concerning the SAR. The report said a P-3 was overhead a life raft and small dinghy; five people needed rescue. Their position was 80 miles from us.

I was asked if we could send Venom 515 to assist. I said we could when the FCF was complete. I suggested recovering 515 and traversing our other helicopter, Venom 516, to launch with the new mission. The FCF on 515 was going well, but it is hard to predict exactly how many runs are left when it comes to vibes.

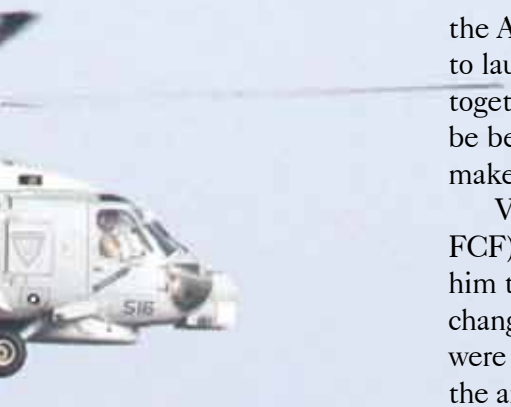
I still had no way to know how long it would take. Once the FCF was complete, all the paperwork had to be signed off and a turnaround inspection completed before launching.

The vibes were still out on the current run. However, the system was only calling for a pitch control rod (PCR) adjustment, versus the previous adjustments that included trim tabs. I knew it was getting close to reaching an "up" status, but we needed to act immediately for the survivors in the water.

The captain asked how long it would take to recover 515 and launch 516. I quickly thought through what had to be done: straighten 515, fold and hangar it, pull 516 out, spread and prepare 516 to fly. My mental math came up with 90 minutes. I told the captain 90 minutes to swap aircraft. I could not really say how long it would be until 515 was available. My recommendation was to swap the aircraft. He said to do it.

At this point, 515 had completed the vibe run and was returning to the ship. I had

Photo by CT2 (Technical) Charles Canale.



the ASTAC radio the crew that this would be a shutdown, and we would be setting up to launch 516. I called my detachment operations officer and told him to get his crew together, along with the AW from my crew and prepare for a SAR. I thought it would be better for me to remain on the ship and coordinate the SAR effort. I also wanted to make sure the aircraft were recovered and launched.

Venom 515 was recovered. My detachment maintenance officer (the HAC for the FCF) got out of the aircraft and said he and his crew were ready to go on the SAR. I told him the operations officer was going to do the SAR. He protested, but I was not going to change my mind. His crew had briefed for the FCF at 0600, and it was now 1330. They were well within their crew day, but I decided a fresh crew was the better choice. Once the aircraft launched, I didn't know how long they would be involved in the SAR. Also, the SAR crew already was briefing, and I needed their help to swap the aircraft.

As soon as the rotors stopped on 515, the rest of the detachment went into action. Everyone played a role. We skipped the water wash and went right to straightening. The H2P on my crew was in the LSO shack and completed the straightening with detachment personnel on deck. Venom 515 was straightened and traversed into the hangar. I stood on the flight deck, out of the way, to observe and make sure the evolution was safe and efficient. I reemphasized to everyone to do things the right way, and not to cut corners because we were in a hurry. The first rule of conducting a SAR is never to require one yourself.

The ship RAST technicians then swapped over the RSD, and 516 was pulled out on deck. Once it was spotted and spread, the remaining aircrew started the preflight. The SAR crew got the brief and gathered their gear. Venom 516 was launched less than 90 minutes after receiving the call. The crew performed flawlessly and recovered the survivors. The first report of five survivors quickly grew to 16 once the helicopter was overhead. The P-3 could not see them all in the life raft. Venom 516 expeditiously pulled 12 of the 16 survivors from the water in two trips. The ship closed by the end of the second trip and rescued the remaining four survivors from the Gulf of Aden via small boat.

A few days later we finally finished the FCF on 515—it did only require one more adjustment.

LCDR. CARTER FLIES WITH HSL-48.

Cut the MAF

BY LT. JOSH FELDMAN

I was on cat 4 getting ready to launch on my first day-night, double-cycle, front and backside tanking off a KC-135. Flying off the Southern California coast, I was part of a large, carrier force strike to R-2508. The schedule called for a 1930 launch and a 2230 recovery.

The case 2 launch, rendezvous, and push to the tanker track were uneventful; however, the tanking was a challenge. The Air Force does it differently than the Navy. Their boom operators maneuver the boom into a slot on the aircraft they're refueling. For naval aircraft to refuel, the Air Force attaches a basket to a 10-foot hose and sticks that on the end of their boom. This short hose makes the basket very stable but very unforgiving. You have to put a kink in the hose to generate fuel flow into your tanks.

