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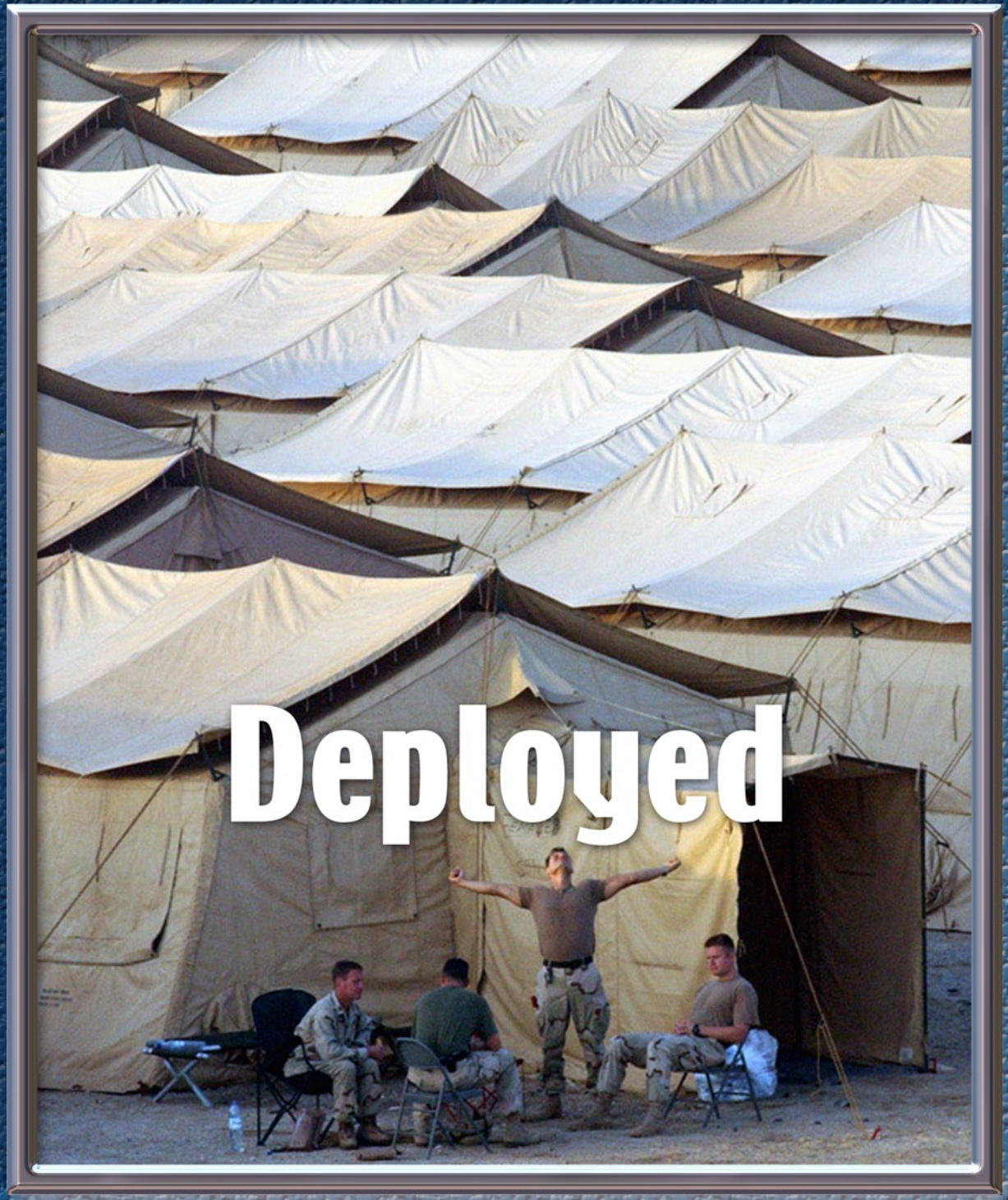
NOV 2005
FLYING SAFETY MAGAZINE



# Deployed

FSM
FLYING SAFETY MAGAZINE

AIR FORCE RECURRING PUBLICATION 91-1

contents



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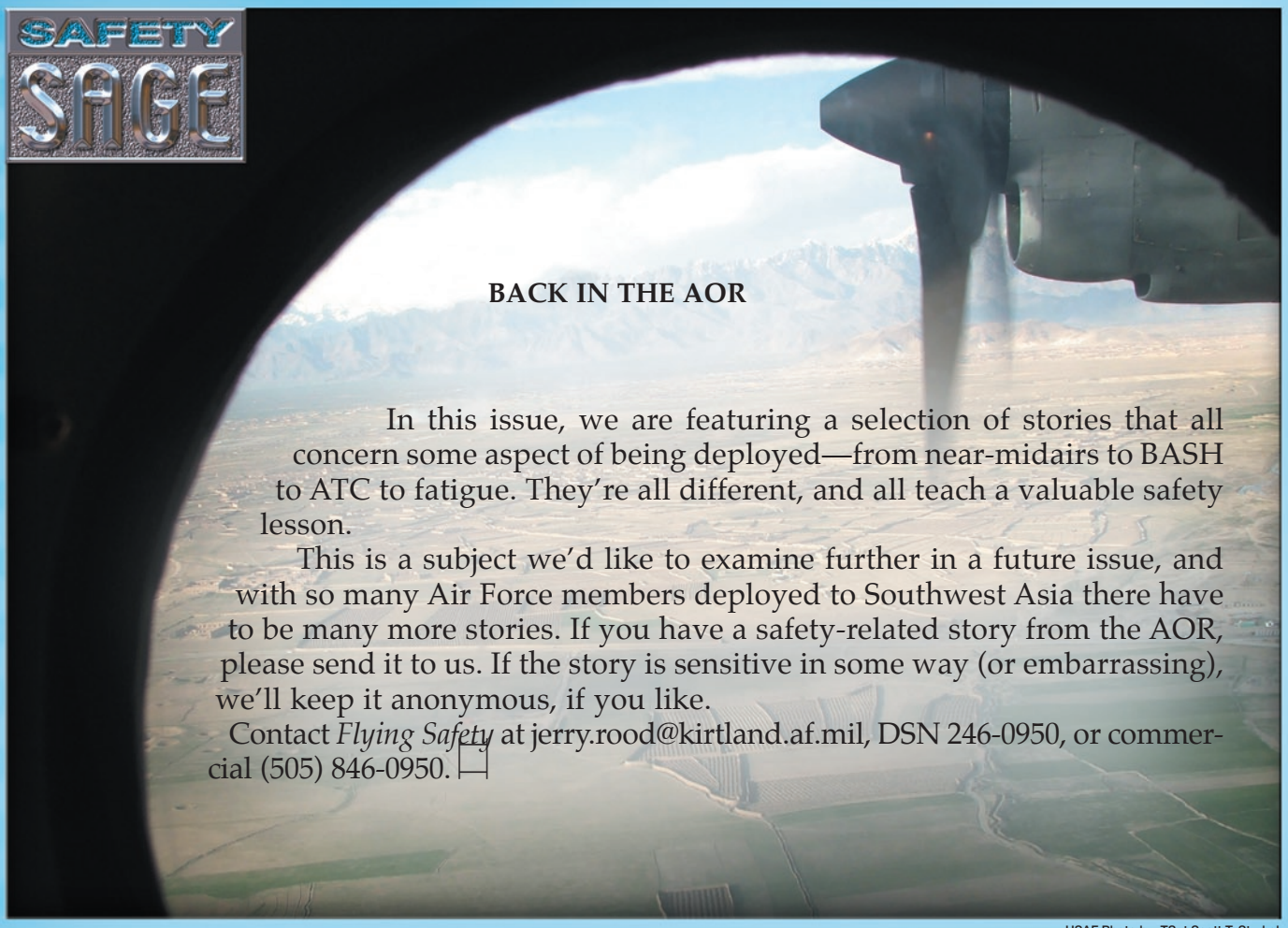

## BACK IN THE AOR

In this issue, we are featuring a selection of stories that all concern some aspect of being deployed—from near-midairs to BASH to ATC to fatigue. They're all different, and all teach a valuable safety lesson.

This is a subject we'd like to examine further in a future issue, and with so many Air Force members deployed to Southwest Asia there have to be many more stories. If you have a safety-related story from the AOR, please send it to us. If the story is sensitive in some way (or embarrassing), we'll keep it anonymous, if you like.

Contact *Flying Safety* at jerry.rood@kirtland.af.mil, DSN 246-0950, or commercial (505) 846-0950.

USAF Photo by TSgt Scott T. Sturkol





**DEPARTMENT OF THE AIR FORCE — THE CHIEF OF SAFETY, USAF**

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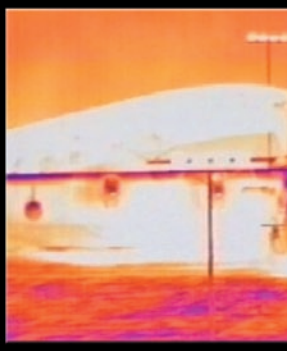


**LT COL DOUGLAS P. WEITZEL**
**58 SOW/SE**
**Kirtland AFB NM**

# Inconceivable

As I watched the security surveillance video of the mishap for the fifth time, I could only think of one thing: the image of actor Wallace Shawn as Vizzini in 'The Princess Bride,' shouting the word "Inconceivable!" As I viewed the video of the full power C-130 engine run mishap for the sixth time, I still couldn't believe what I saw happen. I couldn't believe it was even possible. It was inconceivable!

Let me set the stage first. A C-130 Hercules maintenance team prepared for a normal full-power engine run at a deployed location. Due to recent ramp construction, this was the first time an engine run had been accomplished in this position with the aircraft oriented north-south. Now, technically this was not an official engine run location; however, it was located next to one. I would have had no problem signing off on the request, had it been sent to my office.

