THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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Approach

Midair
Near Midair
Runway Incursion

"I was greeted with the enormous sight of a Hornet's right mainmount heading for our left vertical stab."

The Navy & Marine Corps Aviation Safety Magazine
November-December 2007, Volume 52 No. 6

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

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Features

This issue looks at midair, near-midair, and runway incursions.

Front cover: Photo composite by Allan Amen.

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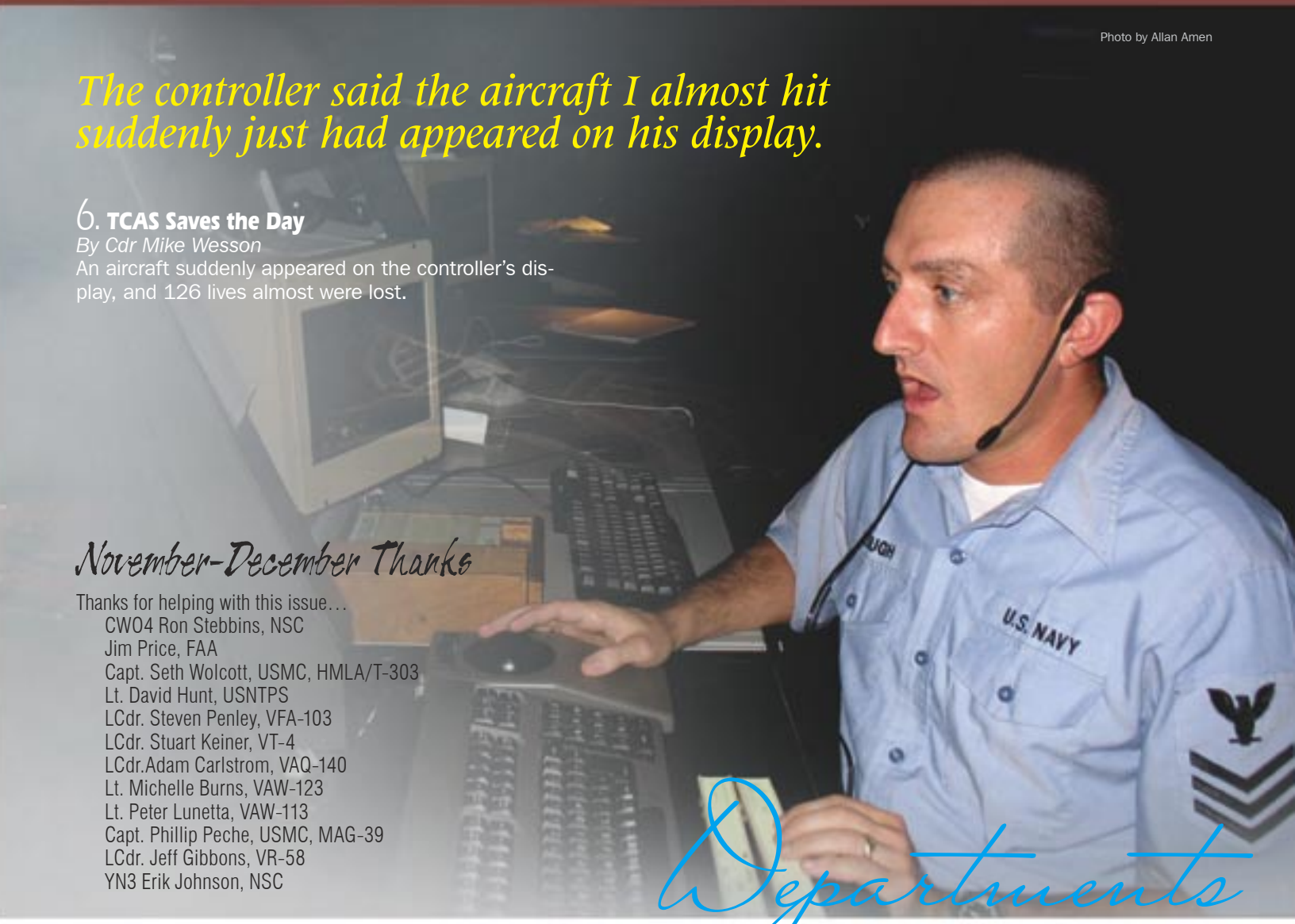

Photo by Allan Amen

The controller said the aircraft I almost hit suddenly just had appeared on his display.

November-December Thanks

Thanks for helping with this issue…

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LCdr. Stuart Keiner, VT-4
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Lt. Michelle Burns, VAW-123
Lt. Peter Lunetta, VAW-113
Capt. Phillip Peche, USMC, MAG-39
LCdr. Jeff Gibbons, VR-58
YN3 Erik Johnson, NSC

Departments

Admiral's Corner

From Commander, Naval Safety Center

The Right Mind-set

I've only been at the Naval Safety Center a few months, and the basic concept continually reinforced to me is: Safety must be an integral part of everything we do.

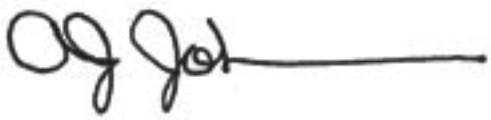
Our command's mission is to enhance the warfighting capability of the Navy and Marine Corps, preserve resources, and improve combat readiness by preventing mishaps and saving lives. When we make safety an integral part of everything we do, the Navy's mission will be accomplished. Our Sailors and Marines deserve every opportunity to do their jobs, which means we need them healthy and mission-ready.

On the inside front cover of this magazine, it states, "Mishaps waste our time and resources." We can't afford to let that happen. In the last 10 years, we have lost 11 aircrew and eight aircraft to the enemy, but we've lost 264 aircrew and 234 aircraft to non-combat mishaps. Fighting the Global War on Terrorism takes its toll, but the much greater loss of aircrew and aircraft occurs during our training and operational missions. We can't afford to let the "Blue Threat" rob us of our ability to carry out the mission. By Blue Threat, I mean you and me. Most of our losses—people and material—are not the result of the enemy (Red Threat), but the result of self-inflicted actions, with most mishaps occurring off-duty. This problem is significant when you realize that, between Memorial Day and Labor Day this year, we lost 43 Sailors and Marines on our highways, here at home. This tragic loss is avoidable.

I'm here to make a difference! I firmly believe we can improve our safety record. Our leaders have to take proactive steps to create safety-oriented commands. When we accentuate the positives, identify best practices, and reward success, we create an environment of safety buy-in. Where we have a safe workplace and healthy Sailors, Marines and civilians, life is better. When we have the mind-set that safety is a full-time, on and off-duty way of life, then we're closer to mission accomplishment.

We are partnering with organizations, military and civilian, to improve our safety programs. In addition to current programs, such as safety surveys and culture workshops, the Naval Safety Center is moving forward with initiatives such as TRiPs (for managing risks for off-duty travel) and ORMAS (for managing risks for operations and training).

We are committed to a mishap-free Navy and Marine Corps.



The Initial Approach Fix

From the Director, Aviation Safety Programs

While at Tailhook '07, I had an opportunity to sit on the Current Technology and Operations Panel, which focused on the tactical environment. Naval aviation, manufacturers, and contractors have done an outstanding job developing equipment, tactics, training, and procedures to counter the enemy. This effort is evident in our statistics and our low losses to the Red threat. However, we still need to keep developing tactics to control our Blue-threat losses. So how do we get our arms around countering the Blue threat? I offer some thoughts to consider during your AOMs and tactical discussions:

• Elevate ORM application to the same level as tactical employment. ORM can be used during combat operations in comparing the "can do" attitude with the "will do" mentality our crews can find themselves in as they push to fly every requested mission.

• Establish a "back to basics" (aviate, navigate, communicate) mind-set in your command. As naval aviation's machines become more reliable, there is a sense the machine will keep you out of trouble. This belief counters the older aviator mentality that a machine was destined to fail, and that everyone was out to kill you, so you better have your "A" game at all times. The net result is that a relatively minor aircraft emergency quickly can compound with catastrophic consequences.

This issue is closely tied to my previous comment that fundamentals of systems knowledge, aircrew coordination, and basic blocking-and-tackling skills in cockpit management must be given the same emphasis as when we plan our tactical employment.

As the Air Boss says, "Enhance combat readiness through preservation of the force: people and physical assets." Fly safe. —Clyde

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Midairs, Near-Midairs, Runway Incursions

In this issue, ATCS Fredda Bryan, our air-traffic-control analyst, provides an overview of these topics, including several representative scenarios. The "There I was" stories included in this issue confirm that these situations are occurring and all too often.

International Helicopter Safety Symposium

Many of the problems the civil helicopter community face are similar to those in naval aviation. Recently, aviation-safety-directorate members attended the International Helicopter Safety Symposium 2007. Nearly 300 representatives from the international helicopter community attended to share updates on initiatives, progress made by joint helicopter safety analysis and implementation teams, and to discuss how to institute cultural changes.

The International Helicopter Safety Team (IHST) has a goal to reduce mishaps 80 percent by 2016 from a 2000 baseline of 8.3 mishaps per 100,000 flight hours. The naval aviation Class A, B and C combined flight-mishap rate for the same year was 4.62. Before we get too impressed with our mishap rate, we actually have seen an increase in subsequent years to a 2000-to-2007 average of 6.33.

To help prevent mishaps, they are working to make sure every organization, small or large, has a safety-management system (SMS), as one presenter stated, "to eliminate luck from the equation." Our SMS is, in large part, the Naval Aviation Safety Program (OPNAVINST 3750.6R). They also are studying new technologies such as helicopter operations monitoring program (HOMP), which is similar to military flight operations quality assurance (MFOQA), and a performance situation indicator.

One result of this conference is planned meetings between the Naval Safety Center and the original-equipment manufacturers (OEMs) who provide helicopters to the Navy and Marine Corps. We hope to leverage each other's best practices and ideas to help reduce mishaps in naval aviation and civil helicopter aviation.

Bravo Zulu

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

These squadrons submitted five or more hazreps:

HS-10	VR-40	VT-3	VT-9
VT-21	VT-28	VT-31	VT-35
VAQ-129	VAW-120	VFA-137	VQ-2
VR-30			

These squadrons submitted four hazreps:

HSL-49	HT-10	VAQ-137	VAW-77
VAW-116	VFA-125	VQ-3	VQ-4
VP-1	VP-30	VT-86	VX-20

Safety Awards

Submissions for CY07 safety awards, including Admiral Flatley, CNO Aviation Safety, and Grampaw Pettibone, are due the first quarter of CY08 IAW OPNAVINST 1650.28A. Contact your controlling custodian safety officers for details.

Photo-composite image.

Midair and Near-Midair Events

In the last eight years, midair collisions have cost the Navy and Marine Corps more than $795 million.

By ACCS(AW/SW) Fredda Bryan

While midair collisions are costly to naval aviation, we first need to focus on the many near-midair collisions (NMACs) to prevent situations that lead to actual collisions.

The Naval Aviation Safety Program (OPNAVINST 3750.6R CH-2) says, "A NMAC occurs when aircraft pass close-by one another in the air and, as a result, the pilot-in-command feels the safety of the aircraft or UAV is in jeopardy."