I stabbed at the basket on my first pass and quickly disconnected. The swinging kink was about half a second from taking off my angle-of-attack (AOA) probe. I took a deep breath. My second attempt went a little better, but I only stayed in the basket for about 10 seconds before I lost the jousting match with the

unforgiving Air Force hose. I took another deep breath, wiggled my fingers and toes, stabilized in precontact, and then ever so slowly pushed the throttles forward to get into the basket.

"Contact," said the boom operator.

After five minutes of furious ball flying behind the KC-135, I had taken on 5,000 pounds of gas and was ready to proceed with the mission. My flight-of-four fighters destroyed all of the opposing red air and paved the way for the strikers to drop their laser-guided training rounds. The strikers were successful, and before we knew it, we were rendezvousing on the tanker. This evolution went a little smoother for me. I took on 7,500 pounds for our journey to the boat. The lights of Los Angeles absolutely were stunning as we made our way through the Friday night sky to feet wet and USS *Abraham Lincoln* (CVN 72).

We often find ourselves too far from the boat to make our assigned approach times while at a reasonable airspeed. I was at military power, screaming through the night sky, just under Mach 1, trying to make it on time to the marshal stack. CATCC recognized my predicament and graciously gave me vectors. I penetrated through the overcast. Despite having 96-percent illumination, I was at 1,200 feet above water, at 10 miles behind the boat under a solid overcast.

I needed to compartmentalize and concentrate on the basics. Although I'd accomplished a lot in this flight, I couldn't afford to drop the pack. My pass was fair to the 2-wire.

As I taxied out of the landing area, the yellowshirt gave me the wing-fold signal. As I had done 50-plus times before, I made sure my flaps were up and pulled out on the wing-fold handle. I then rotated the handle 90 degrees to the upright position—nothing happened. "That's odd," I thought. I had folded and unfolded the wings on the flight deck before my cat shot, and this position definitely was the wing-fold position. I reached down, felt the handle, and realized that the wing-fold-handle assembly may have shifted during the trap. I applied a little pressure to the handle, and the handle moved to a new position 90 degrees further than the normal wing-fold position. The wings folded. Good deal.

After shutdown I pulled aside the flight-deck chief and told him to send a troubleshooter to the cockpit to check my wing-fold handle. I stood by the ladder as the troubleshooter jumped into my cockpit. After a few minutes, he climbed down and said the wing-fold-handle assembly had come loose. They would realign it.

"Roger that," I yelled over the roar of the flight deck.

I thought I had addressed the problem and a solution was well in hand. As I navigated my way to maintenance control, I thought about the other two gripes I was about to write. I debriefed the maintenance chiefs on my gripes. They weren't downing discrepancies, so the jet definitely was good-to-go for the next day. I neglected to mention the issue I'd had with the wing-fold handle, or my conversation with the flight-deck chief and troubleshooter.

ALL OF THE LARGE-FORCE STRIKE PLAYERS met in CVIC at midnight, had a quick debrief, and made it to the wardroom for midrats before 0100. I hit my rack that night with a sense of accomplishment. Little did I know that my assumption that the wing-fold handle was being taken care would come back to haunt my air wing, squadron, and fellow nugget roommate.

The next day, my roommate, the dude who arrived to the squadron only two months after me, manned up that jet for a good deal, SSC mission around the boat. As every good FA-18 pilot should do, my roommate checked to make sure the wing-fold-handle position agreed with the actual position of the wings—it did. But after getting his second engine on line, his wings suddenly spread and crunched the TACTS pod on one of our sister squadron's jets. Shocked, my roommate quickly tried to fold the wings. The handle already was in the fold position. Then a very angry face looked over from his damaged jet. That angry face belonged to none other than CAG. Fortunately, CAG's jet was still good to go once he had the damaged pod removed. Our jet only required an inspection.

If I had followed up on my verbal debrief of the wing-fold handle with the maintenance chiefs and written a maintenance action form (MAF), I would have prevented the incident. As it turned out, my issue with the wing-fold handle got lost in the fog of the flight deck. The troubleshooter, not fully understanding my gripe, simply moved the handle to what he thought was the apparent fold position (he actually had moved the handle to spread).

At the end of the day, I had cost the air wing a sortie on the most important day of COMPTUEX, my squadron a jet to flow into a subsequent event, and $5,000 worth of damage to our sister squadron's TACTS pod. If I had cut the MAF, the aircraft never would have been released with a wing-fold gripe. Write a MAF for every discrepancy; verbal debriefs do not suffice.

LT. FELDMAN FLIES WITH VFA-34.

OCF Over Spanish Skies

BY LCDR. ABRAM STROOT

We were enjoying a typical December day in northern Spain: cool, clear skies and light winds. The day promised to be a great opportunity for dissimilar air-combat training (DACT) for my Spanish Air Force student and myself. The flight, however, developed into a very different sort of training that neither of us could ever have expected.