Second, this is an Air Expeditionary Wing. This ramp was constructed of AM-2 airfield matting. This is metal matting approximately two feet by eight feet, linked together. It has been used here for years to form a parking ramp and taxiway. To provide additional space behind the aircraft, some M19 matting was positioned on opposite sides of the ramp. This four-foot square matting weighed 80 pounds per piece and was linked 12 feet deep and 400 feet along the length of the ramp. The area right behind the four aircraft parking locations was extended another 16 feet in order to help aircraft loading operations. The M19 matting was not connected in any way to the AM-2 of the main ramp, leaving about a 2-3 inch gap between the two surfaces.

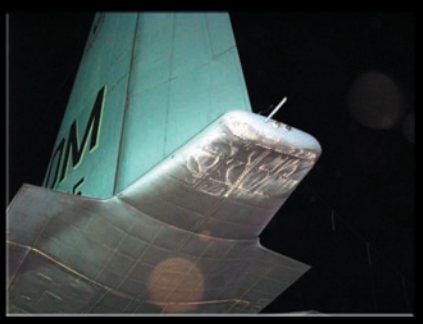
About 90 seconds into the engine run, the inconceivable happened. Propwash over the top of the matting at the tail of the aircraft reaches about 140 knots, according to the C-130 Dash-One. High velocity over the top of the surface, compared to almost zero underneath, and—presto!—you have an airfoil! Only this one was 14 feet long and 400 feet wide.

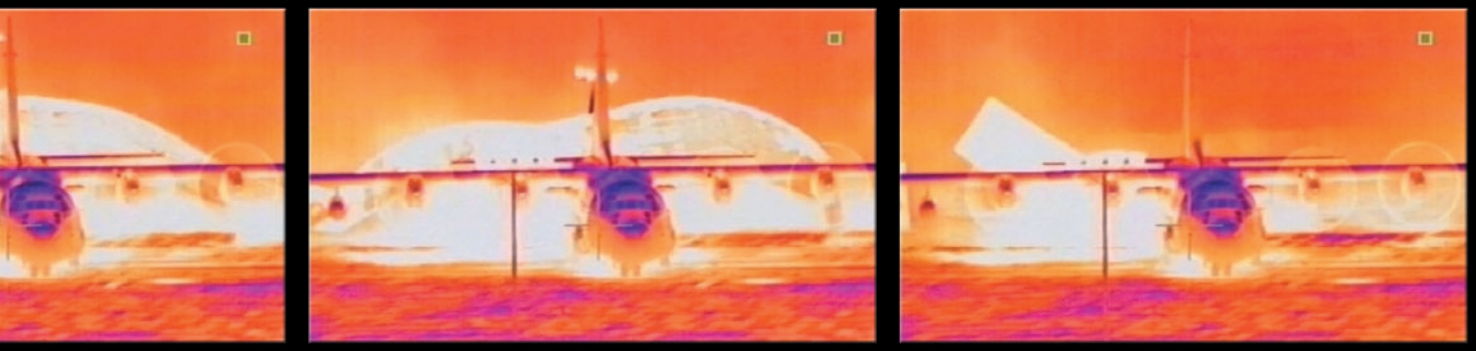
The video continued on, showing the matting acting just like a wing, fluttering up and down behind the aircraft. For about eight seconds, the matting stayed together and then it broke apart. The liberated matting was about 12 feet by 300 feet, and weighed about 18,000 pounds. It flew up into the beaver tail of the C-130, then continued flying aft, away from the aircraft, and subsequently, contacted a light pole. Contact with the light pole initiated 'catastrophic' failure of the matting, causing it to break into its smaller pieces and tumble back to the earth.

Despite hitting the beaver tail of the C-130 and damaging the light pole and security sensors, total damage was under $35,000. We were very lucky that we did not damage some costly systems on this aircraft.

In the aftermath of this mishap, I started to investigate this type of occurrence. Was I the only one who didn't see this risk? Had something like this happened before? Should we have known better?

My first step was the Air Force Safety Automated System (AFSAS). I limited the search to just C-130s, but could not find an instance of anything like this happening before. I remember my instructor at safety school teaching that there are no new accidents. Had I found an exception? As the notifica-



Photos Courtesy of Author

tion of the mishap was distributed to MAJCOM and theater safety channels, everyone seemed to be amazed. While there have been mishaps with matting before, I could not find an instance of matting forming a giant wing.

So, was this a preventable accident? Was it truly 'Inconceivable'? Unfortunately, I have to say: yes, it was preventable, for two reasons.

Soon after this incident, a Category 4 hurricane approached the Gulf Coast. I thought I should compare the propwash velocities to hurricane categories. Now, wind in excess of 135 knots (not miles per hour) is actually a Category 5, so the area behind the aircraft experienced up to a Category 5 hurricane. Before this incident, while looking at the engine run area, I thought the propwash would be fine. But as I changed mindset and said, "What if a Category 5 hurricane were to hit this engine-run area?" I knew I would have immediately been concerned with the matting. So, translating numbers from the book into a natural phenomenon would have put it into better perspective and prevented the mishap.

The second reason I think this was preventable came in the form of an e-mail. Our base civil engineer forwarded information from higher headquarters including a matrix for every aircraft and conditions to operate on airfield matting. The matrix clearly recommended that we should not have been doing engine runs on this matting. It was a bit of information no one seemed to know about before. When the request to have an engine run on the nearby location was requested, civil engineering, maintenance, airfield management, safety and operations all approved the location. Everyone thought it was safe. This bit of information showed it clearly was not.

So, it wasn't "inconceivable" after all. While the limited number of people at our base didn't know, years of experience had been captured in the airfield matting matrix. This would have told us not to approve this area for engine runs.

### Things I Learned

The "What If" tool is one method of identifying hazards in an operational risk analysis. Obviously, you can't include things you can't even conceive of happening. But if you change the way you look at it, like comparing to a hurricane versus just a wind velocity number, it may open your mind to additional risks. It's also important to use more than just one tool to identify your hazards.

Despite something being approved and operating for months or years, you might be the one person who has the vital piece of information to prevent a mishap. This is also why it's important when you form ORM groups to include a wide variety of skill sets. If you are dealing with a flight line issue, the input of just operations and maintenance can severely limit your analysis. Civil engineering, airfield management, logistics or security forces might all provide a critical piece to the puzzle which will identify a hazard you didn't think possible.

So, keep your eyes open, continue "what-if-ing," and maybe you will be the one person with the information to prevent the "Inconceivable!" mishap.

*LC Weitzel was Chief of Safety at 386 AEW/SE from 15 May to 15 Sep 2005.*

# Safety Is Paramount In Deployed Locations

**LT COL TOM MENKER**
**386 AEW/SE**
**MAJ DAVID SIMONS**
**386 AEW/PA**

Safety is, and continues to be, one of the top priorities of the Air Force. It is a force multiplier that needs to be considered at all levels, in all sections, performing any job or task. In a war-fighting environment it is more important than ever to correctly execute procedures as the operations tempo is much quicker, the ammunition is real, and the effects of poor judgment more devastating.

When deployed, the means to ensure safe operations shifts slightly from the in-garrison mindset to the combat-arena mindset. This is the case because of high personnel turnover rates, as well as austere base conditions. The Wing Safety Office focuses its energy on three main areas: Networking with Unit Safety Representatives; spot inspections; and Full Spectrum Threat Response Plans (FSTR) and Mishap Response Plans (MRP).

1. Networking with Unit Safety Representatives (USR): Establishing a sound network via unit safety representatives and unit flight safety officers is crucial to timely identification of high risk, and equally timely risk reduction or elimination. At a deployed location, there are multiple issues that are unlikely to occur at an established airfield. These range from airfield conditions to living conditions.

2. Spot Inspections: With a rotational Air Expeditionary Force (AEF) cycle, there is limited utility to annual inspections due to massive personnel turnover and lack of programmatic ownership. What all commanders and safety officers are most concerned with is ensuring that behavior around the base matches the behavior at any garrison location.

3. FSTR and MRP: Due to massive turnover at deployed locations, the base Full Spectrum Threat Response Plan and Mishap Response Plan must be thorough and complete. Commanders at deployed locations lack the benefit of routinely exercising response plans. Combine that with high personnel turnover and the effectiveness of the response plan becomes that much more crucial. The deployed location's FSTR and MRP must be able to meet these challenges.

The biggest mindset adjustment that the Safety Office needs to achieve is to ensure this ideal: Train like you fight…fight like you train.

For pilots, maintainers, civil engineers, and services troops alike, this phrase is true. The first part of the phrase is routinely touted by operators. It ensures their training (to include planning, execution, and debriefing) resembles what they will encounter in combat.


The second part of the phrase doesn't get the necessary attention it deserves. It is human nature to want to succeed; people want nothing more than to accomplish difficult tasks. It is also human nature to cut corners in that endeavor. That is where "fight like you train" becomes important. People at many of the Air Force's forward deployed bases throughout the world routinely disregard checklists, Air Force Instructions and common sense in the name of expediency and mission accomplishment. Safety standards apply to all ranks throughout the chain of command. Every member at a deployed location is equally responsible to uphold these standards. When in doubt, you need to ask yourself, "Would I do this at my home base?" If you're uncertain of the answer, seek the guidance of a supervisor or the Wing Safety Office.

From the beginning of the deployment process, commanders and their personnel must work jointly to craft a safety mindset. Each location may be different, but a thorough analysis of the safety concerns at any base is paramount to the safety of all personnel. Don't allow the operations tempo or the continued rotation of key personnel to diminish the focus of *safety first*.

*Lt Col Tom Menker and Maj David Simons are assigned to the 386th Air Expeditionary Wing at a forward deployed location in Southwest Asia.*

USAF Photos Courtesy of Author

# Sharing The Sky

**CAPT JOHN C. THARP**
**16 SOW**
**Hurlburt Field FL**

USAF Photos by SSgt C. E. Lewis

For those of you who have deployed to the AOR recently, you know the sky can fill up quickly in a combat environment. We have become accustomed to sharing airspace with a variety of aircraft. We are all taught the proper procedures for deconfliction. It is written in publications providing guidance for a host of situations one may encounter, but sometimes the old "see and avoid" is the one that might save you.