This criteria is used to determine when a NMAC should be reported:

- "A collision was avoided by chance, rather than by a conscious act on the part of the pilot.
- "A collision would have occurred had no action been taken.
- "Two aircraft inadvertently passed within 500 feet of each other."

The OPNAV 3750 further states, "Pilots involved in a near-midair collision must:

- "Report the incident by radio to an FAA air-traffic facility or flight-service station. Inform them you will file a written NMAC hazard report.
- "At the next point of landing, contact the nearest FAA air-traffic facility or flight-service station and report the incident. Inform them you will file a written NMAC report.
- "Under this instruction, file a written, formal hazard report."

The final approach, touchdown, takeoff, and initial climb to the first turn away from the airfield are considered to be the most critical phases of flight for NMACs. A review of the causal factors for midairs and NMACs reveal that failure to adhere to procedures, directions, and/or instructions; poor or incomplete communications; poor coordination; complacency; bad scanning techniques; and failure to adequately train or supervise personnel are cited most often. The loss of situational awareness, though, is the No. 1 causal factor.

Are all NMACs reported? I would say "no." One of the most common findings we identify during safety surveys is the underreporting of these events. When we receive calls asking whether a certain situation needs to be reported, our response is usually "yes." A report results in the command reviewing their procedures, which prompts other commands to do the same.

ACCS Bryan is the air-traffic-control analyst, Naval Safety Center.

Midair and Near-Midair Scenarios

Our Naval Safety Center air-traffic-control analyst reviewed several scenarios from the WESS database. The following edited versions give a synopsis, provide causal factors, and share comments from leadership. The tenets of crew resource management can be found in each case.

Scenario No. 1

Aircraft (call sign LB259) was in the emergency-landing pattern (ELP) at an outlying field (OLF) and was approaching low-key for runway 22. The pilot was doing a practice-precautionary-emergency landing (PPEL) when he heard AA168 call a three-mile initial for runway 22. LB259 did not have AA168 in sight, so LB259 made a radio call on common frequency, stating he was approaching low-key. The runway duty officer (RDO) then called AA168, stating LB259 was approaching low-key. Then RK259 passed about 50 feet below and 100 feet behind BB168. During this incident, four aircraft were in the pattern and two were inbound. The RDO had difficulty dividing his attention between the PPEL, break, pattern traffic, and LAPL(p) on final, not to mention all the radio calls.

Human performance causal factors:

- RDO was not monitoring both landing patterns.
- RDO was inside the RDO cart and could not see both landing patterns because of visibility constraints.
- RDO assumed both aircraft had deconflicted with themselves, and he continued to monitor the traffic pattern.

Recommendations:

The RDO should be required to advise the incoming break aircraft of traffic in the ELP. Without this notification, an incoming break aircraft never may know an aircraft is in the ELP.

Commander's comments:

Operations at outlying fields can be very demanding for all, especially when they are at or near saturation. The recommendations not only will help to prevent a midair collision but also will aid in increasing the overall safety at the OLF. Operating at the OLF takes 100-percent concentration by all participants. The role of the RDO is something not to take lightly; RDOs may be the ones who prevent the next midair collision.

Scenario No. 2

A flight of two FA-18s were flying a precision-approach-radar (PAR) approach to runway 23R while field-carrier-landing-practice operations (FCLPs) were in progress to runway 23L. SOP is not to allow ground-controlled approaches (GCAs) to the same runway where field-carrier-landing practices (FCLPs) are being flown. The two FA-18s originally had requested a section PAR approach, which was coordinated between the arrival and final controller, using a scratchpad on the radar scope.

While on base leg, the flight of two FA-18s changed their request with the arrival controller to split-the-duals (land on runways 23 left and right). The arrival controller responded, "On request."

The arrival controller did not change the scratchpad entry on the scope, nor did he verbally coordinate the request to split-the-duals to the final controller. The final controller was monitoring button 12 and heard the request to split-the-duals; however, he didn't relay that request to the tower. Had the final controller done so, tower immediately would have denied the request and reminded the final controller FCLPs were in progress. At three miles, the tower controller issued the clearance for the flight of two FA-18s for what they thought would be a section approach for runway 23R. When the final controller cleared the flight, they cleared them for runways 23 left and right. The FCLP aircraft at the 90 and GCA FA-18 at two miles saw the potential collision and waved off.

Human performance causal factors:

- The final controller believed that the arrival controller or the supervisors were going to coordinate the nonstandard operation.
- Loss of situational awareness.
- Arrival controller failed to deny the request to split-the-duals, knowing FCLPs were in progress on runway 23L

Commander's comments:

An essential element of CRM is communication, which in this case broke down. The controllers began to assume coordination was taking place, rather than verifying it. The aircrew kept a bad situation from getting worse. Our controllers must be vigilant in following their SOP and maintaining good coordination with multiple aircraft operating under dual-runway ops. Communication is the key to reducing our risk.

TCAS Saves the Day

TCAS

The traffic-alert-and-collision-avoidance system II (TCAS II) is an airborne system that uses active surveillance to alert the pilot to the presence of other nearby aircraft. TCAS interrogates the transponders of other aircraft to determine their positions and altitudes and shows this data to the pilot of the TCAS aircraft by means of a traffic display. TCAS II issues two types of advisories: the resolution advisory (RA), which identifies an intruder that is considered a collision threat, and the traffic advisory (TA), which identifies any intruder that soon may cause an RA and whose position, therefore, should be monitored closely. For each intruder causing an RA, TCAS II recommends a vertical-escape maneuver to help maintain safe vertical separation from the threat aircraft. TCAS II is required in the United States on all commercial aircraft with more than 30 seats, and it soon will be mandated in many European countries.

By Cdr. Mike Wesson

I strapped into the Navy's newest and finest logistics transport: the C-40A Clipper, which is our next generation 737-700 and can get in anywhere. Our mission from NAS Jacksonville was to pick up 120 Sailors in Norfolk and drop them off at NAS Mayport, so they could begin three weeks of work-ups with their ship. We held our crew brief, preflighted our jet, and took off on time.

Our day went perfectly until we received the latest weather information at NAS Mayport: a broken ceiling at 400 feet. "No problem," we thought. ATIS reported runway 05 in use, and Airport Surveillance Radar (ASR) were the only available approach; once again, no problem. We can set up our navigation displays to depict a final course for the runway, and we can program a glideslope in the FMC (flight-management computer) to aid in our descent.

Our problems began when we were vectored on downwind. A lot of traffic appeared on the traffic-alert-and-collision-avoidance system (TCAS). A few targets seemed to hover within a few miles of my location, at our altitude, despite our traveling at 200 knots. Much of our time during the approach phase of flight was spent trying to locate various light civilian targets. These targets, and Mayport's close proximity to a civilian field, should have made the hair on my neck stand up. They didn't. After we configured the aircraft for landing and began our descent to the MDA, we had the oral warning, "Climb… climb."

The controller said the aircraft I almost hit suddenly just had appeared on his display.

A target appeared on our navigation display virtually at our location. We completed our emergency procedure while following the guidance of our TCAS until "clear of conflict" was announced. Shortly after we initiated our climb, the Mayport ASR controller notified us of the traffic. I think we passed within about 300 feet of a light civilian aircraft that just had taken off from Craig Field, located about five miles from Mayport, directly beneath the flight path for runway 05. After our near miss, we were offered runway 23 by our controller but couldn't accept it because of fog along the coast. We elected to repeat an ASR to 05, where we landed.

During my postflight of the aircraft exterior, I saw a petty officer walking out to the plane. He asked if I was one of the pilots; he seemed shaken. He said he was our ASR controller, and he has no control over the VFR traffic at Craig Field. The weather conditions that required me to conduct an approach strictly were coastal and did not affect the civilian field. The controller said the aircraft I almost hit suddenly just had appeared on his display. I thanked the controller for taking time to talk to me, then we flew back to NAS Jacksonville and reflected on the day's events.

This near-midair almost took 126 lives and a valuable Navy asset. I know you can't control everything that goes on around you, but you certainly can work to stay aware of your situation. I failed to brief the proximity of the civilian field to our final-approach path and relied on ATC to keep me clear of the VFR traffic during our approach. Fortunately, for my crew, my passengers, and me, I was flying an aircraft with TCAS. It truly saved our lives on this supposedly easy day of flying.

Cdr. Wesson flies with VR-58.

and Airspace:

If you smell smoke, you're in the wrong spot

By Gary Morgan

Interagency-aircraft fly in support of ground-based units that are fighting wildfires, with the common goal to protect life and property. To facilitate the firefighting effort, temporary flight restrictions (TFRs) are placed on airspace over areas on fire. These airspace restrictions pop up, like fires, with little warning.

Aircraft that penetrate these areas put themselves, as well as those in the air and on the ground, in danger. At the very least, aviation assets necessary for the safety and effectiveness of ground personnel may be diverted out of the area. In the worst case, a midair collision occurs with an intruding aircraft.

Here's an example of how hazardous this can be, taken from a safety-communication report received by the forest service last year:

"An aircraft identified as a fast mover entered the TFR around the Tin Pan Fire at 1738 and proceeded down the Entiat River Valley, passing through the Tin Pan Fire area within the confines of VR 1350-1351 low-level route. The aircraft was identified as a Navy aircraft. Five aircraft (four helicopters and a fixed wing) were working in the Entiat Valley when this incident occurred.

"The field observer in the Entiat Valley sounded the first warning that the Navy aircraft had entered the fire area. It was estimated he was about 200 feet off the deck, as he proceeded down the valley. At the entrance to Snow Brushy Creek, the Navy aircraft flew under a helicopter engaged in bucket drops at the entrance of the Snow Brushy drainage. Estimates put the helicopter at 500 feet above the ground when the Navy aircraft flew under it. Upon receiving the warning from the field observer, the "air attack" (an airborne on-scene commander who coordinates aerial resources and acts as liaison between the ground commanders) announced in the blind to all aircraft on the Tin Pan Fire that a fast mover had entered the valley.

"The fast mover passed the air attack about 500 feet below that aircraft. The air attack notified the Tyee Heli Base to hold all aircraft on the deck. The pilot of the air-attack aircraft tried to contact the pilot of the Navy aircraft on VHF guard frequency (121.5 mhz); the pilot was warned he had entered a fire area and aircraft were working on the fire. The pilot of the Navy aircraft did not respond to the warning; however, the aircraft did start to climb out of the valley.

"The Navy aircraft passed the air-attack location

In the first 10 months of FY07, more than 58,000 wildland fires covered almost 5.5 million acres. A review of wildland-fire, airspace-intrusion incidents for FY06 showed 41 violations of temporary flight restrictions (TFR), 11 of which involved military aircraft. When compared to the 10-year average of about 53,000 fires, this year has been particularly challenging for interagency firefighters.

and continued down valley, where he flew over the Tyee Heli Base camp. The pilots of two helicopters had to take evasive action to avoid a midair collision with the Navy aircraft."

TFR information is available to all aviators to avoid inadvertent violation of restricted airspace during firefighting operations and other national airspace operations.

Military aviators can help the interagency wildland firefighters maintain a safe flying environment by doing two things:

• Before every flight, check notifications to airmen (NOTAMs) and websites that carry the latest TFR information. One source is: https://www.notams.jcs.mil. Another source is http://www.notams.faa.gov. Both sites contain a direct link to the USDA Forest Service airpace website.