We were scheduled to launch in a Spanish FA-18B Hornet on a 1 v 2 mission versus the CASA C-101 Aviojet. The Aviojet is a tandem seat, single-engine jet used to train Spanish Air Force pilots in the advanced jet syllabus. Today, however, our adversaries were well-experienced instructor pilots providing the red-air presentation for our scheduled mission.

The brief, preflight, launch, and check in went as expected, resulting in a "fights on" call and game on. The VID intercept was executed as briefed, leading to a low-to-high merge with the C-101s in a spread formation. My student engaged the south bandit, climbed to 18,000 feet while in a maximum performance, left hand turn. I passed through 360 degrees of turn, and shortly after a neutral pass with the southern bandit, it happened.

I distinctly remember the metal-on-metal sound produced from the left inboard tank as the pylon and tank turned and crashed against the outboard pylon and aft fuselage of the Hornet. The airplane abruptly entered out-of-control flight (OCF) by entering an uncontrolled left snap-roll. I felt an obvious sensation of left yaw, as the aircraft decelerated. The simultaneous sensation of left yaw and deceleration was eye-opening.

My student immediately shouted "El tuyo! El tuyo!" ("Your flight controls, your flight controls!"), and passed the flight controls to me. As I took control, the sensation of left yaw cued my eyes to look outside to the wing, and there it was: the left inboard tank and pylon were turned outboard at about 45 degrees. The tip of the fuel tank was touching the outboard pylon and pointing toward the LAU-7. We continued rolling out of control, with our nose pointed about 30 degrees down, and our airspeed bleeding off. Struggling to regain control, and doubting whether this was even possible, I immediately attempted an emergency jettison. This action jettisoned the remaining right inboard fuel tank, but the damaged, left inboard fuel tank remained in place.

The red-air C-101, "Fox-2" call triggered me to make the "Knock it off" call, as I was recovering the aircraft. In those few brief seconds, we lost about 6,000 feet and 100 knots. We recovered at 12,000 feet and 280 knots.

A quick look inside the cockpit showed that we had plenty of gas, with about 9,000 pounds remaining. Because of the lack of a "fuel tank pointed outboard" emergency procedure, I followed the "Leading Edge Flap Failed Up/Flaps Off" caution, not knowing whether the aircraft could fly at lower airspeeds. The procedure calls for the pilot to maintain airspeed above 300 knots and wings level. The aircraft was difficult to fly, requiring a large right rudder input and minimum afterburner to maintain speed.

My student declared the emergency and we flew back toward Zaragoza Air Base en route to the jettison-controlled ejection point for a controllability check. Another Hornet was vectored toward us to provide wingman support. While awaiting the join-up, we tried a selective jettison, auxiliary-selective jettison and another emergency jettison in an attempt to rid ourselves of this problematic fuel tank. With no success, it was obvious that we were bringing this fuel tank home.

After our wingman-of-opportunity joined, I ordered a thorough battle-damage check to determine what

had happened. Our wingman said the left inboard tank was not only in contact with the outboard pylon, but also the left main-gear door. We went ahead with the controllability check, selecting flaps half and gear down below 250 knots. The flaps, nose gear, and right main came down as advertised. As we all feared, the left main remained up because of the contact between the fuel tank and left gear door. My wingman confirmed the configuration, and the aircraft demonstrated adequate flying qualities at on-speed AOA, with a noticeable amount of right rudder and aileron input required to maintain balanced, level flight.

The aircraft was configured for landing, and we used our comfortable 4,500 pound fuel state to buy us time to talk with base. We discussed everything that had happened and our recovery plan of action. Our plan was simple: Make a minimum sink rate of landing and touch down just feet before the cable, minimize contact with the left damaged fuel tank, and engage the cable with our tail hook. If we didn't trap, plan B was to go-around and continue with plan A until we were successful or low on fuel.

With 3,000 pounds of fuel and the firetrucks ready to receive us, we turned toward final approach. Unfortunately, the combination of no LSOs and a rusty rear-seat "deck-spotting" technique resulted in floating over the arresting cable. Because of our lack of obvious deceleration, I immediately selected full afterburner

Hinged pin locking device that prevents the pin from exiting (in the down/open position).

Hinged pin locking device, correctly installed. Picture taken from pilot viewpoint with flaps up.

and rotated to on-speed AOA. The nose quickly popped back airborne, but the left tank, dragging on the runway, caused the aircraft to swerve left. Then it seemed like we immediately got airborne. However, after reviewing a video tape from the AV-8 Harriers FLIR pod standing-by in the hold short, the left tank and right main-landing gear remained in contact with the runway for about three seconds. This yawing motion caused us to get airborne 10-to-15 degrees left of the runway course.