This night started out the same as any other, with our crew receiving an intel brief and proceeding out to the plane to accomplish the mission. We had reviewed the SPINS and familiarized ourselves with the type of aircraft that might be in proximity to our working area. Again, nothing different from the previous missions we had flown. Takeoff was without incident and we proceeded to our mission area.

Shortly before arriving in our area, we checked in with ATC on what other types of aircraft would be operating in the vicinity. As usual, there was a variety of aircraft, operating at a myriad of altitudes. We were informed that there were four UAVs operating in our working area. The closest one had 1000 feet separation from our altitude. This was not unusual, so the aircraft commander just briefed the crew that those who had a window to look through should be cognizant of possible traffic.

The mission proceeded throughout the night without incident until we got involved with engaging an enemy target. Prosecution of the target was commencing when the aircraft commander looked out his window and noticed a UAV in the distance ahead. Now, it's not unusual to see one visually,

but he was able to ascertain that the UAV was now operating at our altitude. The copilot immediately made a call to ATC to obtain deconfliction, and they assured it would be passed to the UAV to return to another working altitude. The aircraft commander, copilot and engineer kept an eye on the UAV, and eventually it descended out of our altitude. For those of us in the plane without a window or view, this was a hectic time, but the aircraft commander did a good job on keeping the rest of us in the loop on where the UAV was in relation to us.

The aircraft commander estimated the UAV's distance, when at our altitude, to be over a mile and traveling in the opposite direction, so there was no immediate threat. But thankfully, we were in VFR conditions that allowed him to gain the UAV visually before we had a near-midair collision. This would have been enough action for one night, but we had one more incident to remind us how little space there is when sharing the sky.

As I stated before, we were engaging an enemy target when the first incident with a UAV occurred. After deconfliction of airspace was once again established, we continued to engage multiple targets. During the prosecution of one target, we noticed something flash across the screen in-between shots. After the engagement was over, we decided to run the tape back and see just what that flash across the screen was. Shortly after one shot impacted, and directly in the firing path, a UAV crossed our screen and appeared to be perfectly timed in-between shots. This once again had us sending messages via ATC to warn the UAV of the dangerous vector it had just flown. ATC passed on the message, and we proceeded with the rest of our mission without visual contact with any other UAVs via visual or sensor video. We returned to base without incident.

This was only my "there I was" experience of how small a sky can become with such a concentration of aircraft in a contained area. There are many other incidents involving a host of aircraft, and certainly those that were much closer calls than mine. From 1 January to 10 March 2005, there have been a total of eight HATR reports filed between various C-130 aircraft and UAVs. All have had aspects common to my story. These numbers may seem large to those who have not been in the AOR lately, but to those in my squadron this seems to confirm some of their fears. During our last squadron monthly safety meeting, a questionnaire was sent to all members asking for their inputs as to where they thought our next air mishap might occur. Although there were a variety of answers to this question, the most overwhelming response was a midair collision with a UAV.

So, our problem now is to look at both communities and decide what can be done about this situation. Are we not putting clear enough guidance into the AOR-specific publications? Is there a way for us to establish clear and concise communication between our aircraft without having to rely on third person translation through air traffic control? Does there need to be CONUS training between the communities to learn more about each other's aircraft and tactics? These questions and many others will have to be looked at in the future in order for us to mitigate this growing threat.

Clearly, we have plenty on our plates to be worried about while operating in the AOR. Taking the threat of running into one another out of the equation will allow us all to better concentrate on the mission. Will we ever be able to eliminate this problem entirely? No, but we must be willing to look at these and other options in order to keep sharing the sky.

USAF Photos by SSgt Darcie Ibidapo

# ORM @ WAR

USN Photo by PH2 (AW) Michael D. Heckman
Photo Illustration by Dan Harman

**CAPT ZACH LISTER**
**C-17A**
**McChord AFB WA**

I was most recently the deployed Detachment Commander of the C-17 Stage executing TACC-directed missions into OEF from Manas AB in Kyrgyzstan. One week after assuming operational control of the Manas Stage, a tremendous challenge presented itself to us.

After 15 hours on duty, I realized that my day was about to become much longer. My DO came to me and explained the following situation: There were two C-17 missions scheduled to go to Kandahar AB in Afghanistan, but the runway had been damaged leaving only 4000 feet of usable runway. The cargo on both jets was high priority Canadian Forces equipment that needed to get to Kandahar ASAP. Additionally, the Airfield Manager at Kandahar said that the Runway would be down to 4000 feet for the next three to 10 days. To say that the pressure to move the mission was high is an understatement.

Before I go into how we used ORM to guide the decision process, some background information on the complexities of getting C-17s into Kandahar is appropriate. First, C-17s routinely land on runways as short as 3500 feet. This is called an Assault Landing. However, certain prerequisites need to be met. The most important is having the runway marked in accordance with AFI 13-217, *Drop Zone and Landing Zone Operations*. The runway must have one of four Airfield Marking Patterns (AMP). AMP 1 through AMP 3 have a 500-foot landing zone marked in some fashion—raised panels, lights, etc. AMP 4 has no markings of any sort; this is in essence what was available at Kandahar. The problem with AMP 4 is that no aim point is identifiable. Without a known reference, or "aim point," there is no way to ensure the takeoff and landing data (TOLD) is valid for a short runway.

Secondly, due to excessive rubber deposits on the runway, as well as highway tar used to repair cracks, the runway condition reading (RCR) was poor. The NOTAM stated the following: RWY FRICTION CHARACTERISTICS ARE POOR DUE TO EXCESSIVE RUBBER DEPOSITS. DURING REPORTED WET CONDITIONS AN RCR OF 9 IS RECOMMENDED. RECOMMEND CAUTION BASED ON THE REDUCED RWY AVBL DURING THESE CONDITIONS.

Thirdly, the runway was in bad condition. The concrete and asphalt had decayed to the point of forming large holes in the runway. Some holes were as large as 10 feet by 10 feet. The depth varied from a few inches to completely through the runway down to the gravel base. Pieces of runway the size of softballs were in these holes.

As you can see, the risks involved for missions going into Kandahar at this time were considerable. We all know that in our business of military aviation the mission comes first, but we can—and must—control risks in order to persist in executing the mission. If we don't control the risks, attrition will be the enemy that defeats us, not the bad guy. So, how did we use ORM to work the problems?

First, we assessed the problems. We knew a few things:

(1) The runway at Kandahar was only 4000 feet long.

(2) The condition of the runway was such that we could expect tire and possibly landing gear damage.

(3) The potential for engine FOD was likely.

There were several unknowns:

(1) Was the TOLD going to be accurate due to the RCR?

(2) If a crew landed, would they be able to get TOLD for takeoff?

(3) Would the Kandahar airfield even allow C-17s to land?

The first night this happened, we canceled all C-17 missions going into Kandahar because there were too many unknowns and the known hazards alone were enough to place the risks higher than the benefits. As soon as the missions had been canceled, we went to work on identifying all the hazards and working to mitigate the risks. First, we called Stan/Eval to get guidance on what RCR to use. At the time, there was no official guidance on what value to use. After 36 hours of research, Stan/Eval finally issued the following guidance: Use an RCR of 16 with temperatures below 95°F and an RCR of 12 when temperatures rose above 95°F.

Second, we used the aircraft TOLD computer to determine a maximum ramp weight that balanced both fuel and cargo. We developed an ACL (Acceptable Cargo Load) for the conditions that C-17 aircraft were likely to encounter, as well as worst-case environmental conditions. Additionally, the exercise with the TOLD computer of the aircraft provided an absolute minimum runway length required that we could use for planning. Airfield Management also painted a large white line across Kandahar's runway so crews could identify the threshold of the undamaged portion of the runway. Once this line was on the runway and by obtaining approval to use the 1000-foot overrun, 5000 feet of runway was available for takeoff and landing. When all this was done, many of the variables that were previously unknown, and therefore unmanageable, were fixed. Our final act was to carefully consider the crews that we sent to Kandahar.

When these risk mitigation steps had been completed, we began sending crews to Kandahar. The most experienced crew available flew the first mission. During their pre-brief, we asked the crew to take notes and be prepared to provide as much feedback as possible after their return. When the mission was completed, the Aircraft Commander provided us with the TOLD they used for takeoff and landing, the environmental conditions, and the condition of the runway. Additionally, he confirmed the RCR values we had recommended. Up until then, the RCR values had been determined from analytical methods. His mission verified that our analysis was accurate. He also recommended we could decrease the ramp fuel by 10,000 pounds, thereby increasing the ACL by an equivalent amount. This information allowed us to refine our planning and risk assessment decisions.

In the preceding discussion, it is evident that the structured methodical approach to identifying hazards can be used under combat conditions. The salient point is that ORM does work. It helps us to break down complex problems into manageable pieces, to develop individual solutions, and then to reassemble the individual solutions into a whole again, yielding the result that we want. With our evolving culture of Safety and ORM, this is an example of how both act to enhance the mission, not hinder it.