• Look for signs of wildland fire (smoke) and remain well clear. Keep a lookout for aircraft en route to or from the fire.

For more information on how wildland firefighters use airspace and aircraft in support of their mission, visit our website at: http://www.fs.fed.us/r6/fire/aviation/airspace/web/index.html.

Gary Morgan is with the Eastern Region, USDA Forest Service. Contact him at gmorgan@fs.fed.us. He is a former navy helicopter pilot.

Mishap-Free Milestones

HMLA-369	16 years 8 months	100,000 hours
HMH-362	24 years 6 months	70,000 hours

When the Blue Threat Is Painted Gray

By LCdr. Stephen Higuera

Our hazrep summary line said, "Starboard outboard pylon-ejector feet of FA-18C grazed the top of the port wing of FA-18E during warfare-capabilities-exercise practice." Although the incident only resulted in a hazrep, it certainly could have been much worse. With much talk about the blue threat, on another day, this midair could have resulted in the loss of two naval aviators and two FA-18s.

The flight was practice for the finale of a warfare-capabilities exercise during our aircraft carrier's dependents-day cruise. The formation was briefed as two, line abreast, four-plane-diamond formations, with an E-2C in the slot between the two diamonds. The lead diamond formation was on the left and consisted of four FA-18Cs. The second diamond was on the right and consisted of two FA-18Es (lead and left wing) and two FA-18Fs (right wing and slot) aircraft. As the formation passed over the carrier, and in full view of everyone, the right wingman of the lead diamond formation and the left wingman of the right diamond formation grazed each other's wings.

How could this have happened? The event was not some off-the-cuff, unbriefed formation—it had been thoroughly planned and briefed to air-wing leaders. In hindsight, however, it is clear all possible hazards were not identified before this flight. Also, many naval aviators and naval flight officers had the opportunity to raise questions or ask for clarification and could have broken the chain of events.

Postflight inspection showed that the FA-18C's starboard outboard pylon hit the top of the FA-18E's port wing, about two feet inboard of the Rhino's wingtip, with about 10 feet of wing overlap between the aircraft.

The obvious question no one asked was how would the right-diamond division leader make sure there was enough lateral separation from the left-lead division in this nonstandard formation? Would the pilot of the E-2C, between and aft of the diamond formation have any input on dressing the formation, and ensuring safe separation? What responsibility would the slot WSO (weapons-system officer) have? Were the inboard pilots of each division apprehensive? As you easily can see, plenty of concerns went unanswered.

Even though I wasn't part of the flight, I am not without blame—I was the backup-right-division lead (in case the right-division leader's wife delivered their child before the flight—another ORM issue altogether). I had sat in on a practice brief with the participating aircrew, my first exposure to the plan.

I still remember thinking I wouldn't want to be

Please send your ORM questions, comments or recommendations to: Cdr. Allen McCoy, Code 16
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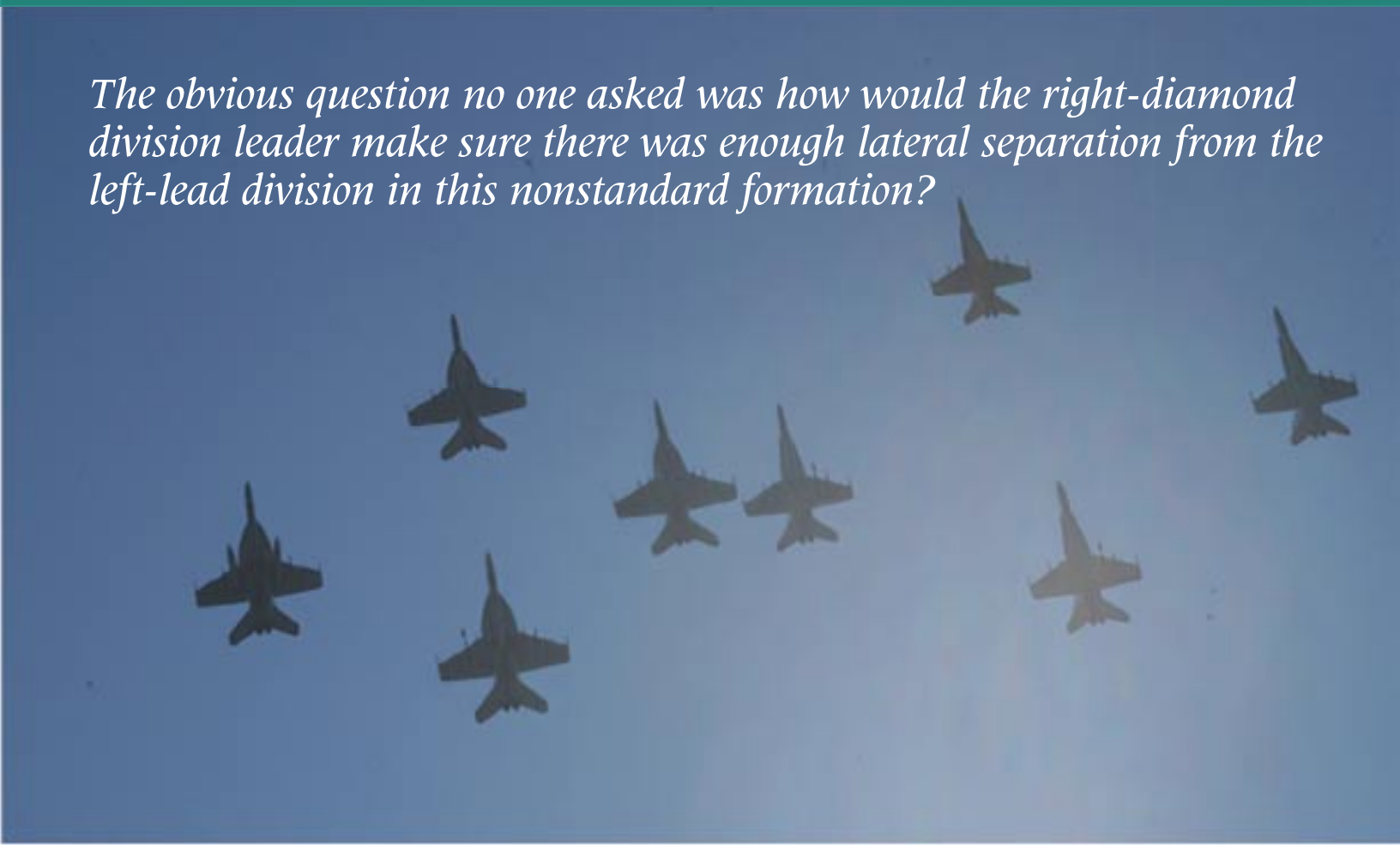

The obvious question no one asked was how would the right-diamond division leader make sure there was enough lateral separation from the left-lead division in this nonstandard formation?

one of those guys on the inside of the formation: flying formation off of their lead and not seeing the adjacent formation because of my formation-keeping responsibilities. However, I didn't question the plan or bring up my concerns to the overall flight lead. Why? Maybe because I knew this plan already had been briefed to senior leadership, and all factors had been taken into account. Maybe I also assumed this formation had been done before, so there was nothing else I could add to the plan. Whatever my reasons for not bringing up my concerns, I did not do my part to properly ORM this flight.

Everyone involved in this exercise, regardless of their rank or experience level, had a responsibility to ask for clarification, as well as to ORM all aspects of this flight. Aviators with less experience might be reluctant to ask questions for fear of looking foolish, or for being given a hard time for not knowing something they should have. There should be many questions for any nonstandard evolution, especially if it involves a safety-of-flight issue. If a question needs to be asked then ask it.

Those of us with more experience must use that experience to ask the correct questions if something doesn't seem right or is unclear—our safety depends on it. Your efforts in performing proper ORM, specifically with identifying all possible hazards, could break the chain of events that would lead to a mishap.

LCdr. Higuera flies with VFA-143.

Photo by Lt. Col. Russell Hopkinson, U.S. Air Force. Modified.

The Phantom TCAS Hit

By Ens. Jessica Barrientos

Early August found me scheduled for one of my T-1A Jayhawk low-level navigation events. In July, the weather had been good in the morning and you got SIGMETed in the afternoon. Now, when I drove to work in the morning, the clouds already were building and would get worse as the day progressed.

In the preflight brief, the pilot, mission commander, and I agreed the weather looked good enough to fly the route. The radar picture we saw on the ground showed a few cloud layers but no ceiling to prevent us from flying the victor route (VR). We made a mental note to be watching on our return for cells that formed during the low-level.

Once airborne, we completed the normal departure procedures and climbed to our altitude of 10,000 feet. We eventually were switched to Mobile Approach and given the local altimeter. When the pilot gave the OK, I cancelled IFR and directed the pilot to point A of VR 1022. We were over Mobile Bay and had a scattered cloud layer at about 3,000 feet. Because we were VFR, we worked our way down to 1,500 feet by dodging clouds.

When we had descended to about 20 feet below the layer, our TCAS (traffic-alert-collision-avoidance system) screen lit up with a yellow dot, and the computer started to scream at us. The pilot quickly turned hard left and put the aircraft into a steep descent. We looked intently for the traffic, which the computer indicated was about 100 feet above us. Our view of 100 feet above us immediately was blocked by the clouds, and we didn't see any aircraft. The crew continued to be vigilant as we leveled off at 1,500 feet and entered the route, but we never saw anything.

We never were sure if another aircraft really was out there, or if the computer just had given us a false hit.

Here are two good lessons to walk away with:

•Never let the computer take over clearing responsibility. While it's not as if no one was looking outside the cockpit, we just were not as alert as we should have been in a critical phase of flight.

•When transitioning from IFR to VFR and passing through cloud layers, every crew member always must remember clouds are great hiding places for other planes.

Ens. Barrientos flies with VT-4.

Photo-composite image.

A Bright, Clear Friggin' Day

By LCdr. Scott Miller

Lead and wing compare notes.

What Happened

Lead: The flight was a good deal, day launch, pinky recovery, Operation Iraqi Freedom (OIF) mission on the first day of the New Year. My section was scheduled for three tanking evolutions and two hour-long vulnerability windows over Iraq, bracketed by an hour of transit each way. I briefed admin, tactical admin, and mission specifics, making it clear I wanted to execute a professional tanker rendezvous. I spoke directly to the technique I would use, including how I wanted my wingman in a loose cruise formation for any daytime tanker rendezvous. I specifically briefed this point because of poor (sucked, wide) formations I had seen joining on big-wing tankers.

My "nugget plus" wingman and I were to join above the North Arabian Gulf en route Al Basrah, Iraq, and destinations farther north. We visually joined into left combat spread. As he collapsed the formation to parade position, I pointed our section in the direction of our next navigational point. I set my autopilot to cross-country-transit mode: altimeter hold, airspeed hold, and heading select. I watched as he joined from my left into parade and then a little closer, a little too close. We passed thumbs up, which indicated our jets were ready for combat. I then gave the take-combat-spread signal and transmitted over our auxiliary radio, "Don't hit me."