Trying to assess the situation in the climb, I looked back over my left shoulder and saw a large amount of fuel that was trapped inside the damaged fuel tank spewing out. This fuel trail appeared to be a smoke trail to the bystanders below and my wingman. To calm the situation, I explained to them that it was fuel, not smoke, and continued to climb. Looking inside at my instruments, I was surprised by what I saw.

In my poor attempt at a fly-in arrestment, the damaged fuel tank was moved out of the way of the landing-gear door. We now had landing-gear indications of three down and locked, as the left main-landing gear had lowered during the go-around. My wingman confirmed the indications, and we returned to trap on our second attempt. When stopped, we immediately shut down the engines and made an emergency egress. The emergency finally was over, with only minimal damage to the aircraft.

The principal damage to the aircraft was to the left outboard-inboard pylons, the aft fuselage (where the fuel tank hit it), and a small knick on the leading edge of the left stabilator (the hockey stick) when it contacted the runway during the go-around. The investigation found the aft pylon-pin locking mechanism that maintains the pin in its correct position (to maintain the pylon aligned with fuselage) had a failure of the spring-loaded, ball locking mechanism located at the end of the pin.

What remains unclear is whether the backup, hinged-pin locking device was correctly installed. The airplane had flown once without incident before this pylon-pin was removed and reinstalled. Neither sets of pilots, instructors, or mechanics verified that the pin and backup device was properly installed. From the pilot's side of the house, even though NATOPS does not specify to verify the status of this pin and the backup, hinge-pin locking device, it has proven to be a critical item that every pilot must add to their preflight walk-around.

Pilots should be aware, depending on their height and the flap position, that it may be difficult to visually verify that the backup, hinged-pin locking device is up and in the locked position. I know that checking this was not taught at the FRS and is not in the typical habit pattern of most legacy Hornet pilots. Pilots need to be taught how to check this by feel alone, by placing their hand on the pin and verifying the status of the pin and the backup device.

LCDR. STROOT WAS WITH FIGHTER SQUADRON 153, AIRWING 15, ZARAGOZA AIR BASE, SPAIN, WHEN HE WROTE THIS ARTICLE. HE CURRENTLY FLIES WITH VFA-147.

Crew Resource Management

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

Under Pressure, Underpowered

BY CAPT. MATTHEW T. DWYER, USMC

An aircraft commander faces many decisions before making the final call for takeoff. All Marine Corps pilots use a combination of crew resource management (CRM), operational risk management (ORM) and experience to reach each decision. Some decisions may seem minor, but it is the sum of all of them that determines the final outcome of an event. The morning of 29 January was no exception when, just after takeoff, my MV-22B crossed the deck edge and immediately settled with power.

Marine Medium Tiltrotor Squadron 162 (Reinforced), the Air Combat Element for the 24th Marine Expeditionary Unit, had been conducting humanitarian assistance/disaster relief (HADR) in support of Operation Unified Response off the coast of Haiti. We had been operating there for only six days, conducting time-critical medevacs, aerial reconnaissance, HADR, and assessment-team inserts all over the island. Each mission required extensive planning and coordination. Supplies were being staged in Guantanamo Bay, Cuba (Gitmo) and because of the distance from our location it became a MV-22 mission. I was to lead a section to Gitmo and return to USS *Nassau* (LHA 4). In comparison to what else was going on, this was a seemingly easy mission.

I delegated roles to two other aviators for the event. Although I was the section leader for the flight, it was being briefed and led by my wingman's aircraft commander as preparation for his section-leader

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check flight. I also had an agreement with my tiltrotor second pilot (T2P), allowing him to act in the role of aircraft commander in preparation of his aircraft-commander check. This arrangement was implied but not directly addressed in the brief. When I entered the cockpit, I decided to take the left seat, allowing my T2P to sit where the aircraft commander usually sits.

I then failed to recognize how human factors within the squadron could degrade our flight. The T2P was distracted by issues that had occurred days earlier. I failed to notice the problem until he hesitated in the cockpit. He had paused for a moment before asking tower for an amber deck for engine start. I could tell something wasn't right with his attitude and overall demeanor, so I got involved.

I pointed to the radio, indicating that I was up private, and our crew chiefs couldn't hear our conversation. I asked if he was OK. He quickly replied, "Yes," but I wasn't satisfied. I asked, "Is there anything going on that will adversely affect your ability to fly this aircraft safely?" He answered more slowly (which convinced me that he had given thought to the question) before answering simply, "No." I should have realized that just needing to ask the question should have been sufficient cause for me to stop and formally reassess the situation.

The next step in our journey toward the water was to let the pressure of flight operations drive our crew to rush getting airborne to support the deck cycle. My aircraft had maintenance issues, so we couldn't take off on time. My wingman's aircraft was just fine, so it was approved to fly the mission as a single. Thirty minutes later, an aircraft was available as a backup. I thought that if we hurried, and the aircraft was good, we still could make the original timeline.

