UNITED STATES AIR FORCE
FSM
MAY 2004
FLYING SAFETY MAGAZINE

There I Was...

"Knock It Off, I Said Fast Of The Banana!"

I've Got A Whale On My Tail

Welcome To The Caterpillar Club

MACE In The Crowded Skies

ORM In The AOR

Take Your Seat

FSM
FLYING SAFETY MAGAZINE

AIR FORCE RECURRING PUBLICATION 91-1

contents

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Photo Illustration by Dan Harman

U.S. AIR FORCE

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SAFETY SAGE

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Let us know what you think.

The Editor

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

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SAFETY Q&A WITH SENIOR LEADERSHIP

USAF Photo SrA Karolina Gmyrek

GENERAL ROBERT H. FOGLESONG
Commander, US Air Forces in Europe

(In response to the increased emphasis on safety by the Secretary of Defense, we wanted to get the viewpoints of senior Air Force leadership on this vital subject. This interview with Gen Robert H. Foglesong, Commander of U.S. Air Forces in Europe, is the first in a series.)

FSM: As you serve as Commander of USAFE, what are your priorities as far as improving our safety efforts?

Our Air Force has traditionally maintained a strong safety program. Except for the spike during OPERATION ENDURING FREEDOM we've experienced fewer major mishaps, despite an increasing deployment schedule. There is still plenty of room to improve, however, and Secretary Rumsfeld has challenged us over two years to reduce our 2002 mishap rate by 50%. Meeting this goal within the United States Air Forces Europe, and the Air Force at large, is a top priority for me. Beyond this top-level priority, our entire Air Force family feels the loss of a single life, both in emotional strain and reduction of combat capability. Here in USAFE, we've initiated Project SMART to help reinforce strong safety programs. Project SMART, Smartly Assessing Risk and Threats, is designed to promote a "Safety Culture" by helping and expecting people to "do it smart." We continue to expect commanders to corporately assess risks and take appropriate countermeasures to reduce and manage risks as they accomplish their missions. But Project SMART also emphasizes personal risk management. Project SMART focuses interest on a specific activity every month. For example, the March topic is "Fly SMART," because of increased flight activity and a historic trend of increased mishaps in that month. As the weather warms and people get ready to ride motorcycles, we'll use April to focus on motorcycle safety with "Ride SMART." We've developed specific metrics to track our success in the flying arena, as well as in weapons safety, industrial areas, and personal risk management. Project SMART is one of 14 other combat programs and special projects that focus and energize the command. SMART interfaces with all of the readiness programs (flightline, fitness, and care), and also with Combat Nighthawk and Intro/Exit to weave a comprehensive web of risk management. Those strong safety programs, personal risk management and disciplined procedures, are my personal priorities to improve an already good safety record and prevent even one more lost life.

FSM: What do you believe we as AF members can do to improve our safety record in flight safety?

Disciplined performance is the first step in improving our flight safety record. We have very professional and disciplined aviators and maintainers in the U.S. Air Force, but the investigations of many mishaps reveal that failure to follow established procedures was often part of the cause. The rules and procedures are in place to make the business we do as safe as we can. So discipline is the first step in improving our flight and ground safety record. Maintenance supervisors must reinforce the importance of following technical data and established procedures when performing maintenance on an aircraft. The next step is to watch out for our wingman. We need to make sure our fellow aviators are ready to fly and are operating by the book. Flight leads need to watch out for their wingman, and wingmen need to watch out for their flight leads. Supervisors at every level need to make sure each member of the team is ready to do their part. When we operate as a team with open lines of com-

munication, we can catch minor errors before they lead to more serious problems.

FSM: What do you believe we can do to improve our safety record in POV mishaps?

Despite the significant strides we've made in reducing impaired driving mishaps and in increasing the use of seatbelts, there is still much to be done. Across the Air Force, we continue to suffer needless losses due to the lack of seatbelts and child safety seats. Project SMART will help us focus high visibility campaigns such as "Click it or Ticket," which are essential elements in reducing personal injuries. However, the real solution to reducing POV mishaps in the first place is to deal with the questionable judgment and poor risk management of the driver behind the wheel. We have increased training requirements for operators of two-wheeled vehicles and we are emphasizing personal risk management for every motorist.

FSM: What special safety concerns are posed by our war efforts?

We have an aggressive deployment schedule to support the Global War on Terrorism. Sometimes, the sense of urgency to get the mission done during the high pace of war creates a perception that the rules might seem burdensome. This poses a special concern, because as I said, disciplined performance is the key. Even though it takes time to follow all the steps in a technical order, the price of missing a step is far more costly. We must train the way we fight, and we must fight the way we train; this is integral to accomplishing the mission safely. If the rules do not cover the situation, then Operational Risk Management must guide our actions more than ever. ACT—Assessing the risk, Considering the alternatives to reduce or eliminate risks and Taking appropriate action is the quick application of ORM that allows us to stop and consider our actions when the pressure is on.

FSM: Speaking of our war efforts, do you see any special concerns with the support side of aviation—our maintainers, weapons, security, supply, transportation and the rest of the Air Force?

Our maintainers and support personnel do a fantastic job of keeping our jets in the air. The attention to detail and strict adherence to technical orders while following established procedures minimizes the possibilities for safety incidents. Each member of the team is essential, and every member of the team feels the stress of war in a unique way. We have great resources available for our personnel to deal with stress. It's important for supervisors and co-workers to watch out for their personnel and each other to make sure assistance is provided when the stress gets too high. This applies both on the job and in personal lives. A strong safety program recognizes when people need help.

FSM: What role do you believe supervisors and/or co-workers play in ensuring our Air Force works and plays safely?