Simultaneous with my transmission, my wingman initiated a left roll away (right wing up) from me. As he did, his right-wingtip missile launcher (fortunately, no missile was attached) nipped my left horizontal stabilator. As he rolled away, I looked back over my left shoulder at my stab and saw it move just slightly. I didn't feel a thing, but I saw it happen.

Wing: On the initial rendezvous before I left the Gulf for another OIF mission, I joined to a position much closer than the standard parade position. This join-up was in part because of my misunderstanding of the brief when I was told "not to hang out in a loose tac-wing position." This statement was directed at tanker rendezvous, but I applied it to the initial join-up. To make sure my flight lead knew I could effect a good rendezvous and fly a good parade position, I joined to a position much tighter than the NATOPS parade checkpoints. When cleared to cruise, I made a normal left turn to separate, and as I did, my right-wing missile launcher hit lead's left stabilator. I did not feel anything at the time, and I couldn't believe it when lead said he saw our planes bump.

What I Did

Lead: I don't know how I knew his wing would be close enough to my stab to make contact. Maybe I had joined too close once and was debriefed the wingtip and stab were the closest point of approach between the airplanes. I did, however, see the two parts of our two airplanes touch. For some reason, I didn't place

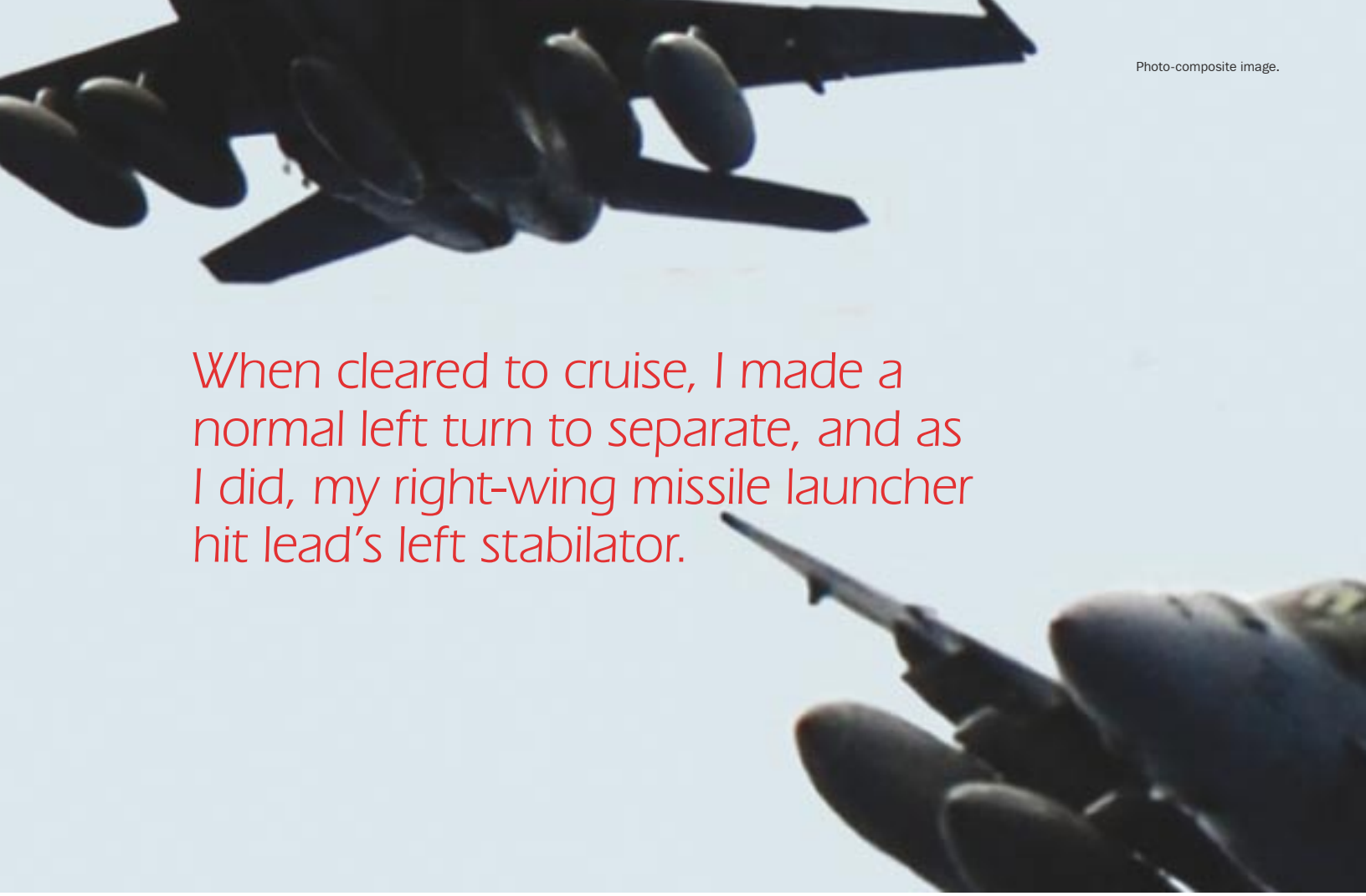

Photo-composite image.

When cleared to cruise, I made a normal left turn to separate, and as I did, my right-wing missile launcher hit lead's left stabilator.

the incident into the midair-collision category, and we did not begin the procedure that is briefed on every flight: Separate, get a visual inspection, determine controllability, slow flight in accordance with NATOPS, and land.

I could see the crush strip on the very outer tip of my stab had been bent upward. The FA-18A-D has a one-inch-wide metal strip, referred to as the "hockey stick," wrapped around the trailing outer edge of the mostly composite stabilator. The metal strip is designed to accept a small impact and crumple, providing a buffer in the event of an incidental bump in environments such as a carrier hangar bay or a cramped airfield hangar. It does not provide a buffer at 24,000 feet and 300 knots.

I transmitted, "I think you just hit me."

After a few moments, I passed my wingman the lead so I could inspect his wingtip. I couldn't tell for sure but thought I saw a light mark in the paint about midway down his wingtip missile launcher. We again changed lead, and after another visual inspection, he agreed the hockey stick on my left stab was slightly bent up. I then decided that, based on our assigned combat mission and the assessed condition of our two aircraft, we should continue north for a five-and-a-half-hour-long mission.

Wing: After a quick visual inspection, I concluded that although I hadn't felt anything, our airplanes had hit. I thought about what I would say when we landed. I fully expected an immediate RTB and to be done flying. However, my lead sounded calm and collected, as we pressed northwest toward Iraq. I figured that our hit was not as bad as I initially had imagined. I felt about as low as a piece of whale feces at the bottom of the Gulf, and decided not to screw up anything else by questioning my experienced lead's decision-making. Even the thought I might fly again was enough for me to keep my mouth shut and fly combat spread.

What I Didn't Do

Wing: I did not join to the briefed parade checkpoints we learn in the FRS (fleet-replacement squadron). Also, once I was in a much-too-tight parade

position, I failed to recognize the two closest points on our airplanes were not my physical location to his wing but, rather, my right wing and his left stab.

Lead: I hope you are all waiting for me to beat myself about my head and shoulders, and I will. The words "midair collision" didn't really hit me (pun intended) until I was back on deck and talking with my skipper in his stateroom.

First, this was a midair collision, and I should have treated it accordingly. I placed the importance of a routine OIF combat mission over NATOPS emergency procedures and flight safety. We did not separate; we actually rejoined and checked out each other. I only can guess the bump didn't strike me (pun again) as a midair collision because neither of us had felt a thing. Both of us still were flying, there were no missing parts, and we weren't going through NATOPS boldface procedures or determining minimum-landing airspeeds.

However, we did swap paint.

Second, the air-wing commander had made provisions for non-combat-ready aircraft to be replaced with armed-airborne spares. Our jets had experienced a midair collision and, by definition, were not combat-ready aircraft. I didn't call in the airborne spares.

What I Should Have Done

Lead: This answer is obvious—I hope; it's obvious to me now and was after the flight was over. I should have contacted the air-wing duty officer on the radio and sent the airborne-spare section in our place. We then should have talked with a squadron representative on the carrier and stepped through the procedures. We most likely would have had a straight-in day recovery during the next recovery-launch cycle, or maybe even an emergency pull-forward.

Wing: I should have joined to parade position and not flown past my ability level. I also should have recognized the two closest points between the flight. After admitting to myself we actually did bump, I should have made every effort to return to the boat, rather than complete our OIF mission. We have all briefed midair collisions before, and although I didn't believe we had had one, I should have been assertive enough to make sure we took the most conservative path.

The Rest of the Story

Wing: The outcome was not what I initially had expected, because I was allowed to fly again. However, the list of mistakes we made certainly had consequences. We spent a significant amount of time on duty and our ready-room stand-down the next day discussing what happened. Being the weak link and the reason your squadron can't go over the beach was the lowest of my lows in aviation to date.

Lead: Another thing—probably the most important—is I didn't realize until I was on deck that my wingman had been almost useless to me for the last five hours. I found out later that, during the flight, he was consumed with visions of a long green table and being at the wrong end. By the way, we ended up in the throes of what turned out to be a very busy combat mission. It included on-station relief of another section of squadron airplanes that had shot a Maverick and fired their guns against hostile forces. I needed my section to be on top of our game, and we were not.

Fortunately, our airplane's control surfaces did not disintegrate during flight, we were not shot at, and we were not required to employ our weapons. We had no other flight incidents, returned safely to the ship, and after a brief visual inspection by our maintenance crew, both jets flew later that night.

This incident and all the postflight discussions were an inexpensive lesson on how dangerous naval aviation can be. We experienced a midair collision—ever so slight—but one nonetheless, and survived. Neither I, nor my wingman, made the right decision once the incident had happened. The Swiss cheese holes nearly lined up for a catastrophic event. Neither of us adequately questioned what had happened, or were willing or able to make the right decision at the right time.

Other sentences I wrote but can't place seem to go with this article.

1. The most dangerous airplane out there is your wingman.
2. Professional rendezvous and strict adherence to tanker procedures are very important.
3. A big-wing tanker rendezvous remains the most likely place for a midair collision.
4. FRS parade position is tight enough for what fleet pilots need parade for: penetrating weather and the overhead break. Getting close is not going to impress anyone; you are only going to scare yourself and your lead.
5. Being on the bench during a combat deployment sucks.

LCdr. Miller flies with VFA-87.

Big Plane, Small Sky

By Lt. Matthew Schlarmann

Our Prowler squadron was privileged to be the first squadron to simultaneously support two campaigns in separate AORs. This situation challenged our ready room during our winter combat cruise.

During the deployment, we conducted split-site operations from the ship in support of Operation Enduring Freedom (OEF) and operated from an Iraqi base in support of Operation Iraqi Freedom (OIF). Supporting two different theaters meant learning two separate SPINS (special instructions), ROE (rules of engagement), tactics, and, as it turned out, hazards to flying.

Our operational plan was to establish a monthly rotation between the two locations. I just had rotated back to the ship after getting used to the relatively busy flight operations in Iraq.