Our squadron representative in the tower, call sign "Angryman," let me know that passengers were on their way to my aircraft. The flight was originally going to split the 25 passengers going to Gitmo, but my Dash 2 took 18 of them because there was no guarantee that I would make the run. Our seven passengers came aboard and were strapping into their seats. Angryman called and told us that we may not be able to launch because of the time delay. As soon as the crew chiefs announced that the passengers and cargo were secure, I called for the breakdown checklist and called for breakdown from tower.

The final step toward danger was to rush the crew brief by missing or omitting checklist items. Once the T2P strapped into the right seat, he began the NATOPS crew brief. I cut him off before he could finish because we needed to start the engines to

remain as close to timeline as possible. Angryman called back to confirm we would return for an overhead time two hours later. I told Angryman we could, and tower cleared us to launch on LSE signal.

The LSE arms raised and my T2P called "Feed tanks full, torques are matched, gauges are green, cleared to lift."

I advanced the thrust-control lever and the aircraft responded. I called 100-percent torque in what I thought was a hover. I assumed interim power was on, and I had 109-percent torque available. I crossed the deck edge thinking that I had a nine-percent-torque margin of safety. Without interim power on, I had zero.

It took me a second to realize I was not climbing as expected. I recognized the descent rate as I lost sight of the deck, and could only see the gray exposed side of the ship. In a moment of clarity, I knew what had happened. I called for interim power as calmly as I could, with no response. The T2P was still in disbelief of our current situation. I called for interim power a second time. His arm reached to the overhead panel and pressed the button. Arming interim power changes the rotor rpm from 100 percent to 103.8 percent. It takes four to six seconds to activate, and decreases torque to get the proprotor blades spinning faster. This process caused the aircraft to descend faster.

Passing through 20 feet AGL, the radios fell silent. We waited for what seemed like an eternity to see what would happen next. I lost visual reference with the water because of the sea spray covering my windscreen. It was like driving your car through a car wash. We recovered at about 10 feet and began to climb away from the water. The ship's captain came over the radio and asked what had happened. After explaining that we had missed a critical checklist item, we continued with our mission.

Had I taken the time to give the NATOPS brief, I would have stressed that the correct call before adding power would be "Feed tanks full, turns are up [meaning interim power is on], torques are matched, gauges are green, cleared to lift."

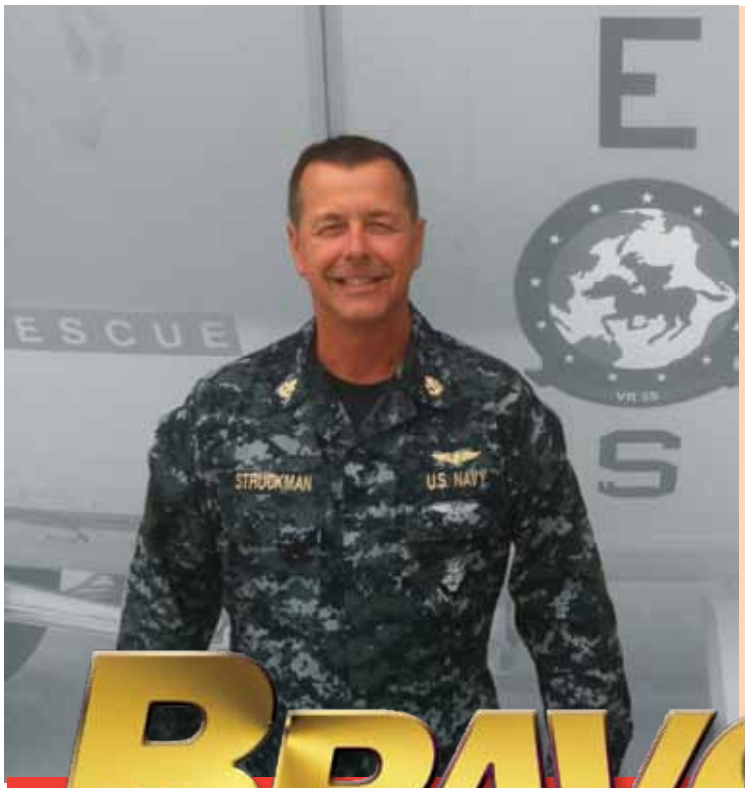
The checklist says to use interim power "as required," but it was standard procedure for the squadron to fly with it on. This procedure has become the norm for operational MV-22 squadrons flying in environments that require extra torque. The fleet replacement squadron does not teach this technique. Even though the T2P had been flying in the squadron for more than a year, the importance of turning on interim power had yet to be learned. I failed to double-check before I added power, because I assumed it was on.