Background Photo: US Army Spc Patrick Tharpe
USAF Photo by SSgt Ricky A. Bloom

# Deployed BASH

**MAJ WILLIAM BROWNE**
**3 WG/SEF**
**Elmendorf AFB AK**

USAF Photo
Photo Illustration by Dan Harman

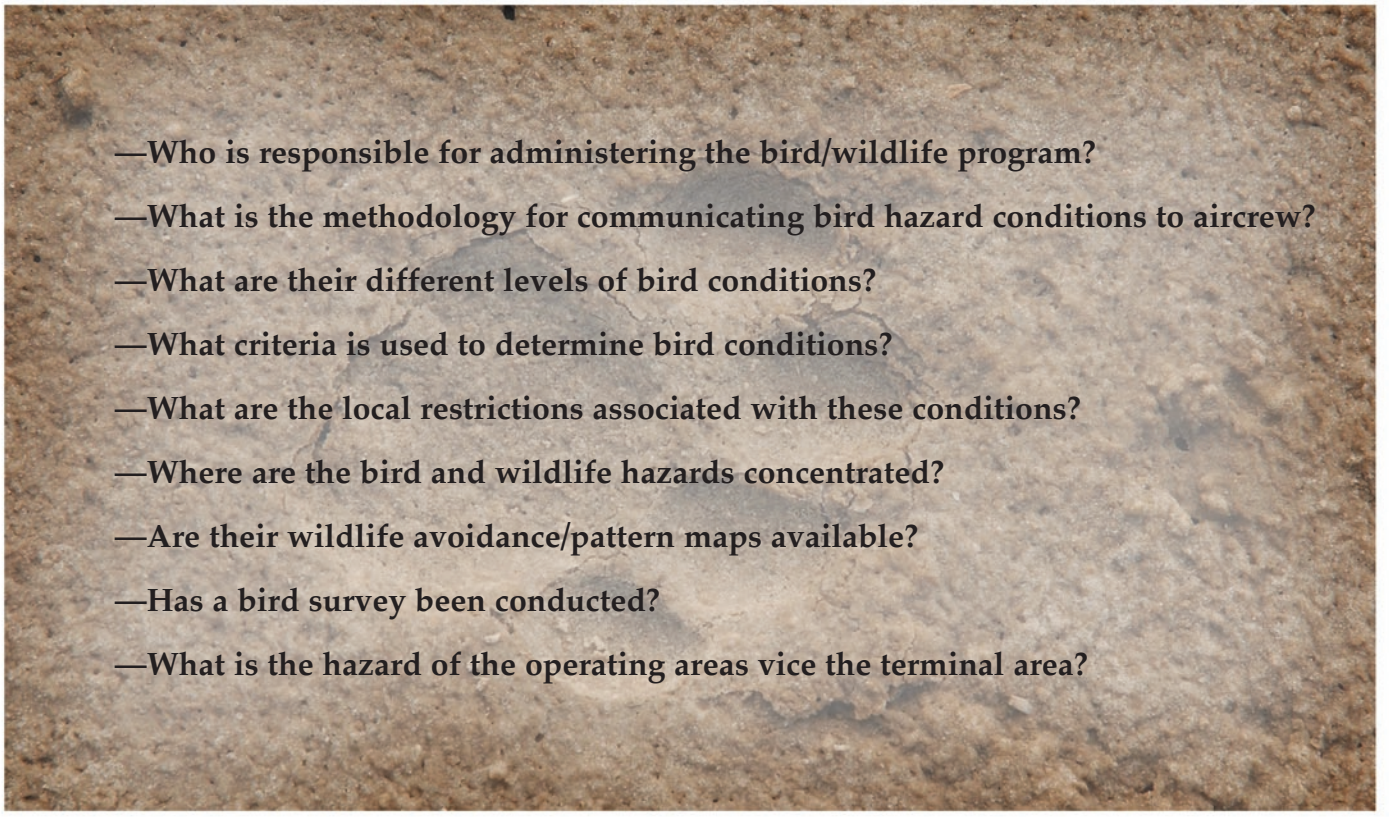
We had been in Cold Lake for two days, and this was shaping up to be a great flying stint. No SIDs, no recoveries, and miles of nearly unlimited airspace. We had all received our local area briefs the day prior, quite standard actually. I vaguely remembered some ambiguous slide about the local bird situation. I taxied my mighty Strike Eagle for a good-deal incentive flight. A beautiful VFR day with hundreds of square miles nearly all my own. What a way to show off the capabilities of the F-15E. We made a max performance takeoff to 10,000 feet, then ramped it down for a low-level mach run (how many places can you do that anymore?). Passing through 1000 AGL, Mach 1.1, I remarked on how many lakes there are out here. That comment was followed quickly by a deafening thump and wind rush as a mallard duck penetrated the canopy just above the bow and struck the young airman riding in the RCP.

A likely scenario? You betcha. Deployment to a non-US base doesn't mean the bird hazard goes away—in fact, it may be significantly greater. And because we've left the normal support structure for managing bird problems (i.e., our stellar home base BASH program), we need to work harder to prevent bird strikes.

Air Force publications don't address managing a deployed BASH program, probably because each situation can be so different. Air Force Pamphlet 91-216, *USAF Safety Deployment and Contingency Pamphlet*, merely tells you to consider BASH when on deployment. Not exactly a lot to plan on. So, whip out your dusty copy of AFPAM 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*, and review the basics. This will orient your thoughts to look at the deployed base separately from your home base situation. Realize you may be stepping into an entirely different threat.

Managing a deployed BASH program starts well before arrival at the deployed base. The first and easiest place to start gathering info is the FLIP. Check all the supplements and long-term NOTAMS available. Chances are, if there is a wildlife problem it will be listed here. Now, get yourself comfortable next to a phone and start making some calls. Your first call should be to the foreign point of contact who is managing your particular deployment (preferably an aircrew member). This will be your first taste for how developed and comprehensive the station's program is. First, get an idea of their basic program and how it's implemented, but don't step on any toes or ask them to provide you

with all the info at once. Once you get a basic idea of how they manage their program, gather some contacts. Good places to start are the same places that have a part in USAF BASH programs: flight safety, airfield management, base operations, air traffic control, and civil engineering. Keep in mind that their organizational structure and division of responsibilities may differ considerably from your own experience. Some good questions to ask:




USN Photo by PH1 Ted Banks

The depth of response (or lack of response) will give you an idea of how much work lies ahead. Now that you have an idea what you're stepping into, take a minute to analyze the program. Are you going to leave the bird program to someone else? Well, probably not. Even if they have a solid program for avoidance, you'll have to translate their restrictions into what makes sense for your unit. Likewise, you'll want to evaluate the local risks from the perspective of your MDS, as opposed to what is normally flown from the field. Things to keep in mind: formations, speeds, flight altitudes, and pattern operations.

A final call you can make is to the BASH experts at HQ/AFSC. They may have more information and resources on the specific geographic locations. It is important to accomplish as much of this work as possible before deployment. Time will be at a premium after arrival, and you may not have sufficient time to develop a solid plan.

After arrival at the deployed station, it's time to validate the information you received with the reality on the ground. The most important function is to make some initial observations. Check out any problem areas that you've learned of, and make your own survey of the airfield. Note any concentrations of birds, bird indicators, or obvious prime habitat areas. Although you may not yet have all the information, it is important to let your crews know before flight operations begin how the unit will initially mitigate the risk. Once local flying begins, use your crews to collect bird data—when, where, and what types of birds. This will probably be your most valuable source of information. The key is to be aggressive about collecting it, and equally aggressive about consolidating and briefing it to the crews.

When you encounter increased bird or wildlife problems, realize your tools to reduce the threat will be limited. If you are not satisfied with the wildlife reduction efforts, you may diplomatically make suggestions. However, most of your impact will be in mitigating the threat through modifying your flight operations. AFPAM 91-212 section 2.4 contains excellent considerations and techniques to mitigate bird hazards through modifying flight operations.

The final consideration for deployed BASH is to keep the program simple, easy to understand, and easy to manage. You cannot afford to spend large amounts of time on a sound plan after deployment. Put your time in prior to deployment, make the local area observations, and implement a simple plan to mitigate the risk.

# Bare Bones ATC

**CAPT STEVEN LONG**
160 EFS
Dannelly Field, Montgomery AL

USAF Photo
Photo Illustration by Dan Harman

You are returning from a six-hour sortie in the AOR, providing Close Air Support for OPERATION IRAQI FREEDOM (OIF) out of Base X. Today was your lucky day because you got to clean off your bomb racks supporting the troops on the ground. You even got to shoot the gun—what a day! As you enter the pattern back at Base X full of pride, you collide with a fighter from the host nation and do the "nylon let-down." You have gone from hero to zero in a matter of minutes because of a substandard air traffic environment while flying in a foreign country. This scenario is an exaggerated version of several incidents my squadron encountered during OIF that could have been much worse.

Prior to OIF, my squadron was informed that we would be deploying to a "bare bones" base. There were many new challenges to face in setting up this operation at Base X. Because I was a young captain, I spent a lot of time with a hammer performing the activities that required a strong back and a weak mind. But one challenge that I certainly didn't think about beforehand was the air traffic control situation, or lack thereof. My squadron learned very quickly that we would not be receiving the standard service we are used to in the United States.

An American combat control squadron deployed to Base X very shortly after us. Despite the quick deployment, there was a gap of a week or two where they would not be able to control us. As they waited for equipment and approach certification, and for host-nation issues to be worked out. However, the flying squadrons needed to start flying as soon as possible to maintain proficiency for the upcoming operation. So, for the first round of flying, we would be operating exclusively in the host-nation's air traffic control system.

The host-nation had several squadrons of fighter aircraft flying out of Base X. The airfield did not have any departure or arrival control. On departure, after talking to tower, you would switch to an air traffic control center frequency on your way to the working area. The foreign controller was also responsible for clearances into the working airspace. The language barrier was alive and well as we tried to communicate with this controller. While conducting our CT sorties, we had multiple flights from different countries getting cleared into the same blocks of MOA airspace without anyone knowing.

Back in the pattern, there were foreign controllers in the control tower. The American SOF was also in the tower as an extra set of ears and eyeballs, but it became very frustrating because the SOF couldn't talk on the radio directly to the American pilots. The SOF had to go through the language barrier talking to the tower controller, who then had to go back through the language barrier to talk to our pilots on the radio. To further complicate things, the host-nation would often be flying at the same times we did. Their system might have worked well for them, but throwing a bunch of American fighters into the picture made things get ugly fast. There were several conflicts in the pattern that became a big safety priority for the entire wing.

The combat control squadron was almost ready, but we needed to improve the safety of our current operation. Our flying squadron held several meetings at the end of the flying day that helped to get us on track. The meetings gave the pilots who flew that day a chance to pass on to others the areas where the conflicts were happening. Also, the SOF could share his experiences and frustrations as viewed from the control tower. This information enabled the flights to brief these areas and exercise increased vigilance when required.