With three trips into Afghanistan in the backseat of a Prowler, I was slated for my first front-seat hop on what seemed to be a "normal" flight in support of OEF. Because it was my first flight in the new AOR, I made sure to painstakingly go through the admin portion of the flight to get my crew and myself out of the expeditionary mindset and back into carrier ops. The last part of the Prowler briefing guide mentions "lookout doctrine," something that is very important around the carrier when you have up to 30 aircraft, in a block of 3,000 feet above the carrier, all jockeying position for their turn on the ball. My technique is to brief, "To call out traffic, using clock code, high/low, factor/no factor, and from the backseat, be descriptive, rather than directive." Little did I know that those five seconds of the brief ultimately would save my life.

The first three hours of the flight were very uneventful—as much so as it can get when you are taking a nugget pilot to the iron maiden for gas three separate times. The weather over Afghanistan wasn't the best but workable: an overcast layer from FL180 to FL215, and then scattered-to-broken layers above that up to FL240. We essentially were working in a hole at FL220.

With twilight conditions, which caused a lot of shadows, we didn't see any traffic, except for the tanker. We were complacent and mistakenly thought we were the only jet in the sky. Contributing to our "fat, dumb, and happy" outlook was the fact the controlling authority cleared us into our working area at FL220. They had said no other traffic was in our area.

As we started our second orbit, I noticed a small black speck materialize from the clouds at our 1 o'clock. I wasn't sure if it was my eyes playing tricks on me with the time of day, or if it was the dirty canopy, so I called the traffic and immediately began to talk the pilot's eyes onto it. After a lot of straining to see around the "Grumman iron," the pilot called "visual" and added it looked like it was "coaltitude." He then climbed—good thing, too, because before I knew it, we were in a right-to-right pass with a C-130. Only 500 feet separated us. The C-130 didn't alter its course at all, which led me to believe they never saw us. We never heard a call from the controlling agency telling us of the traffic. When we queried them immediately after the incident, we got no response. With no word from anyone, we continued our mission and reported the incident in our misrep.

Photo-composite image.

Even in an age when we have a lot of technology to improve our situational-awareness (SA), the Mk-1 Mod-0 eyeball still is the only tried-and-true method of locating and maintaining separation from other aircraft. I am convinced if we had not seen the C-130 and climbed when we did, we would have been a smoking hole in the sky.

Lt. Schlarmann flies with VAQ-140.

Photo-composite image.

Simulated Emergency, Real Near-Midair

By Ens. Ernesto Arboleda

To student naval flight officers (SNFOs), instructors always stress good lookout doctrine throughout every evolution to maintain safety of flight. This doctrine is important in the environment where VT-4 conducts its training, especially the proximity of Sherman Field to Whiting Field. One morning, though, I would learn exactly how important it was to keep my eyes out of the cockpit and not necessarily trust the naval-aircraft-collision-warning system (NACWS) in the T-6.

I just had started the contact phase of training in the T-6, and like any first-time student, I was nervous. I prayed I wouldn't be known as that guy who was so slow he became the laughing stock of the instructor ready room. So, after a typical climb-out into the MOA (military-operating area), the IP (instructor pilot) and I went through the typical maneuvers every student should know during the contact phase of training. After completing a series of helmet-fire-inducing maneuvers, we decided to drop out of the MOA and go through a series of EP (emergency-procedure) drills and a simulation of an ELP (emergency-landing pattern) at Baron OLF (outlying field). The flight then went from uneventful to almost life-threatening.

My IP said T-34s out of Whiting Field typically would fly—almost unannounced—through the airspace around Baron, so we should maintain a good lookout doctrine while in the area. We simulated an in-flight engine fire, and after simulating the boldface for the EP, we began to set up for high key at Baron. We announced our intentions over the radios and got clearance to simulate the ELP.

Just then, approach said a T-34 was entering the pattern, and we started searching for it. When we didn't see the T-34, we scanned our NACWS to determine where he was in relationship to us. As we became task-saturated, because of the simulated ELP and the T-34 somewhere out there, I began to concentrate only on my instruments.

Then a T-34 passed 500 feet below our left wing, and about two seconds later, the NACWS went off. As a typical student, who was new to flying, I had no idea what was going on or what to do. After about five seconds, the IP had leveled the aircraft and decided to forgo the ELP. Afterward, the pilot of the T-34 called on the radio and requested a touch-and-go at Baron.

I had lost situational awareness (SA) during the last few critical moments because of the simulated ELP and while trying to identify the T-34. I was so concerned about correctly completing the ELP, I had forgotten that not completing the ELPs wouldn't kill me but that a T-34 smacking into my aircraft would. Also, I had relied on the NACWS to identify the T-34.

During ground school, we learn the famous mantra: aviate, navigate, and communicate. Part of aviating is keeping a good lookout doctrine. When ATC says another aircraft is close to you, your first priority is to find that aircraft. It's a safe bet that whatever you currently are doing isn't going to kill you, but that aircraft close to you will.

Never trust the other guy. Although we had declared our intentions at Baron, it appeared the T-34 was intent on completing the touch-and-goes. The area we operate in can become busy at times because of all the ongoing training, and it's usually full of first-time student pilots or navigators. Keep your head on a swivel and be mindful of those around you, because no one wants to become a statistic.

Ens. Arboleda flies with VT-4.

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

Under-Run: Under-Prac

By Lt. Larry Cooper

With an upcoming deployment, we were in the middle of our field-carrier-landing practice (FCLP). We also were practicing some formation flying. Most of the squadron pilots had not flown formation since the last deployment's fly-in six months earlier, and some had not done it in more than a year.

After the FCLP brief, the senior pilot briefed the formation flight. Because we lacked currency, he briefed the join-up in great detail, including using 180 knots for the rendezvous speed. He also briefed that we would not do any formation maneuvers we do on pilot-training flights, such as break-up and rendezvous. However, he did not brief under-run procedures. A rare event, other than on training missions, under-runs certainly weren't expected on this day. The decision not to brief this procedure would prove to be one we'd regret.

We planned a three-plane formation to NAS Oceana, which is 10 minutes away. We staggered our launch, and all three aircraft were airborne within 30 seconds of lead. From Chambers Field (NAS Norfolk) runway 28, we would turn about 180 degrees to head east toward NAS Oceana.

Lead checked in with departure and was assigned the first of two left turns. Dash-2 turned to get inside of his radius to commence the join-up. As lead rolled out on our assigned heading, Dash-2 stagnated in position without the advantage of the inside lane of the turn. Dash-2 checked his airspeed, which indicated 179 knots. As lead rolled out, he realized his airspeed was 20 knots faster than briefed. Lead made a radio call that he was fast and aggressively decelerated toward 180 knots. Almost simultaneously, the air-traffic controller issued the next left turn, which would take us to Oceana and put Dash-2 on the inside of the turn.

The Swiss-cheese holes were lining up. Dash-2 almost was in port parade position. Lead was decelerating toward 180 knots from 200 knots. Dash-2 was accelerating toward 200 knots from 180 knots. We reentered a left turn, giving Dash-2 the "advantage" of turn radius. All of these factors created an excessive closure rate. Dash-2 pulled back his power levers to slow a rapidly increasing closure rate. Too late.

Dash-2 had all the information he needed to know to under-run

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Photo-composite image.

The few seconds it took Dash-2 to separate his aircraft from the lead and get out this simple call seemed an eternity.

but didn't. The first thing he thought of was to separate his aircraft from the lead, and he did so with a sharp left turn and descent. Dash-3 wasn't on his mind at the time.

Because of Dash-2's descent and left turn, the pilot no longer could see the lead aircraft. The copilot took the controls and started flying an uncomfortable formation looking back and to the right at lead. Dash-2's pilot got on the radio and notified the flight of the situation. With everyone aware, we were able to reset for an uneventful join-up.

The few seconds it took Dash-2 to separate his aircraft from the lead and get out this simple call seemed an eternity. Dash-3 recognized a bad situation developing and kept his aircraft well clear.

We were fortunate and walked away with some easy lessons learned, instead of a mishap investigation. We did a very thorough debrief and decided it would be helpful to have some "back to the basics" training. The pilot of Dash-2 briefed the under-run procedures in detail at our next FCLP brief. We also planned a detailed formation brief to exercise all aspects of formation flying, followed by the full gambit of flight maneuvers. This training will serve to keep the maneuvers fresh in our minds and to refresh these perishable skills.

> An under-run provides a safe and orderly method for the wingman to pass below and behind the lead when excessive closure precludes a normal join-up during a rendezvous.

Take a close look at each mission. Analyze it in detail, and never take even the easiest maneuver for granted in your brief, particularly if it's a mission you haven't exercised in a long while.

Lt. Cooper flies with VAW-123.

A Not-So-Simple Day Case III

By Lt. J. W. Stigi

The scenario began as expected. In one of the oldest Navy traditions, a real "good deal" had fallen to the very bottom of the squadron's totem pole: The junior WSO teamed up with a brand new 0-4 (hinge) pilot for a day-night deck and CATCC certification of the carrier.

I recently had arrived in Virginia Beach after a year in Lemoore, Calif., and was more than content to smile and nod at just about anything sent my way. Even though the deck cert was planned for a Saturday, I figured if my buddies in Lemoore could handle weekend after weekend of struggling to find a good time, I could afford to sacrifice one Saturday for the team.

The squadron was two weeks away from departing on our first at-sea period of work-ups, so I didn't mind the opportunity to knock some rust off my CV procedures. One trip to the boat for RAG CQ (replacement air group carrier qualification) had given me a small knowledge base, but I knew I was headed to the carrier with just about zero real-world experience.

Photo-composite image.

I was greeted with the enormous sight of a Hornet's right mainmount heading for our left vertical stab.

In the days leading up to the event, I tackled the CV NATOPS for my safety… and just in case my former light-blue-wearing pilot decided to bring the heat. I figured I was safe from any "arrow critiquing" while in the back seat, but he was a hinge, and you just never know. Unfortunately, by the end of that Saturday, my proverbial experience bucket would be slightly more filled, and my luck bucket would be drained.

I arrived early at the squadron for an uneventful CQ brief with my pilot and the lead crew; ORM was covered in-depth. We noted the inherent hazards of operating around the boat, particularly magnified during a CQ and certification evolution, when training would take place all over the boat. I already looked forward to a night-taxi fam of the rounddown about as much as I looked forward to releasing the 2006 "Legacy Hornet Ball" video. The squadron's senior paddles gave the brief, and I walked, feeling comfortable and prepared with the day's game plan.

Preflight and man-up proceeded without incident, but just before taxi, our lead had to hop in a spare jet for maintenance. My pilot and I quickly decided to press out as a single, and we launched to make our briefed overhead time.

Our transit to the carrier went smoothly, and we quickly found it in the local working area. After a sweet comm and sweet lock, we lost the ship's TACAN. This problem lasted throughout the day (weeks later, we found out the carrier had experienced electrical-bus failures, which degraded communication, navigation, and radar in varying degrees). Because of the unreliable TACAN, marshal issued individual aircraft lat-long coordinates and an altitude for marshaling purposes. After I entered the waypoint and found the ship using the sea radar, everything seemed suitcased for a manual push when I considered my first real dilemma of the day: saving the second half of my turkey sandwich for dinner or going all-in at lunch.