Despite all the training I have received in my five years in Marine aviation, I've failed multiple times to make the right decision before takeoff. We were one variable away from putting a multimillion dollar aircraft and 11 Marines in the water. We missed one critical checklist item, but multiple factors had led to a situation where that mistake could occur.

I had allowed that situation to develop by failing to conduct a thorough NATOPS brief with the crew, clearly defining crew roles and responsibilities. I allowed pressure from external sources to affect and rush my decision making in the cockpit.

Finally, I assumed that checklists were completed without verification from the crew. Only after a thorough debrief did we discover the pretakeoff checklist was never run. This event was completely preventable at many different decision points before takeoff. This flight serves as a testament to the CRM and ORM programs. If only I had acted the way I was taught.

CAPT. DWYER FLIES WITH VMM-162.



After engine starts at Fresh Creek International Airport on Andros Island, Bahamas, AWFC Michael Stuckman noticed that a light Cessna aircraft was parked directly aft of his C-130T aircraft. Knowing that a C-130T taxiing with its engines in normal rpm could flip a light aircraft and significantly damage it, he called to the flight station to immediately shift to low rpm prior to taxi.

VR 55

BRAVO Zulu

Captains Brian Davis and Peter Hickson were flying a section of AV-8Bs on an instrument-proficiency flight during a weekend cross-country. Capt. Davis was in the lead aircraft and received an aft bay caution light. This light indicates the aft bay environmental-control system had failed and excessively high temperatures were detected. In IMC, Capt. Davis directed his flight to proceed directly to Wilmington International Airport, 40 miles away. They continued troubleshooting en route.

Within minutes, Capt Davis' aircraft had a total communication failure, and coordination had to be done using hand and arm signals. Captain Davis soon received an oxygen-warning light in conjunction with foul-smelling air emanating from his oxygen mask. As a result, Capt. Davis passed Capt. Hickson the lead, once again using hand and arm signals, and told him to make an emergency descent because of the compromised oxygen flow.

As they broke out of the cloud layer at 10 miles south of the field, Capt. Davis' avionics further degraded. His inertial navigation failed, leaving him with basic standby instruments for altitude, attitude, and airspeed, but with no way to navigate. Captain Hickson coordinated the landing clearance for both aircraft and they landed.

The postflight inspection revealed that a section of the reaction-control-system ducting had been severely perforated. This vented hot bleed air from the last compressor stage of the engine directly into the aft avionics bay, causing significant fire damage. The pilots' timely actions prevented the hot air from rapidly leading to a more catastrophic fire and possible mishap.

Left to right: Capt Peter Hickson, and Maj Brian Davis.

After an eight-hour flight from Kaneohe Bay, Hawaii, to Camp Pendleton, Calif., AWF1 Matt Van Pelt noticed damage to the starboard wing of his C-130T during postflight inspection. The damage was found while the aircraft was parked in a poorly lit area during an intermediate stop. The aircraft was unsafe for flight because of a four-inch crack in the wing's leading edge that had been caused by a bird strike.

AFW1 Van Pelt is a flight engineer with VR-55, from Point Mugu, Calif.

A CH-53E crew from HMH-461 was conducting operational-power-performance checks (OPPCs) during a day flight in support of Combined Joint Task Force—Horn of Africa (CJTF-HOA).

As the No. 2 engine speed-control lever was pushed forward to determine the maximum power available, the engine had a compressor stall. This action caused the helicopter to slightly yaw left, lose Nr and altitude. Major Rudolfo Hernandez, the aircraft commander, slowed the aircraft, while Capt. James Skelton, the copilot, secured the No. 2 engine. The Nos. 1 and 3 engine speed-control levers were pushed full forward to maintain level flight. Lance Corporal Justin Bretthorst, LCpl. Robert Wills, and Sgt. Ronald Quinn helped make sure all steps of the emergency procedure were completed. The crew returned to Djibouti-Ambouli International Airport and made a running landing.

Left to right: Maj Rudolfo Hernandez, Capt James Skelton, Sgt Ronald Quinn, LCpl Justin Bretthorst, and LCpl Robert Wills.

Gas Guzzling

BY LT. TIMOTHY STONE

As we descended, I heard familiar words from my 2P, "Passing through 500 feet, three down and locked, reviewed complete. You are cleared to land Runway 34."

No problem. I'm on speed and on glideslope. We have just over 10,000 pounds of fuel remaining, which is our planned on-top fuel state if we had to divert to our primary alternate. My flight station crew had performed perfectly; our fuel calculations on the return flight from an overland mission were spot on. This was only my second OEF mission as a newly qualified aircraft commander, so I was pleased with our efforts after a long, 11.5-hour flight.

Just as I was about to select land flaps, I heard the dreaded words from tower, "MN808. Foul deck, wave off."