In addition, a system was implemented to enable the SOF to communicate directly with the pilots during the critical phases and not have to pass information to our pilots through the tower controller and the language barrier. Flights pushed to the SOF frequency on their aux radio just prior to takeoff and on the RTB just prior to entering the traffic pattern. Approaching conflicts, as well as other SA-building information, were passed on immediately to the pilots. This system worked very well and only improved once the American radar controllers got online.

The radar controllers could give us excellent support until we got 15 to 20 miles from the airport. However, it was still the host-nation's airspace. Host-nation aircraft were not being controlled by our radar controllers and were still doing things the way they had always done them. This still left the potential conflicts in the pattern. By this point, we were strictly flying OIF sorties, so the controllers were able to give us great service to and from the AOR. On the RTB, the radar controller could arm you with the number of contacts in the pattern, etc., to give you high spatial awareness (SA) entering the pattern. This SA, along with the radio procedures discussed previously, helped to make the pattern a more pleasurable experience.

Along with the threat of a Patriot missile shooting you down, the host-nation aircraft issues in the pattern made the RTB almost as much of a threat as the AOR. The most important thing is to have American pilots talking to American controllers as much as possible. So, have them get there early and start coordinating the host-nation issues right away, if not beforehand. That way, they can begin operations as soon as possible. This will give you the opportunity to concentrate more on the thing you were sent there to do in the first place!

**"A modern, autonomous and thoroughly trained Air Force...will not alone be sufficient, but without it there can be no national security."**

**GENERAL H. H. ARNOLD**


USAF Photo

# To Clear Or Not Too Clear



**MAJ JAMES BODDY**
**39 AS**
**Dyess AFB TX**

We were in the middle of our 120-day tour in the summer of 2004 in Southwest Asia. As we crossed the halfway point of the tour, we were all starting to get anxious about getting back home. My crew and I were getting settled into operations in the Iraq and Afghanistan theaters and used to how things should go, and how the controllers and other aircraft were going to operate as well. We were not on quite the same rotation as everyone else at the time, but everyone had been in theater at least 60 days by this time just like us, and most 90 days or more. We all considered everyone else, including controllers, well-experienced in theater. The Hazardous Air Traffic Reports (HATRs) seemed to have settled down, but we always got a safety brief each time we stepped to the aircraft about other aircraft and the hazards they posed. The HATRs on each rotation seem to increase at the beginning of the rotation, and within a month or so they seem to go back down, due to the proficiency of the controllers and the aircrew operating in that region.

The Squadron Director of Operations (SDO) would always brief the Aircraft Commander each time we stepped to the aircraft. He always had his top three High Interest Items on the board where the crew signed in at the duty desk. The Items that day were:

(1) Clearing for other aircraft;
(2) SPINS;
(3) Work ATOC issues at the lowest level; and
(4) Be at the aircraft on time for loading.

Most of the time, the DO would ensure we knew the High Interest Items by asking us to tell him what they were. He would then give us a brief to be safe, and to watch out for each other in the aircraft and the good and bad guys out there around us, and any other hot items that might have come up recently. His main quote, as well as the Squadron Commander's, was, "Watch out for each other, because we are more of a hazard to each other than the guys shooting at us from the ground." (The shooting of aircraft from the bad

guys in Iraq and Afghanistan had calmed down quite a bit over the past few months, and is still decreasing as I write this.)

The mission briefing went normally with nothing out of the ordinary, and so did my step brief with the DO. We stepped on time, and the aircraft was loaded by our loadmasters, who had stepped from the briefing a few minutes earlier. The mission was planned as most other C-130 missions into Iraq from our deployed location. We had to leave our location, land at three other locations up range, and return to our home base. I hate to say it was a "vanilla" mission because we were at war. But we had no DVs on board, we had no High Vis cargo, and we had no patients to pick up and get out of the war zone, so for lack of another word the mission was "vanilla."

USAF Photo by Capt James H. Cunningham

We took off on time and made it to our first destination with no discrepancies in flight, and none on the ground. We downloaded our cargo and passengers and then got the load information for our next leg, which matched what was planned for the mission. The sun was setting at this time, and it was starting to get dark before we loaded our passengers and cargo for the next leg. The copilot made sure our flight plan and clearance was ready, and then we started engines, completed our checklists and taxied out for takeoff as the navigator set up our next leg in the flight computer. As we climbed up to altitude we discussed, as we always do, our descent into the next airfield. This ensures the entire crew is always on the same sheet of music on our plan to get into the field, with secondary and tertiary plans for backup. This usually works quite well when there is a flight restriction that pops up or a hot fire zone, or any other restriction that might come up after our prebriefing at the squadron and before we initially take off. We can then quickly switch our plan to one of the alternates and be ready.

At this point in our rotation we were working on all cylinders, and this night we were on top of it. The area controller had coordinated our primary plan with the tower and then switched us to tower when we reached the five-mile point. We were doing an NVG approach and landing at this airfield as normal for night C-130 operations in the AOR. A flight of two F/A-18s were at the 20-mile check-in point with area control right behind us in the same sector as we exited into tower's airspace. We kept our Situational Awareness up on other traffic around the field by keeping Area Control frequency on our secondary radio. When we were at three miles from the field, we heard another flight of two F/A-18s at the 20-mile checkpoint straight off the nose.

Our plan was to enter downwind for a right base to the field, and we were approaching to enter straight into downwind. The SPINS had a restriction in our preflight planning for no flights to be on downwind for a left base. As we began to enter downwind for the right base, tower asked us if we could enter a downwind for a left base. We told them there was a restriction in the SPINS to not go on that side of the field. So, we continued to enter a downwind for a right base.

As we approached midfield downwind, tower cleared a flight of two HH-53s to take off from the parallel runway we were flying directly over. Did I mention we were flying at 500 feet AGL at this point? We immediately got the hit on our TCAS when they lifted off. They were just off the nose of our aircraft. We got a resolution advisory to climb. I maneuvered the aircraft to climb and offset from the helicopters. I could only assume that the tower controller thought we were on the downwind for the left base.

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# GET-HOME-ITIS

USAF Photos
Photo Illustration by Dan Harman

**CAPT DAVE SIRESS**
**71 FTW**
**Vance AFB OK**

As we continue our high operations tempo lifestyle, it becomes important to reflect on the need to emphasize safety in all of our taskings. How many times have you been on a crew where a significant factor in your decision-making process was a function of how much you wanted to do the mission? I have been guilty of this a few times myself. It is easy to "lean forward" when you feel the mission is either highly important or a "good deal." Unfortunately, for those of you who fill out ORM scores, I have yet to see an ORM worksheet which assigns a point value corresponding to your desire (or lack thereof) to do the mission. As professional aviators, we need to conscientiously focus on making the right decision based on crew and mission stressors, and not on our individual or crew desires regarding mission accomplishment.

My story goes back a few years, when I was a copilot flying KC-135s. Tanker Airlift Control Center tasked our crew with a no-notice deployment to the Middle East, where we were to sustain operations for an "indefinite" amount of time. We were not expecting to be deployed, and our time there was not especially enjoyable. Obviously, by the time our redeployment orders came, we were more than ready to go home. Our tasking was to head east into Guam to pick up some cargo and RON. The next day, we were scheduled to deliver our cargo to Travis AFB, spend the night, and then to fly home to Fairchild AFB.

As luck would have it, shortly after takeoff, we learned that our autopilot would not engage. Our first thought was, naturally, "You've got to be kidding!" The scheduled flight time to Guam

exceeded our crew duty day limitation with the autopilot inoperative, so the smart decision would have been to return to our departure field and await maintenance. Unfortunately, our desire to get home outweighed our desire to do the smart thing. We decided to troubleshoot our autopilot issues en route, hoping that it would start working before we exceeded our duty day. A contributing factor to our decision was the presence of a third pilot. Although we were not technically considered an augmented crew, we felt that the spirit of the regulation was based on the need to share the flying workload with a third pilot. The second boom operator that we lacked (which would have legally made us an augmented crew) did not inhibit our ability to hand-fly the jet.

Fortunately, our autopilot started working about two hours into the flight, and the sortie was uneventful for the remainder of the mission. We were prepared to return to our departure field for maintenance, but "leaned forward," hoping for the best. The question I forced myself to consider was: Would I have done the same thing on the deployment leg rather than the re-deployment leg of the mission?

The next day, we departed Guam for Travis AFB. Again, the desire to get home started to dominate our thoughts. Upon leveling off, we discovered that our winds were much better than forecast, and that we might be able to quick-turn at Travis in order to make it home within our duty day. As the flight continued, we updated our weather and NOTAM information in case our timing would allow the quick turn. We put together a flight plan back to Fairchild, and looked at the minimum fuel requirements to make it home. To our credit, the crew determined that if anyone felt uncomfortable, we would Knock-it-off. We also made the decision that if *anything* out-of-the-ordinary happened for the remainder of the flight, we would stop for the day.

Things continued to be smooth, and our 170-knot tailwind stayed with us all the way back to the U.S. ATOC was on the ball, transient alert serviced our aircraft quickly, and the weather was perfect. We decided to press home. The quick flight home to Fairchild was uneventful, and we made it back with thirty minutes to spare on our duty day. As we started our approach, I think we all started to consider how fortunate things had turned out, and how we had probably failed to make the smartest decisions.

At the time, I was simply thrilled to be home after a long deployment. Looking back on the experience, I realize the mistakes we made and how bad the consequences could have been. I think we would have had a hard time as a crew justifying the decisions we made, had anything gone wrong. ORM is a great tool to look at personal and mission-related factors as the basis to assess risk. Personal desires, especially "get-home-itis," can have a profoundly negative affect on flight safety. I now look not only at my own motivations, but also that of my crew. I try to think what my reaction as a supervisor would be if a young crew briefed me on a similar plan.

The time to slow things down is highest when the desire to "lean forward" is greatest. I am thankful that I was able to learn my lesson the easy way.

# TOP OF THE GAME

**ANONYMOUS**

There I was, slapping myself to stay awake, eyes drooping and then suddenly popping open as they frantically accomplished a quick cross-check to see if I had missed anything. I glanced at the EWO sitting next to me…his eyes were glazed over as he stared at his Visual Display Terminal. I glanced back at my radar, confirmed we were past the large ridgeline, double-checked my altitude calibration setting and cleared the pilot from 11,000 MSL down to 7000 MSL.