After an extended period of drilling holes in marshal, we received our manual push and left the stack as the sixth of eight aircraft scheduled for the day. The carrier was running dual-frequency ops, and we were positively switched to button 15 during our descent. I worked the sea radar like a bachelorette party in Key West and kept a rough estimate of our distance from the boat, but the TACAN completely was out at this stage in the game. We leveled off at 1,200 feet and proceeded inbound on approximately the final bearing, with little help from the controller. My pilot continued with the approach and rogered-up a "see me" call at roughly eight miles. We received ACLS (automatic-carrier-landing system) lock-on, and things looked solid. About four to five miles out, the approach controller called "Ninety-nine, switching to Case II" and pushed us to button one. And so the plot thickened.

Although I never had encountered a situation like this, I was confident we were cleared to continue our approach, given our position inside of 10 miles from the boat. Soon after the switch to button one, we heard over the radio, "Approach, 312, at 3.5 miles, confirm I'm continuing the approach."

While I couldn't determine our exact distance from the boat, the hairs on the back of my neck stood on end as I realized we had to be close to 312, and I had zero situational awareness (SA) of his position. I quickly shifted the radar from tracking the carrier to sanitizing the skies in front of us. I started to voice concern to my pilot and looked over my left shoulder to scan for 312. I was greeted with the enormous sight of a Hornet's right mainmount heading for our left vertical stab. I shouted an expletive and "Over the top!"

My pilot unloaded the jet, and 312's mainmount missed our vertical stab by about 10 feet. We took an aggressive cut to the right, and my pilot, recognizing the pilot of 312 by voice, called him over button one to look right. At this point, 312 finally saw us, did a double take, and raised his gear to break off the simo-approach.

My pilot followed his transmission with a call to tower that we just had had a 10-foot pass on approach, and we planned to proceed overhead at 2,000 feet for low holding. We quickly asked for a Rhino rep and were directed to button 18. After several unsuccessful attempts to hail the rep, I returned to tower, called no joy, and again asked for a Rhino rep. This request was met with the response, "202, what's your deal?"

Having just had a Charlie Hornet mainmount nearly clip our jet, I had more than a few choice responses for the Boss. I decided I might need that lieutenant money if I ever wanted a radio for the Impala, so I let my pilot handle the next call. He reiterated to tower we just had had a near-miss and would like to speak to a Rhino rep. He said it more calmly than I could have.

Tower responded with, "What do you say we get everyone on deck, and we'll sort this out."

I was stunned.

After landing, the incident never was addressed by tower for the rest of the more than six-hour evolution. Given the attitude from tower, neither my pilot nor I felt inclined to raise the issue again unless the ship planned to ask us for information. They never did.

As we taxied around the flight deck, the realization of just how close we'd come to a midair began to sink in. Leveling off on the approach, my pilot had followed his usual habit pattern of keeping the jet level at 1,200 feet with his expert pilot skills. Those skills had us at 1,170 feet when 312 passed over us. Thankfully, my pilot was a "patch" and not a Blue Angel. Given his angle of attack on the approach, it's highly unlikely 312 ever would have seen us before his mainmount made short work of our vertical stab.

During the resulting investigation, a multitude of causal factors were identified. The carrier's compounding electrical issues resulted in serious degradation of their systems. These issues included a complete failure of the TPX-42 that fuses IFF (identification friend or foe) interrogator data with SPN-43 air-search-radar video. Using a SWO-secret decoder ring, I determined this failure left the controllers with no aircraft data associated with their raw radar returns, and no graphic display of the final bearing line. Mother Nature played a role, as she often does, with a squall line and precipitation to clutter radar returns, which resulted in weak target video. The final blow came at about six miles, when the SPN-43 radar completely stopped radiating, and positive control of both aircraft was lost.

CV NATOPS does not provide clear guidance for transitioning from Case III to Case II operations with aircraft inside of 10 miles. Combining this procedural uncertainty with the carrier's systems issues led both pilots down the road to this near-midair collision. This situation could have been mitigated earlier by asking guidance from tower or approach. All the aircrew involved are fortunate we came away unscathed from what started as a simple, day, Case III event.

Lt. Stigi flies with VFA-103.

Photo-composite image.

Where's the Love?

By Maj. Owen Coulman, USMC

We had another great day for flying in the beautiful American Southwest. I was part of a flight of four AH-1Ws flying a cross-country from Sedona, Ariz., to NAS North Island, Calif., where we would spend the night.

Because we'd be flying outside our normal operating area, we thoroughly studied the map of our route on the Phoenix Sectional Aeronautical Chart. We identified any obstacles and made sure we were in compliance with FAA rules. We noted three items: Love Field's Class D airspace, the occasional wilderness areas, and a couple of hang glider and glider areas northeast of Prescott's Love Field. We also saw a note about extensive IFR training in the vicinity of the Drake VOR (northwest of Love Field), 10,000 feet and below, so we planned an appropriate VFR cruising altitude.

Satisfied we were ready to fly, we departed Sedona, climbed to 8,500 feet MSL, squawked 1200, and began our route as a flight of four, flying in a fingertip formation. As we headed westbound, we assumed our even-plus-500-foot altitude would help mitigate the risk of any civilian traffic in the area. But, we quickly were proved wrong when, out of nowhere, a Cessna 172, heading eastbound, split the formation and missed our lead aircraft by only 50 feet. We identified the aircraft as belonging to a local civilian flying school and called them the following day to report how close they had come to swapping paint with our lead aircraft.

How could this near-midair have been prevented? We thought we were doing everything right: We were flying in an easily recognizable formation, squawking 1200, and transiting at a correct altitude. After consideration, I decided to check some of my civilian publications, specifically the "Flight Guide Airport and Frequency Manual," Volume 1, where I noticed a few items of interest.

First, the note about extensive IFR training in the vicinity of the Drake VOR was because Embry-Riddle Aeronautical University conducted extensive flight training in the area. I knew Embry-Riddle had a campus in Prescott, but I didn't consider the risks of transiting through their potentially high-sortie-rate operating area during our preflight planning.

Second, when I looked at the Love Field Class D area, I noticed two VFR reporting points to the east of Love Field that were not on our Phoenix Sectional Aeronautical Chart. A check of the civilian pubs while planning at the civilian FBO at Sedona could have made us change our planned flight route or be more aware of the potential for civilian traffic in the area.

We learned at flight school to review all available information during preflight planning. When transiting outside of a local operating area, it's a good idea to read all publications, including civilian flight publications. The civilian piloting that Cessna 172 probably was as surprised to see us as we were to see him.

Maj. Coulman flies with HMLA-267.

How the Big Sky Becomes Small

By LCdr. Scott Hielen

As a command-and-control (C2) platform, the E-2C Hawkeye is supposed to be the purveyor of situational awareness. With the "big picture" on three displays in the back and two sets of eyes up front in each plane, two Hummers never should meet unexpectedly in a dark alley. So, how did our squadron nearly put two planes and 10 people in the water on a sunny California afternoon?

Nearing the end of a joint-task-force exercise with our carrier-strike group, our crew was off-station and en route the ship, transiting around the simulated geography over SOCAL (Southern California) waters. As is the case with standard CV-cyclic operations, our relief was first off the pointy end and climbing to take their turn against the simulated enemy forces.

Let's cover the spoken issues. As we transited back, our carrier-aircraft plane commander (CAPC) in the right seat told the crew that he would like the junior pilot in the left seat to practice an emergency descent. Hawkeye pilots rarely get an opportunity in fleet-replacement-squadron (FRS) training to execute this procedure, and an actual emergency shouldn't be the first time they try it. The crew was well-briefed on what to expect, with no dissensions. After we made a good visual sweep of the skies, the flaps went up, power levers to flight idle, and the gear came down as we lowered the nose and accelerated toward 250 knots.

The Hawkeye weapon system, with its superb long-range radar, originally was designed for early-warning capability. Unlike a strike-fighter radar, however, its performance is limited at very close ranges and is not optimized for close traffic or collision avoidance.

As our playmate climbed, and we made a dirty descent along the same flight path—neither pilot had situational awareness (SA) of the other because they weren't getting information from our organic sensors. But what we did have in both planes was Link-16. The air-control officer (ACO) in our aircraft saw a precise-position-location identification (PPLI), which is an accurate self-reported track from our playmate; the track was in close proximity to us, as was their reported altitude. Bypassing the standard interplane-communications flow, the ACO selected the cockpit and called for an immediate level off, which they did. The copilot spotted our playmate between the 3 and 4 o'clock positions, and they passed beneath us, with about 500 to 1,000 feet of clearance.

Now let's cover the unspoken issues. At the end of a work-up cycle, complacency is a major green-eyed monster. We were lulled by the routine of cyclic operations and didn't brief a transit-deconfliction plan. Days of safely transiting from points A to B to A had set a precedent. Adding to the "it can't happen to us" attitude, we didn't brief a plan for ownship lookout. We're Hawkeye guys. Why wouldn't we all know where another Hawkeye was?

During the flight back to the ship, we were busy

debriefing the mission events and no longer focused on the multi-million-dollar weapon system we'd just used to find, fix, track, target, engage, and assess an orange-surface-action group. In an aircraft with significantly restricted cockpit visibility, the pilots depend on a good heads-up from the operators in back for traffic calls. We broke what should be a verbal contract every time we go fly: Who has ownship lookout at each phase of flight, whether it's sensors or eyeballs?

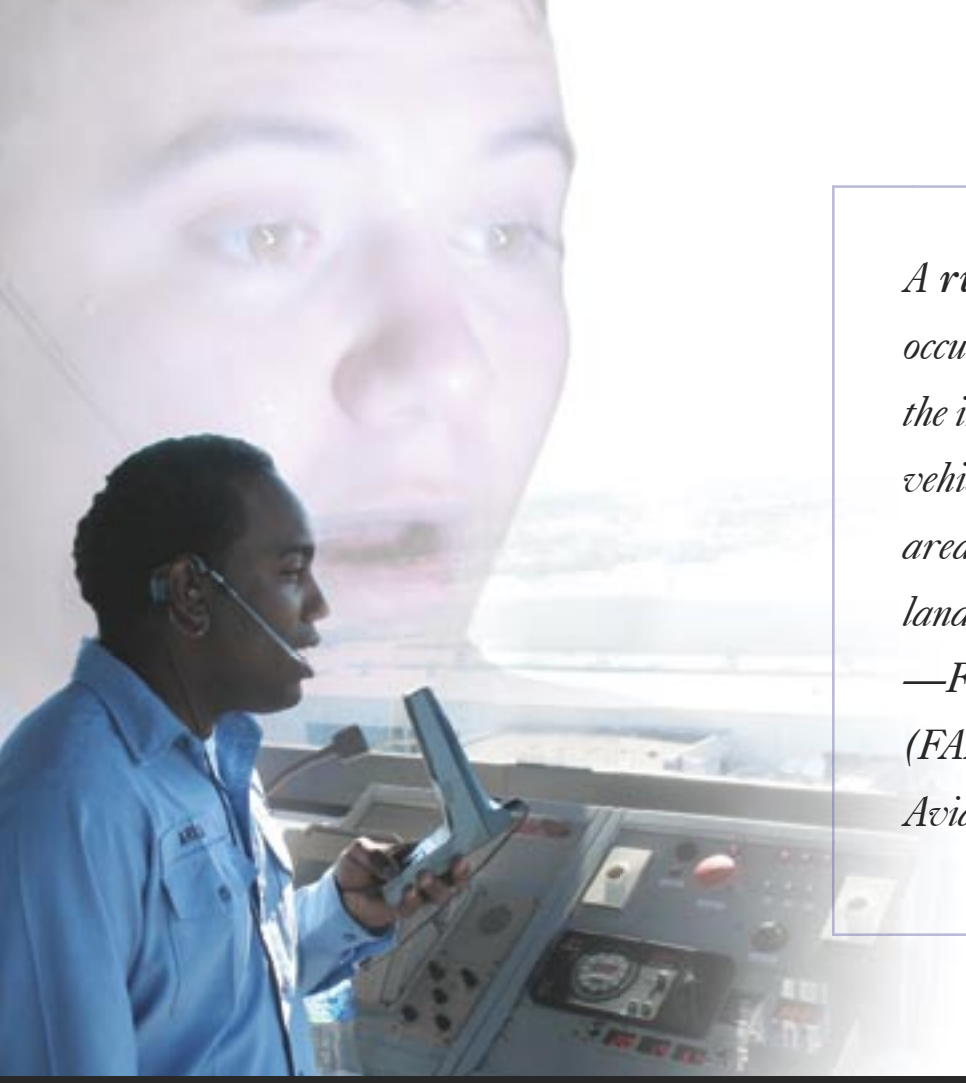
Big skies are made small by airspace controls and aircraft with similar operating envelopes. If an orbit is good for one plane, why wouldn't our relief want to go to the same place?