I had deployed to this base several times and never had waved off, but this is something we practice all the time in the P-3 syllabus—no big deal.

I called "Waveoff. Set 3,500 shaft horsepower, gear up."

I then had my 2P request a left downwind and confirm the pattern altitude. Tower came back with, "Cleared for left, closed traffic in the pattern, at 1,500 feet."

Upon receiving my clearance and assigned altitude, I chuckled at having to wave off. I never had to fly a go-around at any airfield in an EP-3.

Tower said that the long-field gear was out of battery and that trucks were being sent out to the runway to correct it.

We're home based out of NAS Whidbey Island, so I'm used to hearing the gear is out of battery. I expected to be holding over the field for the next 10 to 15 minutes, which was subsequently confirmed by tower. As I raised my flaps, I called our maintenance support and told them of our situation. The mood in the flight station was light, and everyone was relaxed. We had plenty of gas, and were in a good position over the field.

This situation is precisely why we come home with extra fuel, even with good weather. The airfield has a single runway that's more than 12,000 feet long. Our primary divert is 180 miles away, which is about 45 minutes flight time, including an approach. I was neither worried nor thinking about having to divert.

Ten minutes after entering the pattern, I received more bad news from tower. The anticipated delay would continue for 10 more minutes because of trouble getting the gear back in battery. These Air Force guys were not as experienced as personnel at P-3 bases in fixing this problem. After all, 3Ps doing bounce flights usually

Photo by PH2 Michael Sandberg.

knock the gear out of battery on a regular basis, much to the chagrin of everyone airborne.

Upon hearing this update, my crew laughed at me for making them endure even more time in the plane and for stretching out my A-time. I wanted that functional-check-flight (FCF) qualification, but this was not the way to win the hearts and minds of my aircrew. I told them to relax—we soon would be on deck.

At the 22-minute mark, I had burned through 1,800 pounds of fuel. We were down to around 8,300 pounds and really needed to consider diverting. After I conferred with tower and maintenance, I began to plan for the divert if the situation continued much longer. I was assured by tower that only five more minutes were needed, and that I would be the first one down as soon as the runway was ready.

I had images of diverting and then having to explain to the OinC that if we had just waited five more minutes at our home field, we could have landed with no problems. We still had plenty of gas and time to circle for another 20 minutes, and again, I wasn't overly worried. After all, how hard a fix was that gear?

The flight-station crew conferred and decided to stay until a minimum of 6,500 pounds of gas. Our only option then for a divert would be an international airport that was the nearest airfield. That airport was less than desirable because of political-military sensitivity and physical-security concerns related to our aircraft.

With this other airfield as our last option, we were still faced with landing below 6,000 pounds (1,500 pounds per engine), an emergency for P-3s because the engines have been known to flameout with less than 2,000 pounds indicated remaining in the tanks. Although this airfield wasn't as desirable as either of our alternates, it allowed us to stay overhead for the "five more minutes" tower promised and then some. We still hoped to get on deck at our home base.

As I write this, I never actually thought we would have to divert. The "five or 10 more minute" calls were continuous and deceiving. I was being lulled into a trap, and I had to eventually decide about tower's inaccurate time estimations. It was time to divert.

As I requested clearance to the nearest airport, tower told me once again to wait a few more minutes, extend my downwind, expect a late clearance to land, and come on around one last time.

The runway would be clear, and I could expect to land this pass. I wondered how many times I already had been put off by tower, and whether or not I could actually take them for their word on this pass.

I followed their request to perform one last circuit and was given my landing clearance at around 700 feet on my final approach. I exited the runway with about 6,100 pounds of gas.

How had I gone from an 11.5 hour flight with 10,100 pounds of gas at landing to a 12.4 hour flight with just over 6,100 pounds left in the tanks? I felt misled by tower and frustrated. I didn't have to declare an emergency and wasn't in trouble with anyone, but I was mad at myself. I was uncomfortable with how the situation played out, and blamed myself for poor decision-making.

Upon reflection, I would have diverted when I had 8,300 pounds of gas in the tanks. I would not have been stressed, the aircrew could have remained safe, and I would have had a quick conversation with the det OinC stating that I diverted for gas. End of story.

After discussions with tower personnel and other pilots who were also holding with me in the pattern, everyone felt the same way: We were mad that we were given bad information from the tower, a source we had always thought of as trustworthy. Unfortunately, the airman in the tower didn't understand the gas-guzzling capabilities of several aircraft relying on him.

I now have my divert fuel level in mind when I'm heading home. My decision point for heading somewhere else needs to remain the same, no matter what outside sources are telling me. Stories and situations change, and information can be unreliable. In the end, stick to your plan no matter who or what is pulling you in other directions.

LT. STONE FLIES WITH VQ-1.