I was the most exhausted I had ever been in an aircraft, flying low-level in some of the most rugged terrain on earth, and was on the final leg of a 12-hour combat sortie…in the weather. I was aligning the aircraft up on a base leg at 7000 MSL to intercept a 10 NM final to Runway 03. As the pilot began a right-hand turn to intercept final, I cleared him down on the cue out of 7000 MSL to fly the approach at a terrain following set clearance plane of 500 feet AGL.

As the aircraft rolled out on a nine-mile final and was in a descent to approximately 6000 MSL, Approach Control directed us to make an immediate right-hand turn for traffic on a 12 NM final to Runway 03. The pilot cut off the approach and started a right-hand turn to sequence in behind the traffic on final. As he began the turn, I noticed the bright green return on my radar scope running from our three o'clock to 12 o'clock position, and converging quickly. As our Obstacle Warning System began to sound, I cross-checked my Terrain Avoidance scope and saw the same bright green return, indicating a large ridgeline quickly converging with our course. I double-checked my chart, and suddenly realized the Approach controller had directed us in a right-hand turn to the east…directly toward a 10,000-foot ridgeline. At 6000 MSL there was no way we were going to out-climb the ridge. When I finally realized what had happened, I immediately directed the pilot to make an aggressive left-hand turn back towards final, avoiding the ridgeline by 1.5 NM. We managed to stay to the east of the in-bound traffic, and lined ourselves up for another 10 NM final. This time, the approach and landing were uneventful, but things could have turned out far worse. Although the controller had given us incorrect directions for our altitude, fatigue was crucial in our crew losing situational awareness (SA) during a critical phase of flight.

Looking back on the sequence of events that led up to the approach and near mishap, it's hard to see where the chain could have been broken, especially

USAF Photos
Photo Illustration by Dan Harman

in combat when necessity and benefit outweigh the risks. Easier to see are things that we could have done as a crew to better prepare ourselves for those events.

Our crew was deployed in order to augment an ongoing commitment to OPERATION IRAQI FREEDOM (OIF) by one of our sister squadrons. They had managed the stage for nearly 2 1/2 years, and we were finally able to cough up a crew to lend some relief and support. We arrived in country on 21 January and were immediately greeted by the Mission Commander. Before our bags were unpacked, he informed us that our commitment was shifting to OPERATION ENDURING FREEDOM (OEF), and that we would be leaving the following day to support that effort. The mission sets and tasks that we had been preparing for in OIF were more or less out the window. OEF presented a whole new set of challenges…a whole new mission set none of us had accomplished before. After only a few hours of sleep, we left the next day.

The day we arrived in country, the EWO and I began acquainting ourselves with the AOR. Tired and apprehensive about our first combat mission, we spent the next 12-14 hours putting together routes, terminal charts, flight plans, comm cards, execution checklists, and other mission planning tools. As we shuffled back to the hooch to catch some sleep, we now felt more prepared for the missions we would need to accomplish.

Forty-five minutes after I lay my head down on the pillow, our pagers sounded. A forward operating base was one day away from running out of fuel. The weather was beginning to clear up, and leadership felt the condition of the dirt strip was sufficient for us to land to fill up their fuel bladders. Weather was supposed to become increasingly worse as the week went on, so it was now or never. So, there I was…about to leave on a 12-hour mission I had never done, into a dirt strip where I had never been, in the middle of terrain that is phenomenal….and all on 45 minutes of sleep. I don't recall in training the day they taught us how to prepare for this.

There will be times, especially in combat, when we are asked to perform outside the boundaries of the regulations and guidelines we are used to following. There was no manual I could reference on how to maximize my performance on 45 minutes of sleep. However, once a risk has been identified, mitigation procedures can be developed, and over the course of the next 27 missions, our crew incorporated procedures that helped us battle this continuous fatigue problem. We began flying hard altitudes versus low-level altitudes in the more permissive environments to minimize the workload on the navigator and flying pilot. Flight time and primary navigation time was given to the copilot and EWO during non-critical phases of flight to allow the Aircraft Commander and the Navigator time to rest before terminal events.

The most important portions of the mission, and the most critical, are terminal events. Whether it be an unfamiliar Landing Zone or a blind Drop Zone, the crew needs to be focused with their "heads in the game" when that terminal event occurs. A lot of times, a quiet cockpit is a sign of a well-oiled crew, but you need to be careful not to confuse this with fatigue. We found as the day went on that the more we talked, and the earlier we talked, about terminal events, the smoother they went.

Another luxury we had in our aircraft was the ability to get up and move around. If you are 30 minutes from a critical phase of flight and you find yourself fading, get up and walk around…do some push-ups…start talking…do whatever you need to do in order to be on top of your game when that event occurs.

Battling fatigue in a crew aircraft is a crew responsibility. If you find yourself struggling, chances are everyone else is, too. At home station, fatigue and crew rest are rarely a big issue, but when you deploy in combat, it becomes a much larger risk. Identify that risk early, come up with a plan to mitigate it, and make sure your crew is at the "top of their game" in the 24th hour.


# Combat ORM In Small Words You Can Understand

**CAPT CASEY MOORES**
**347 RQW**
**Moody AFB GA**

USAF Photo
Photo Illustration by Dan Harman

You're deployed. You're being launched on a real-life combat mission. You're about to do what you've been trained to do. Operational Risk Management (ORM)? That's just for training. That doesn't exist in a combat environment, right? Well, you can roll your eyes when I say "Wrong," but it is wrong. ORM, however, it is accomplished, at whichever level the decision is made, is always necessary. It exists at all levels, and for every mission you fly. Too many of us believe in our "Anytime, Anywhere," "No Mission Too Demanding," or "That Others May Live" patches to mean despite the risk. I work in rescue, and while self-sacrifice is one of our major tenets, another is that we don't create more survivors. I'd like to extend that to say we don't create more casualties, at least not until we've really thought about what we're accomplishing in the process. Really thinking about it is the key, making a decision based on all the facts, the risk versus the gain. Is the mission worth it?

The Air Force breaks ORM into six steps:

1. Identify the Hazard
2. Assess the Risk
3. Analyze Risk Control Measures
4. Make Control Decisions
5. Implement Risk Controls
6. Supervise and Review

For aircrews, ORM is done on a mission-by-mission basis. Identifying hazards and assessing risks boils down to asking, "What can kill us tonight?" That may sound harsh, but that is the bottom line. Looking at the "Five Ms" of ORM—Man, Media, Machine, Mission, and Management—you determine where the hazards are and how badly they can affect you.

For example:

Are the crewmembers well rested? Are they having any personal problems? Are they mission capable? Have they flown several days or nights in a row, etc.? (Man) How's the weather? If at night, what's the illumination? If in combat, what are the threats? What's the terrain like in the objective area, etc.?(Media) What is the status of the aircraft? What systems might be broken/degraded and how do they affect your ability to deal with other hazards? (Machine) What kind of higher-risk-than-normal events does the mission entail? (Mission)

Once the risks have been thought out, the ORM concept helps us see where the trouble areas are so we can, as a crew, and perhaps with the help of our commander, decide what can be done to minimize the impact of those risks. This assessment should be ongoing throughout the mission as a quick check to determine if changing circumstances are pushing the crew past the point they can reasonably accomplish the mission.

At the crew level, it can only be expected that ORM will be done in order to identify and mitigate risks. Whether or not a crew is given the freedom to cancel a mission should it determine the risk is too high, it will seldom do so. This is because we all want to do our job. We usually do our risk assessment with the assumption we will accomplish the mission because that is what we're supposed to do. That is why we spent countless hours training, and that is what we have spent countless hours sitting alert waiting to do. Similar to what I said above, too many of us believe our patches to mean that if a mission has been assigned, it *will* be flown. Now, there can usually be a good number of measures put into place to ensure that a lot of these risks are mitigated before the mission is even assigned, such as alert rotations designed to ensure good crew rest. Though a lot of things involved in our way of doing business can mitigate some risks from the start, we all know that things change. This is where an Air Force ORM tenet comes into play—"making risk decisions at the appropriate level."

This is where the ORM concept can get a little tricky. Many units have an ORM assessment sheet or program where the crew fills out all the forseen risks, makes the computation and the sheet/program determines how high the risk is and what corresponding level of leadership can make the call. While deployed, this risk assessment technique may or may not be utilized, but whether the crew or the deployed commander accomplishes it, some form of risk management still needs to be done.

On a deployment, the "appropriate level" should really be the agency that assigned the mission in the first place. Once the mission is assigned to a unit, both crew and commander operate under the assumption that the mission will be flown. So, arises the problem—the agency assigning the mission seldom has any concept about what is the overall risk for a given crew on a given mission. Meanwhile, the commander of that crew may not be capable, or may not know they are capable, of making the decision to cancel the mission based on the risk assessment. In my experience, this is where the breakdown has occurred. There is an assumption from the bottom that a mission assigned means those above have determined that the benefits outweigh the risk. However, there is an assumption from the top that if a unit assesses they cannot reasonably accomplish a mission, they will say so.

So, for what it is worth, here is a possible solution. To begin, appropriate agency assigns the mission. In my job, that is the Joint Search and Rescue Center, the overseeing authority on rescue missions. Then the commander, either before or after alerting the crew, performs the ORM assessment for that crew. If a squadron sets it up right, the ORM assessment seldom takes more than a minute or two to fill out. If the crew has already been alerted, the commander can ask the crew if there are any other major concerns before sending them out the door to launch. Then the commander sends that assessment back up to the assigning agency, who can now make a better determination of the risks involved with assigning that mission. Based on our current Chat capabilities and the availability of information to that deployed commander, this process should take no more than a few minutes.