Our lesson learned from work-ups served us well in the Iraqi theater of operations. During deployment, our aircraft was allotted a 1,000-foot vertical block to operate, with limited lateral airspace to boot. Each night, we briefed deconfliction well in advance. We maintained good SA as we provided relief on-station and communications support to the Army and Marine convoys on the roads of Iraq each night. Historically, we've been our own worst enemy, even in wartime. Don't set the conditions for your own close pass.

LCdr. Hielen flies with VAW-113.

The copilot spotted our playmate between the 3 and 4 o'clock positions, and they passed beneath us, with about 500 to 1,000 feet of clearance.

Photo by PHA Michael B.W. Watkins



*A **runway incursion** is "Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing or take-off of aircraft."*
—Federal Aviation Administration (FAA) and International Civil Aviation Organization (ICAO)

What's on the Runway?

By ACCS(AW/SW) Fredda Bryan

"I can't believe that just happened."

If you've ever been on a microphone, whether aircrew or controller, you've said that phrase.

Runway incursions continue to be the No. 1 reported hazrep (hazard report) for the Navy and Marine Corps—and the situation isn't improving. Solving this problem may not be as easy as 1-2-3, but it can be as simple as SOP (standard operating procedures). Disregard SOPs and a hazardous situation or mishap usually results.

Analyzing the causes of any runway incursion is similar to peeling away the skin of an onion, with the layers of skin representing the casual factors. Failure to adhere to procedures-directions-instructions, poor or incomplete communications, poor coordination, complacency, bad scanning techniques, and failure to adequately train or supervise personnel are the typical causal factors cited in reports. The most common factor, however, is the loss of situational awareness, whether it's in the tower cab, radar room, the cockpit, or while operating on the airfield. Only when your perception matches reality are you situationally aware.

The most common incursions are crossing a runway without permission, insufficient separation, landing or departing without a clearance, and descending or climb-

ing to an altitude not assigned. Sometimes an incursion is the result of "I just plain forgot about you." When you peel back the onion skins, the common thread in most incursions is the human-performance factor (HPF).

If we get to the point we become complacent in our jobs, then we are the problem, not the solution. If I were to take a hazrep from 20 years ago and compare it to one today, the scenarios would be nearly identical. Does that mean we are not progressing toward a safer aviation community? No, it means with high-tempo operations, the risks continue to be high. Management teams need to closely watch everyone's performance to catch bad habits and correct them before a hazardous situation occurs. Every time a pilot gets in a cockpit or an air traffic controller puts on a headset, they automatically should shift to a mindset of "expect the unexpected." Is it too pessimistic of me to think that way? Well, I have 20 years of experience, and I have observed many situations when instructions were not followed. In each situation, I knew that what I did or didn't do could result in a mishap or collision.

Respect for each other's jobs cuts both ways. From a controller's point of view, if you are working the position and going along with the scenario, then you most likely are behind the power curve. You have to expect the unexpected and have a plan A, B, and at times C. From the pilot's perspective, never assume what you thought you heard is what you expected to hear. If you are uncertain with the instructions given to you, check again, and if necessary, double-check with the controller. Better safe than sorry is not a myth.

ACCS Bryan is the air-traffic-control analyst, Naval Safety Center.

Runway Incursion Scenarios

Our Safety Center air-traffic-control analyst offers these two runway-incursion scenarios to reinforce the value of crew resource management. These examples are taken from the WESS data base and are typical scenarios that can be used for training. Whether the focus is on communication, assertiveness or situational awareness, a team effort is necessary to reduce and eliminate runway incursions.

Scenario No.1

Aircraft No.1 (FA-18) was put in position-and-hold on runway 13L. Aircraft No.2 reported the numbers runway 13L for the overhead, while aircraft No.2 was instructed to break. Aircraft No.2 then reported the left 180 with the gear, and was given clearance to land, while aircraft No.1 still was in position-and-hold. Aircraft No.1 radioed he still was in position-and-hold. Aircraft No.1 then was cleared for takeoff. A traffic call was issued to aircraft No.2 on the FA-18 departing the runway. Aircraft No.1 cleared the deck and switched frequencies to approach and aircraft No.2 landed on runway 13L.

Human performance factors:

- Tower controllers lost situational awareness.

• The controller forgot about the aircraft in position-and-hold.

• The facility watch supervisor and tower supervisor did not have proper facility staffing per the facility manual.

• They failed to identify or recognize a hazardous or unsafe deck condition.

Commander's comments:

Human error and loss of situational awareness are risks we must remain alert for on a daily basis. Noncompliance with governing regulations and instructions are not acceptable and shall not be tolerated. A high level of awareness and teamwork from the pilots saved a potentially catastrophic mishap.

Scenario No. 2:

During an end-of-block contact flight with the SNFO (student naval flight officer) in the front seat and the instructor pilot (IP) in the back seat, aircraft No.1 received clearance to position-and-hold on runway 7R. The SNFO repeated back clearance to position-and-hold, which was confirmed by tower tapes. Tower gave clearance to position-and-hold because of a previous aircraft that had landed on 7L and had been cleared to taxi across runway 7R at the departure end. Aircraft No.1 completed lineup checks, and then made a normal takeoff with the SNFO at the controls but without receiving clearance to takeoff from the tower. Once tower realized the hazardous situation, they immediately cancelled their takeoff clearance. But, the aircraft already had reached rotation speed. The IP took control of the aircraft and noticed a T-39 already had cleared runway 7R. With no other obstacles in its path, the IP deemed it safer to continue the takeoff than to execute a high-speed abort.

Human performance factors:

• IP allowed the SNFO to take off without clearance from the tower.

• Aircrew failed to properly supervise the flight.

• Failure of attention: distraction, channelized and fixation.

• Poor communication.

Commander's comments:

No matter how old you are or how many hours you have, the basics still apply. Expect the unexpected. When controllers issue specific instructions and the pilot reads back verbatim what those instructions are, we don't expect the pilot to do the complete opposite, do we?

WESS contains hundreds of hazreps that ASOs, ATCFOs and training branch manager's can use as training resources for aircrews and air traffic controllers. Use these scenarios as a positive training tool for your personnel. Visit WESS on our Naval Safety Center website at: http://www.safetycenter.navy.mil/wess/.


Photo-composite image.

THE PAVEMENT JUST MOVED

By LCdr. K. C. Jones

Day three in theater, and what better way to break in my fresh new credit card than on an Osan RON (remain overnight). A four-year supply of sneakers and new luggage tags for the kids were on the list.

Osan hovered around one-half-mile visibility, in a thick summer haze and an obscured ceiling. I was in the left seat, flying with a copilot new to WestPac but who quickly was learning how to interpret the local controller's instructions. We took the time to brief inside-outside scan and callouts. We also reviewed the missed approach for the second time, just in case we didn't see the field. While being vectored onto the ILS final-approach course, the visibility was reported to be "one mile in haze." We were cleared to land by approach about five miles out, and we made sure our checklists were complete.

At one mile from the runway and about 400 feet, the approach lights came in sight, and soon the runway threshold was in view. As the copilot started to call out radar altitudes, the crew chief and I looked down the runway. We saw a dark object in the haze, well down the runway; it looked like a dark rectangular piece of asphalt pavement on an otherwise concrete runway. At 20 feet from touchdown, that "pavement" moved, as the rectangle rotated 90 degrees.

The crew chief and I barked out, "That's a truck on the runway!" as I rapidly brought up the power to initiate a go-around.

Just as the truck started to disappear under our nose, the two doors to the cab opened, and two people got out to inspect the arresting gear, which was located near the 3 board of runway 27.

We cleaned up and reported our go-around to approach control. They were unaware a truck was on the runway. We got vectors to another approach and landed.

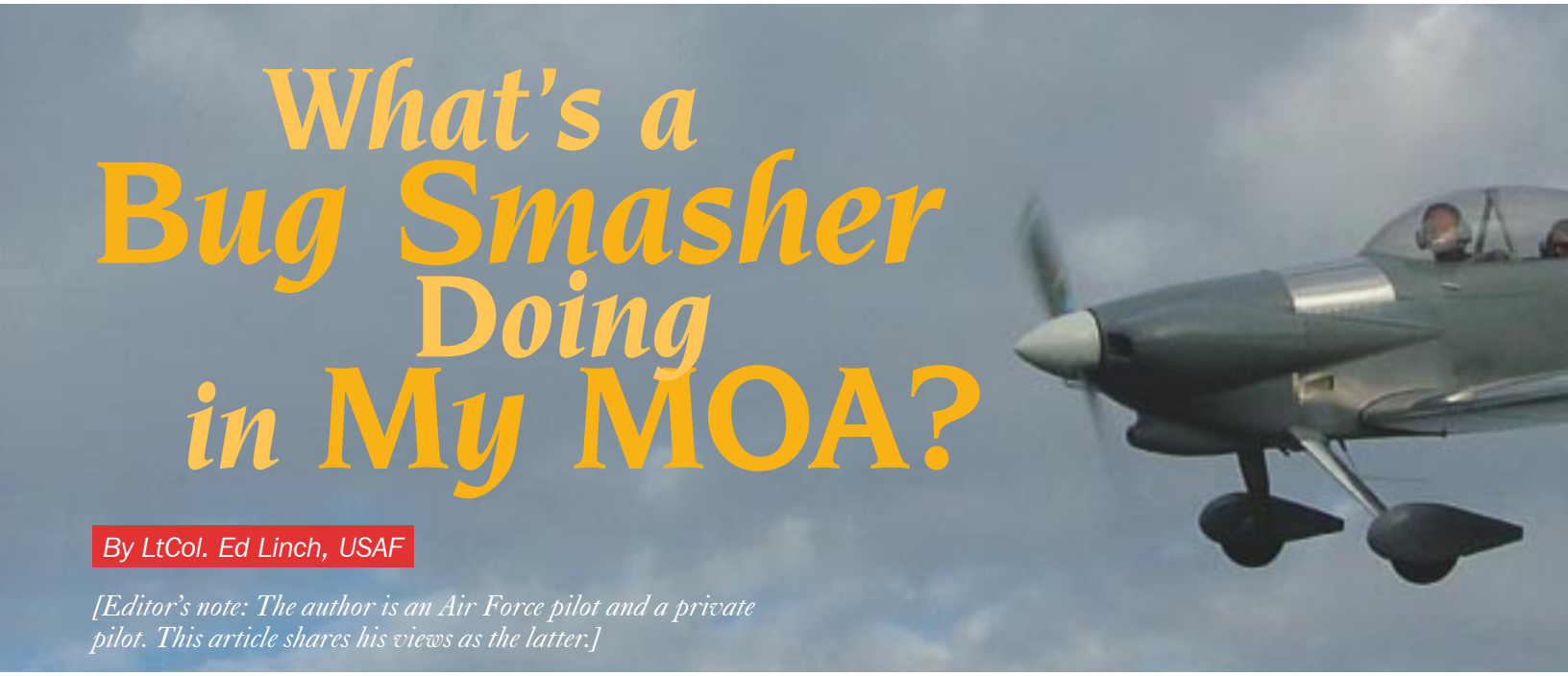
A few calls of assurance that the "runway is clear" certainly put the previous approach in historical perspective.