Laptop Emergency

BY LT. BRIAN BERG

The VAW-126 Seahawks were about five months into work-ups preparing for our seven-month deployment aboard USS *Harry S Truman* (CVN 75). We were on our second boat detachment, doing cyclic ops off the Florida coast. The det had been running smoothly, and we had a week left before returning to Norfolk. For CVW-3's last event that day, a night double cycle, our crew walked on aircraft 601, a bird we had recently received from another squadron.

Man-up, preflight, and launch went off without a hitch. We leveled off at 23,000 feet and set station profile for the war games that were scheduled for the next two and a half hours. Our carrier aircraft plane commander (CAPC) was in the left seat, and I was sitting copilot in the right seat. We were controlling fighters that night, so I unpacked the tactical laptop and got it set up. We sat back for a moment and waited for the mission to ramp up.

About 15 minutes after level off, the master-caution light illuminated. I was busy working the laptop when I noticed the light in my periphery. I thought it was just another max-rudder caution light (not a big deal when we're maintaining station profile). Hawkeye pilots get desensitized to the master-caution light because the max-rudder light illuminates so often.

As I scanned the lights panel to check the aircraft status, I expected the CAPC to say, "Max rudder, no others."

You can imagine my surprise when he instead said, "We need to shut down this engine."

There it was on the lights panel: a left engine, oil-low caution light. My first thought was to check for secondaries. As my focus moved from the lights panel to the engine instruments, I saw the secondaries. The other pilot had already seen them. The reduction-gearbox oil pressure was on the bottom red LED, indicating only that the gauge was operating. The left engine's gearbox indicated no oil pressure.

The CAPC repeated himself, "We need to shut down the engine."

That's when we started the boldface.

My seat was moved all the way aft because of the laptop, so he pulled the T-handle with my concurrence. The engine came down and feathered. We immediately pointed the aircraft toward the boat. We updated the aircrew in the combat information center (CIC) in the back. We contacted marshal, declared an emergency and requested vectors for an immediate recovery.

The CAPC took the comms, so I could stow the laptop and cables, which had been in my way for the entire engine shutdown. After the minute or two it took to get that stuff up and out of the way, our ears started popping. We executed the post-shutdown checks, went to override on the air-conditioning switch, and regained our pressurization.

Once we had the aircraft pointed toward the ship, we thought ahead to the recovery. We knew we had to give the LSOs our aircraft configuration, gross weight, and waveoff capability. We also needed to talk with our squadron rep, to help spread the word about being unable to taxi once we trapped. We kicked the rep

frequency to the NFOs and kept marshal in the front radio. We contacted paddles and passed all the information early, so that when we did get behind the boat, all we had to focus on was flying a good approach and a single-engine night pass.

DURING THE APPROACH, we began a slow descent and were vectored into a left downwind. Once approach control hooked us onto final, we dumped fuel to adjust to our max-trap weight. We dirtied out of the turn just inside six miles. The white-coated gentlemen on the platform were talking to us, but we didn't have to say much on this pass: OK 3-wire. I even got a compliment over the radio afterward from the admiral. After we trapped, we were chocked and chained, then we folded the wings. We quickly shut down the good engine, so they could get us out of the LA for the next recovery.

Seahawk maintenance found that the scavenge-oil-pump fitting had stripped loose inflight, and the engine oil was being sprayed from the pump out of the engine. Apparently, it took about 20 to 30 minutes from startup for the engine to push enough oil out to cause the low light to come on. At that point, the redux gearbox was not receiving adequate oil. Continued operation of that engine could have caused catastrophic failure. The fix required maintenance to change the engine during the final week at sea.

We had an emergency aircraft and recovered aboard ship at night, so I'd be amiss to suggest we'd do anything differently. However, this experience and recent mishaps have offered improvements I incorporate into my current flying practices:

A simple way to free the copilot from the burden of the laptop and cables is to hang it from the bubble window side mirror.

Procedurally, our community has learned to push the power lever of the malfunctioning engine to max power prior to feathering. This drives the blades to the highest angle possible before attempting feather, therefore mitigating excess drag if the blade does not feather.

Flying a simulated waveoff at altitude lets the pilots understand flight characteristics before being forced to execute it behind the boat. This action is not a major issue with a properly feathered propeller, but if you have the time, altitude and fuel, why not?

We were so focused on the mission, training and work-ups that we didn't expect this situation. Training and procedures, CRM, and solid airmanship turned a night single engine over the Atlantic into another uneventful recovery aboard the ship.

LT. BERG FLIES WITH VAW-126.

NEVER LET YOUR GUARD DOWN, NO MATTER WHAT PHASE OF FLIGHT YOU ARE IN, AND ALWAYS BE READY FOR THE UNEXPECTED

LT MATT HEADLEY