So, there's a quick, dirty, layman's-terms approach to deployed or "combat" ORM. It may seem like common sense in a lot of ways, but, as we all know, common sense is not common. Now, let's turn it back around. You just got home from a deployment. Your mindset is such that for every mission assigned, your crew *will* accomplish the mission. However, now there is no wounded soldier needing pick up, no medical supplies, food or ammo that need immediate delivery, no target that needs to be attacked. It is a training mission. Training missions are important to keep us proficient, but as the weather rolls in and the plane breaks, the crew commander must reassess and determine when the training accomplishment is no longer worth the increased likelihood of a crashed aircraft.

ORM is a concept meant to keep us alive in spite of ourselves, so let's use it.

# OPS TOPICS

**Editor's Note: The following accounts are from actual mishaps. They have been screened to prevent the release of privileged information.**

Here are a few tidbits about icing, loads gone wrong and maintenance setting up an aircrew for trouble. Make sure you know what is going to happen and others don't damage your aircraft, or you put yourself in a compromising position.

### Thumped By Ice

The T-37 sortie was planned as a return leg from an air show. Approximately 45 minutes into the flight, cruising at FL180 in the clouds, moderate icing began to accumulate on the aircraft. The aircrew requested a descent from center and departed FL180 for 11,000 feet. On the descent, the ice began to melt away from the wings and the windscreen. After all the visible ice had melted from the aircraft, a thump was heard in the No. 2 engine. Shortly thereafter, a second thump was heard in the No. 2 engine followed immediately by steadily decreasing engine rpm. The situation was analyzed as an in-flight engine failure. The emergency air start boldface was initially applied without success. However, the engine started on the second attempt. The aircrew requested initial for the active at a nearby airfield and informed center of the emergency. A modified single-engine overhead was flown to a full stop and the crew landed without further incident.

The engine was removed from the aircraft for further investigation, and maintenance was unable to duplicate the flameout or find any defects. The engine was run in the test cell and operated normally. The mishap engine was returned to stock to be used as a fully-operational spare on the first operational check flight. We were lucky because nothing was damaged from ice ingestion. The big questions I have here are:

—Did the aircrew know they were facing icing conditions?

—Did they take all precautions to avoid being in icing conditions to begin with?

When you make your plans, make sure you think about icing on the ground and what your actions should be once in the air.

### Winch It, Winch It Good

During loading operations of a US Army OH-58D helicopter onto a C-130H, an incident occurred which caused minor damage to both aircraft. The C-130 loadmaster (LM) was operating the winch (PN 41750-3-41BG) in the forward area of the cargo compartment. His view of the incident helicopter was partially obstructed by another helicopter that had already been successfully loaded. Army personnel were assisting in loading the helicopter by guiding it from the rear of the C-130. During the winching operations, the LM heard someone yell, "Stop!" The LM immediately released the winch handle, then turned off the power switch. At this time, as the helicopter was at the peak of the C-130 ramp, the winch cable spool began to unwind and the helicopter began rolling down the ramp, causing the tail stinger and vertical fin to contact the "hog trough" on the cargo compartment ceiling of the C-130. Immediately after the LM noticed the spool unwinding, he pulled back on the winch handle, which stopped the unwinding action.

Army personnel participating in loading operations jumped clear of the helicopter to avoid injury. One soldier received a minor knee injury, but he did not desire medical attention. The LM then looked at the ratchet brake release lever and noticed it was no longer in the up position as it had been verified prior to the start of winching operations. The LM held back the lever until the helicopter was restrained. Three instructor/evaluator loadmasters were onboard the aircraft and all agreed that both Army and Air Force personnel followed proper loading/winching procedures.

Initial investigation by Dash 21 and Quality Assurance (QA) found that the C-130 cargo winch did not have any historical evidence to warrant an investigation of this problem and considered it to be an isolated case. Flight safety personnel, however, contacted safety personnel at two other airfields, and it was revealed that the same problem with the winch malfunctioning has occurred at least three times in the last year and a half at one base alone. Because the damage to the aircraft in all these cases has been relatively minor and injured members have not sought medical attention, all the incidents have gone unreported.

All the Air Force and Army personnel interviewed say that they have no confidence in the C-130 winches. Army personnel are trained to just jump out of the way at the first indication of a problem because the winches are so unreliable. Many USAF loadmasters complain about the winches and ask why we don't use the more reliable HCU-9A type wench used on the C-141.

QA did accomplish a quality deficiency report (QDR) on the winch and after several months trying to initiate a test for the mishap winch, one was finally conducted by Depot. A test was performed to see if the ratchet brake on the winch would come unlatched when a load was applied. The setup for the test was designed to load the winch to its maximum capacity. During the test setup, the ratchet brake would not catch every time. After repeatedly powering up and running the winch cable in and out, the ratchet spring failed to engage the ratchet brake 50 percent of the time. There are only supposed to be two positions for the ratchet brake, up (engaged) or down (disengaged). With a weak ratchet spring, however, a third position was noted. The ratchet brake could be in the up position, but be disengaged. A worn ratchet brake spring was the cause of this mishap, resulting in a ratchet brake position not selected by the operator. Efforts are still being made to add the results of that test to the QDR report.

Just a heads-up to all you Herc airlifters to watch out for the winch, and know that efforts are under way through your active flight safety personnel to try and remedy the situation. If you have any winch incidents, make sure you report them, as that is more ammo for safety to use to ensure your equipment performs as required.

### Load Gone Wrong

While on an OEF mission, the aircraft was scheduled to stop at a stateside base for fuel and cargo. The cargo consisted of both rolling stock and three ISU 90s. The loadmasters had finished loading the rolling stock and configured the rear cargo compartment for logistics right-side loading. The loadmasters removed the ramp toes instead of moving them from the high to the low position for palletized cargo. After the reconfiguration, ramp service marshalled the 60k loader into position. However, instead of aligning the loader rail with the aircraft logistic rail, the marshaller aligned the first pallet with the aircraft logistic rail. The first pallet was then successfully loaded. While the loadmasters were securing the first pallet into position, the 60k loader driver moved the second pallet forward to preposition it for loading. Because the pallets were stacked for logistic loading, they were not in line with one another, but staggered by a few inches. Since the first pallet was used for alignment instead of the loader rail, the second pallet was too far to the right to be loaded onto the aircraft. When the driver moved the pallet forward, without a spotter, the ISU 90 struck the rear cargo door frame resulting in $2000 of fuselage damage. When the driver heard the contact, he backed the pallet away from the aircraft and ceased operations. The damage resulted in a tail swap and mission delay.

What could have prevented this delay and extra work? Had the ramp toes been in place, the 60k loader would have been further behind the aircraft and the driver would have had a better view of the fuselage, and the pallet would have been a safe distance from the aircraft even as it was moved forward. Also, if the driver had used a spotter and the marshaller aligned the loader correctly, the mishap would have been prevented. How would you have prevented this simple mishap that led to a lot of extra work?

### Unintentional Ground Power Check

A C-17 taxied out and then returned to its original parking spot for EFCS resets on the warning annunciator panel. The aircraft and crew waited with engines running for maintenance to test the system. A maintenance specialist did discover the problem and IAW tech data performed a rotary electro-mechanical actuator operational checkout. How-ever, the tech order procedure does not identify any safety conditions or warnings. The tech data also does not specify whether aircraft engines must be shut down or can be running when performing this operational checkout. The maintenance specialist performed the checkout while the aircraft engines were still running and the aircrew was in the seats. Step 20 of the procedure automatically moves all throttle levers to full and back to idle. This resulted in extremely high jet blast that did not cause any significant property damage or injuries, but had the potential to do so.

When was the last time you had a maintenance problem and kept things running? Do you know all the implications of the operational checks that are performed? Remember, as the aircraft commander, you are responsible for anything and everything that happens. Make sure you don't get caught in a Catch-22.

# Maintenance Matters

**Editor's Note: The following accounts are from actual mishaps. They have been screened to prevent the release of privileged information.**

### Who's Teaching Who

A maintenance training crew consisting of students and one field training detachment (FTD) instructor were performing a three-system general hydraulic bleed and leak check on an F-15 for a training requirement. Upon arrival at the aircraft, the instructor noticed the forward main landing gear doors opened with no safety pins installed. Having seen this situation before, the instructor knew the gear doors would close once hydraulic pressure was applied. The students attached the hydraulic test stand to the aircraft and continued with the bleed and leak checks.

After completion of the bleed and leak checks, the instructor was performing follow-on maintenance (FOM) servicing of the utility system reservoir, when he noticed the hydraulic test stand hose was caught between the right forward main landing gear door and the airframe, damaging the forward main landing gear door beyond repair. Do you think the instructor should have said or done something about the safety pins by now?

In the external hydraulic power application and removal tech data, it states: "If main landing gear forward doors are open, make sure landing gear forward door safety pins are installed." Prior to step four, there is a warning stating, "To prevent injury to personnel or damage to equipment, area around landing gear wheel wells must be clear before applying external hydraulic power."

What caused this mishap? The instructor noticed the missing safety pins, but failed to install them. The students initially connected the hydraulic test stand too close to the aircraft to meet tech order safety criteria, so the students repositioned the test stand and took the slack out of the hoses. However, the students and instructor did not comply with a visual inspection to ensure proper clearance between the aircraft and hoses. The tech data has warnings and cautions, stating, "To prevent injury to personnel or damage to equipment, area around landing gear wheel wells must be clear before applying external hydraulic power."

The bottom line of this mishap is that the instructor noticed a safety violation and failed to stop the task or correct the condition. Isn't the instructor supposed to be the smart one during training? Warnings and cautions are in the tech data for a reason, and if you are teaching someone, formal or informal, make sure the warnings and cautions are part of that training.

### $O_2$ Burns

A B-52 maintenance specialist sustained second degree burns to his right hand from holding a gaseous oxygen supply hose during red-ball maintenance. Two workers (W1 and W2) responded to a red-ball call from a B-52 aircrew that reported a constant air flow from the bomb-navigator's oxygen regulator. When they entered the aircraft cockpit, W2 loosened the four set screws holding the oxygen regulator to the aircraft console. As he lifted the oxygen regulator out of the console, just far enough to expose oxygen supply hose connections on the back of the regulator, the gaseous oxygen supply hose came free from the regulator. W1 reacted spontaneously by grabbing the oxygen supply hose with his right hand and placing it to the regulator nipple, while W2 tightened the fitting. W2 then positioned the regulator back into the console and secured the four quick-release fasteners. Both workers returned to the shop and reported everything was alright. After a short while, W1 noticed his right hand began to hurt. The shop supervisor transported W1 to the base clinic where he was treated for gaseous oxygen burns and placed on three days quarters.