After shutting down for the night, we had a prolonged discussion with Osan airfield management that revealed several additional factors to our runway incursion. Osan was conducting a base exercise, and most personnel were in various levels of MOPP (mission-oriented-protective posture) gear on a hot day. The arresting gear was getting inspected after a heavy-aircraft takeoff, which we understood to be standard Air Force procedure.

During the past decade, there have been many advances in avionics systems in transport aircraft: TCAS (traffic-collision-avoidance system) and EGPWS (enhanced-ground-proximity-warning system), nevertheless, perhaps no greater warning system is better than a set of eyeballs looking outside the aircraft, particularly around the terminal environment. Our crew was waved off successfully when in close because we had briefed and executed our divided inside-outside responsibilities in accordance with our SOP. Preparing for a missed approach every time as preached in flight school is another lesson we revisited. The best defense for our runway incursion was a good offense. After all, TCAS does not mean "truck-collision-avoidance system."

LCdr. Jones flies with VR-61.

What's a Bug Smasher Doing in My MOA?



By LtCol. Ed Linch, USAF

[Editor's note: The author is an Air Force pilot and a private pilot. This article shares his views as the latter.]

As a general-aviation pilot, I fly through MOAs (military-operating areas). When I use my GPS moving-map display, I can fly along the border of a restricted area. My Mode C sometimes doesn't work, and I tend to turn off my radio for most of the flight. I rarely call ATC because I hate being vectored—too inconvenient. I've even flown from Oshkosh, Wis., to West Palm, Fla., without talking to a soul. I fly direct to save time and gas, and yes, I'm 100-percent legal.

You might think I am a cowboy aviator, but you are wrong; I maintain my aircraft well within federal aviation regulations (FARs), using airmanship skills developed and honed as a USAF F-16 fighter pilot. Because of my exerience, I'm more likely to go above and beyond what a typical general-aviation pilot would do to look for you and stay out of your way.

Are you looking for me as we share the skies? I know a lot about you because I'm also a military aviator, but do you know much about me as the civilian aviator in a light aircraft? I fly an experimental aircraft with a 23-foot wingspan at 150 knots. Sometimes, I fly in formation with several aircraft—from finger tip to 6,000 to 9,000 feet line abreast, with an altitude split, or I'm a single-ship doing aerobatics. I hope you're looking for me and not just depending on your radar to find me and my friends. I'm usually flying between 3,000 and 10,000 feet. I would expect other light singles to be around these same altitudes, following roads, at speeds between 100 and 250 knots. For light twins, expect altitudes in the midteens. I also would plan on civilians not observing the existence of your MOA (I have had them blast right through the middle of my military "4 v X" engagements). You may never see them because you are focused on air-to-air tactics, not doing a visual search for a "bug smasher."

Regardless of your situational awareness (SA) and ability to find me, I'm looking for you. When available, I use flight-following with ATC. I fly below your air-to-air floor, and I check SeeAndAvoid.org for any information about your airspace. If the FAA has a VHF-common safety frequency for your MOA, I monitor it to make sure I get out of your way. But, not all civilian aviators

Photo by LtCol. Ned Linch, USAF. Modified.

Photo by LtCol. Ned Linch, USAF

are looking for you. Many civilian pilots are not aware of MOAs or military-airspace information for a variety of reasons: lack of training, lack of available information, attitudes toward military airspace, or ineffective MACA (midair-collision avoidance) programs at your base.

How effective is your MACA program? I've flown throughout the United States as a light aircraft (experimental) pilot, as well as an airline pilot, and have yet to see any MACA information displayed that warns me about your local flying area. Just because you have a MACA program and a pamphlet doesn't necessarily mean the average civilian pilot has your information. Near-misses, midair collisions, and TCAS (traffic-alert-collision-avoidance system) alerts continue to be part of the safety database. I believe many mishaps and incidents could have been prevented with a more effective and robust MACA program.

Recommendations to improve your MACA program:

- Use sectional charts for your MACA products. I recommend using a sectional chart for any phases of flight where you'll be flying below 18,000 feet.
- Put up a poster showing the local military airspace and aircraft information. A well-displayed poster would remind all aviators what is happening in the local area.
- Have a local MACA website.
- Report all close encounters using WESS and hazreps.

I know what it's like to be on both ends of a close encounter. I've seen a lot of near-misses with other aircraft, and in most cases, everyone was legal. Be vigilant as you share the skies with everyone; your best friend could be the guy in the other aircraft.

LtCol. Linch, USAF, is chief of 12th Air Force Flight Safety.

See and Avoid Program

The SeeAndAvoid.org mission is to eliminate midair collisions and reduce close calls. The exchange of information between the military safety community and civilian pilots will help us all share the sky.

The SeeAndAvoid.org was developed by the Air National Guard for the Department of Defense. This website:

- Allows links to all existing military MACA programs in a single website.
- Targets two groups:

1. General aviation pilots by encouraging them to use seeandavoid.org as part of their flight planning.
2. Military safety officers, with the opportunity to create a web-based MACA educational and public-outreach program.

The SeeAndAvoid.org; website contains information to avoid midair collisions.

USNTPS

Mr. Bill Warlick and Lt. Travis Inouye

Capt. Kevin Krzeminski, an instructor at HMLA/T-303 (the UH-1N and AH-1W fleet-replacement squadron), was the aircraft commander of the Dash-2 aircraft in a flight of two UH-1Ns. They were conducting basic daytime-formation maneuvers and section landings aboard MCB Camp Pendleton.

The aircrew on Dash-2 was 1stLt. Joshua Piper, the pilot-under-instruction (PUI); SSgt. Michael Pyland, the crew-chief instructor; and LCpls. Christopher Riveragant, Jordan Liszka and Edmond Tucker, the crew-chiefs-under instruction.

The flight had aborted the formation-maneuvers sequence because of poor weather along the beach and had headed east to conduct section landings two miles inland.

The section completed the landings and was returning to MCAS Camp Pendleton, heading south at 1,000 feet MSL and 100 knots, when Capt. Krzeminski's aircraft suddenly began to shake violently. He immediately initiated an autorotative-descent profile, while he scanned the instruments to determine the source of the vibrations. When he reduced the collective, the severity of the vibrations decreased. Capt. Krzeminski determined the engines, transmission and gearboxes still were operating normally.

SSgt. Pyland spotted an open, dirt parking lot at the aircraft's 9 o'clock position. As Capt. Krzeminski turned left toward the parking lot and applied power, 1stLt. Piper continued to scan the gauges, looking for any secondary indications. The increase in collective was accompanied by increased vibrations. The crew decided to fly a powered-on approach to a no-hover landing in the parking lot. The aircraft entered brownout conditions with the skid one foot off the ground. Capt. Krzeminski smoothly reduced the collective and set the aircraft down in the parking lot.

After shutting down the aircraft, the crew found that one of the blades had begun to delaminate. The blade's skin was peeled back 1.5 inches, exposing the blade skin to the wind line. The delamination started on top of the blade, just behind the leading-blade cap, and extended 14.5 inches inboard.

The aircraft was repaired on-site by removing and replacing the head and blades. It was returned to flying status within 24 hours. The damage had resulted from corrosion after water intruded under a previous blade-patch repair. Timely and effective decision-making, efficient crew-resource management, and skillful airmanship by the entire crew allowed them to control a dangerous situation.

Bill Warlick (a Wyle Labs contractor instructor and a retired Navy commander) and Lt. Travis Inouye (a test-pilot-under-instruction) were flying a handling-qualities syllabus flight in the U-6A Beaver. This aircraft is regarded as one of the most challenging to master at test-pilot school (TPS).

While established on downwind after four uneventful landings at a local outlying field (OLF), the crew heard a loud bang coming from the tail, accompanied with a significant left yaw. They use areful power corrections, right-rudder trim, and right-wing-down attitude to maintain heading because they couldn't steer using rudder pedals.

Following an inconclusive airborne visual inspection, Warlick did a controllability check to determine a safe approach speed. However, the deceleration to flare and subsequent ground-rollout controllability still were a major concern. After chasing light and variable winds to gain an advantageous crosswind, he aborted the first landing attempt because of excessive left drift and high potential of departing the runway surface (usually resulting in a ground loop). He then flew a second approach to the extreme side of the runway and, using aggressive differential braking, stopped safely on the runway.

Aircrew inspection after engine shutdown revealed a fully deflected left rudder: no damage to any other aircraft component was visible. The maintenance inspection determined the rudder-cable cam had disconnected from the torque tube assembly, which caused loss of rudder control.

Warlick and Lt. Inouye exercised impressive crew resource management to assess the situation. They had sought assistance from NAS Patuxent River Tower, and had clearly communicated to operations and maintenance to solicit plausible remedies. Warlick displayed superior airmanship in handling a serious directional-control problem on the most notorious "directionally challenged" tail dragger.

BRAVO Zulu

Left to right: Capt. Kevin Krzeminski, SSgt. Michael Pyland, LCpl. Christopher Riveragant, LCpl. Jordan Liszka, LCpl. Edmond Tucker, 1stLt. Joshua Piper.

HMLA/T-303

It's not until you have a reason to sit down at a computer, stare at a blank white screen and think to yourself, "How will I start this *Approach* article?" does the gravity of this publication really hit you. As a new fleet aviator and as a student throughout flight school, *Approach* had always served as an entertaining read, especially on those days when you're in the pickup box all day long. But after you fly through a few *Approach* worthy nights, or days for that matter, you start to view the articles inside this magazine in a different light, more as a source of professional training than entertainment.

—Ltjg. Clarence D. Washington, HSL-48.

Photo by Lt. Gary Sears