During this red-ball, aircraft engines were kept running while W1 and W2 began to troubleshoot the constant air flow problem from the bomb-navigator's oxygen regulator. In order for the oxygen hose to come loose, over an unknown period of time, the oxygen supply hose fitting possibly backed off from vibration because it had not been properly torqued when last removed from the regulator nipple. As the crew was re-attaching the oxygen supply hose to the oxygen regulator nipple, W1 held the hose with his bare right hand for approximately one minute. The outer surface of the hose began to freeze due to the escaping high pressure gaseous oxygen, due to electrical power to the oxygen regulator not being de-energized in accordance with the tech data, which states, "Do not commence oxygen servicing if aircraft electrical system is energized." W1 also failed to don personal protective equipment (PPE) prior to handling the oxygen supply hose per tech order: "Servicing personnel shall wear personal protective equipment required for gaseous or liquid oxygen servicing."

Another tech data violation was when W2 did not torque the oxygen supply hose fitting to the stated 100 to 125 inch-pounds. As we have seen in the above two mishaps, tech data is there for a reason and must be followed.

Would you have done anything differently?

**Where Does The AGE Go?**

The U-2 was parked in a shelter awaiting fuel for its next scheduled sortie. The aircraft in the adjoining shelter required external power for multiple-system preflight checks prior to launch. Since tech data does not allow aircraft refueling with power applied to the adjoining sheltered aircraft, the flight line expeditor decided to have the aircraft and all support equipment in the shelter towed out front. The tow crew consisted of six workers: worker one (W1)—tow supervisor, worker two (W2)—nose walker, worker three (W3)—chock walker, worker four (W4)—right wing walker, worker five (W5)—tug driver, and worker six (W6)—left wing walker.

When W5 arrived with the tow vehicle, the tow bar was already connected to the tail landing gear of the aircraft. W5 honked the horn and W1 stepped outside. W5 handed W1 the towing checklist, and W1 marshalled the tug into the shelter and connected the tow bar to the tow vehicle. As the connection to the tow bar was made, W2, W3, W4 and W6 moved into their positions. W5 was directly behind the aircraft with a full view of the empennage and wing trailing edge. As W4 arrived at the right wing from the front of the aircraft, W1 gave the command, "Grounds out!" W4 removed the ground wire from the right wing and began rolling up the cord. As W4 was rolling up the cord, he began looking for obstructions forward of the wing. Without delay, W1 gave the command, "Chocks out!" W3 then removed the chocks. W1 blew the whistle and motioned W5 to proceed forward with the tow.

At no time did W4 have visual contact with W1. W1 was standing on the left side of the aircraft near the empennage to monitor the towing operation. W5 began pushing the aircraft forward. After approximately two feet, W5 encountered some resistance and stopped the tow vehicle. At the same time, W1 noticed the external air cart was on two wheels. The air cart was located on the right side of the aircraft near the right horizontal stabilizer. W1 immediately signaled W5 to stop the tow. The aircraft's right horizontal stabilizer made contact with the air cart's exhaust duct on the top of the unit. W1 instructed W5 to back the tow vehicle up to relieve pressure from the aircraft's horizontal stabilizer. After the air cart was set down on all four tires, W1 gave the commands, "Chocks and grounds in!"

The air cart received minimal damage to the exhaust section and the aircraft received damage to the right horizontal stabilizer, approximately 15 inches from the outboard edge. The stabilizer's skin was punctured and torn on the leading edge, approximately three inches wide and two to three inches above and below the leading edge.

Who is responsible for the damage? The tow supervisor has overall responsibility to ensure the operation is carried out within specified technical orders.

The tow supervisor did not:

—Give a safety briefing prior to towing the aircraft as required by the towing checklist.

—Ensure the area was clear of all unnecessary support equipment.

—Establish contact (visual or verbal) with all tow team members to ensure everyone was in position and ready for the towing operation.

In addition to the supervisor's omissions, the tug driver had a full view of the empennage and wing trailing edge prior to starting the towing operation and should have seen the air cart in front of the horizontal stabilizer prior to the towing operation. W4 had just arrived at the right wing of the aircraft and did not have time to properly inspect the area to ensure there were no obstructions in the towing path. W4 was preoccupied with rolling up the ground wire and inspecting the area forward of the right wing. Although the tug driver's main responsibility is to drive the tow vehicle, he was directly behind the horizontal stabilizer and should have seen the air cart and alerted the supervisor of the possible obstruction.

The bottom line of all this is that a tow crew is a team that relies on everyone to be active participants and double-check to ensure nothing goes wrong. In the last few years we have damaged way too many aircraft during tow operations from failures to ensure a clear path and basic failure to follow the tech data.

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The copilot, as well as the engineer and I, kept clearing for the helicopters, and the navigator kept me clear of the few restricted areas just off to the left by giving me headings with a distance to go. The copilot immediately told tower we were on the downwind for a right base. Tower then gave the helicopter a restriction to stay below 100 feet AGL until further cleared. We were now at about 750 feet AGL, and before we began our turn to base tower cleared the two F/A-18s coming in behind us for a downwind and left base. The other two F/A-18s were reporting initial at three miles.

We turned base and as we slowed to configure and then rolled out on final, the two F/A-18s came overhead and we got a resolution advisory to descend. The loadmasters were scanning quite well and gave me a verbal on where the two F/A-18s were. We looked at our TCAS more sternly to see what the altitude separation was, and we descended a bit more rapidly. The navigator cleared me to about 200 feet AGL. Tower then cleared the two F/A-18s doing the overhead to break at departure end to avoid the two F/A-18s on the left downwind. The copilot then made the "Base, gear down" call to tower. Tower stated, "Clear to land."

As we were coming down final at about a half-mile from the threshold, the downwind F/A-18s called "Gear down" to tower. Tower cleared them to land. Realizing they still could not see us and the F/A-18s which just had their top red strobe on, and how much separation we had with each other, the tower immediately told us to turn our lights on. So, on my command, the copilot turned our landing lights from IR to full-on. The navigator and the engineer were still on top of their game, backing me up on my approach and giving the appropriate calls. As we crossed the threshold, tower told the two F/A-18s to "Go around." Within a couple of seconds, those two F/A-18s flew over top of our aircraft as we landed. We then took the next available taxiway and exited, and the second set of F/A-18s came in for landing. We taxied in and shut down, and then seriously talked with one another about the approach and what had happened. We then got on with our mission because of timeline and duty-day restrictions.

I can honestly say that all of us had the hair on the back of our neck stand up during that sequence of events and knew if we had not all been on our A-game, things may not have gone so well. We finished our mission and I did the paperwork when we got back to our home base in the AOR.

It took us all to get that mission done safely, and I let the crew know it. As always, we were all clearing visually outside the aircraft and using TCAS, but this time it paid off with big dividends. Even though tower was not clear on their instruction to put us on the opposite downwind, and had phrased it as a question instead of command, we were able to avoid the helicopter traffic. We had asked ourselves if that was a command, but we all heard the question and had told them why we were on the left downwind.

The tower lost spatial awareness (SA) at that time and allowed us to have another close call with the aircraft on initial, but they caught up in time to clear up the final approach situation with us and the F/A-18s, as the fighters called gear one right after another. We were concentrating on landing more than on the other traffic at that short of final. When tower told us to turn our lights on, they realized how close the F/A-18s were to our aircraft and sent them around. We were not sure exactly where the F/A-18s were, because we only had them on TCAS and could not see them as we turned on final.

Tower is sometimes not too clear with their instructions, as in this case. Because of that, and because of all the traffic you may or may not know about, aircrew should always be clearing inside the aircraft on TCAS and visually outside as well. God was watching over us that night, and on many others, and I thank him.

USAF Photo by SSgt Quinton T. Burris


**FY06 Flight Mishaps (Oct 05)**

**1 Class A Mishap**
**0 Fatalities**
**0 Aircraft Destroyed**

**FY05 Flight Mishaps (Oct 04)**

**5 Class A Mishaps**
**1 Fatality**
**1 Aircraft Destroyed**

| | | |
|---|---|---|
| **09 Oct** | | An F-16C departed the runway on landing rollout; pilot egressed safely. |
| **20 Oct** | ✶ | An F-22A ingested an NLG safing pin into the #2 engine; no intent for flight. |
| **21 Oct** | ✶ | An MQ-9L landed short of runway; gear collapsed. |
| **24 Oct** | ✶ | An Aerostat was destroyed during a hurricane. |

- A Class A mishap is defined as one where there is loss of life, injury resulting in permanent total disability, destruction of an AF aircraft, and/or property damage/loss exceeding $1 million.
- These Class A mishap descriptions have been sanitized to protect privilege.
- Unless otherwise stated, all crewmembers successfully ejected/egressed from their aircraft.
- Reflects only USAF military fatalities.
- "✈" Denotes a destroyed aircraft.
- "✶" Denotes a Class A mishap that is of the "non-rate producer" variety. Per AFI 91-204 criteria, only those mishaps categorized as "Flight Mishaps" are used in determining overall Flight Mishap Rates. Non-rate producers include the Class A "Flight-Related," "Flight-Unmanned Vehicle," and "Ground" mishaps that are shown here for information purposes.
- Flight and ground safety statistics are updated frequently and may be viewed at the following web address: http://afsafety.af.mil/AFSC/RDBMS/Flight/stats/statspage.html.
- **Current as of 01 Nov 05**.



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*"As individuals you are each a national asset and essential to accomplishing the Air Force's mission. As a seamless team, we are able to overcome any challenge."*

**Michael W. Wynne**
**Secretary of the Air Force**