Supervisors need to know the activities of their personnel both on- and off-duty. They must ensure personnel have the right training and tools for every job. They must also understand and communicate the principles of ORM to help guide proper decision-making. Supervisors need to keep aware of off-duty activities and intervene when the risks exceed the benefits. The same can be said of co-workers; they are equally responsible for ensuring fellow personnel are not pushing the limits. In fact, co-workers are often the first to see a problem developing and can be the first line of defense against unsafe activities.

FSM: What role do you see ORM playing in our on- and off-duty safety efforts?

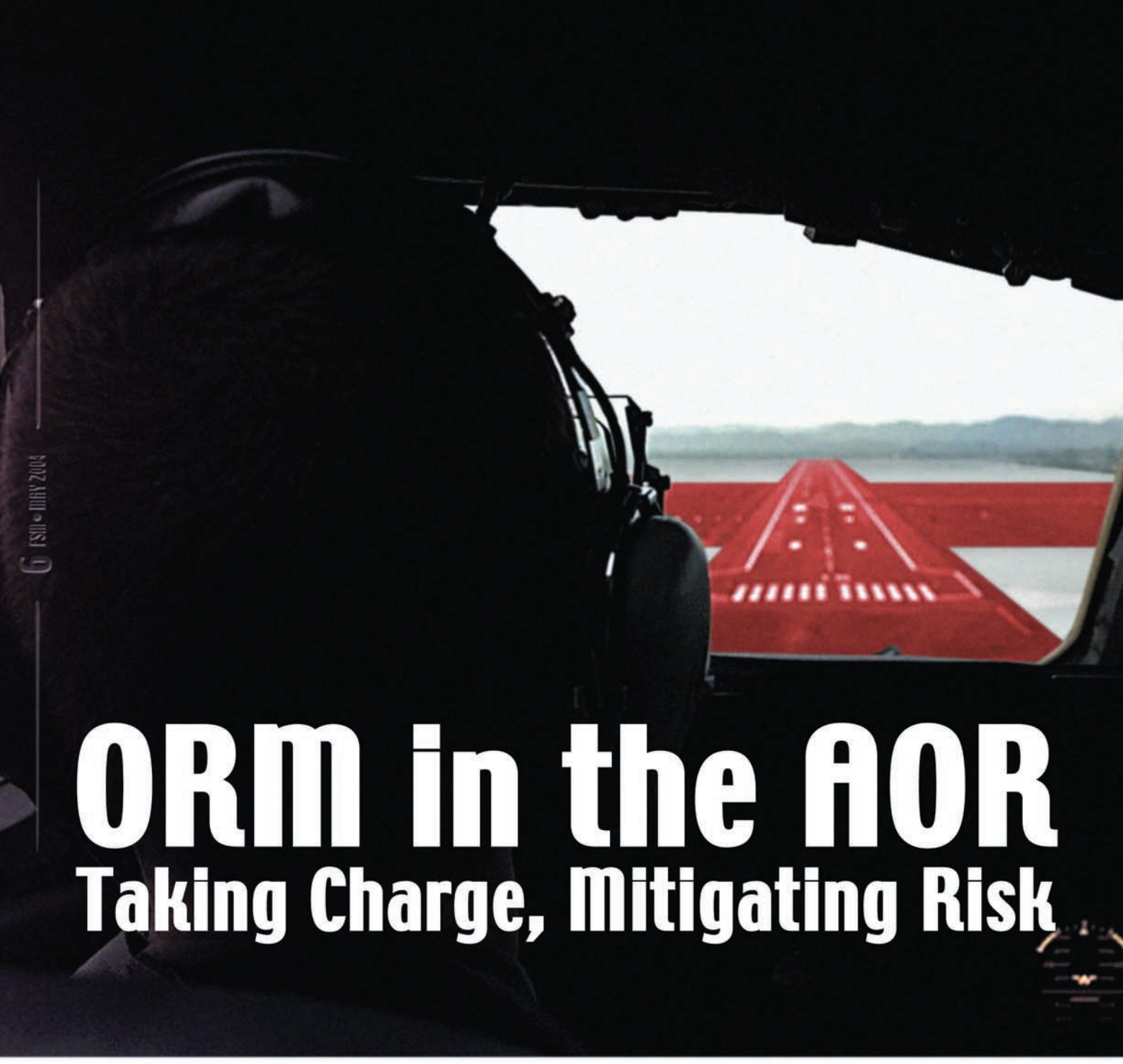
As I've already mentioned, ORM must be integral to all of our on- and off-duty activities. ORM is a tool to aid in sound decision-making techniques. Before we begin a new and complex operation within the USAF, we think through all of the risks associated with the operation. Alternative courses of action are considered and then steps are taken to reduce the risks to acceptable levels. This basic approach must be used from the most complex operations down to the simplest personal activities.

FSM: What do you see as the greatest safety problem with reference to off-duty activities?

Automobile and motorcycle accidents continue to be our leading safety issue. It's everyone's responsibility to follow the rules or make sure the driver does every time you get in or on a vehicle. The consequences of any form of risk taking are simply too great and the benefits too insignificant. It doesn't matter if that risk is alcohol, a little too much "mach," unwarranted passing, or not wearing a seatbelt, a life-changing accident can happen in an instant.

FSM: When you have completed your tour as Commander of USAFE, what would you like to have accomplished?

From a safety perspective, I would like to see concrete evidence that individuals and organizations, at every level, take seriously their responsibility to not take unwarranted risks. I would like to not have written any letters to say that a loved one isn't coming home; but I will look forward to saying we changed the mindset so that each individual carefully analyzed every action and no commanders had to write any more such letters. To sum up, I'd like to see individual responsibility become the motivator that makes all the things we've accomplished in the Combat and Special Interest programs continue as the expected way of life in USAFE. □□□□



ORM in the AOR
Taking Charge, Mitigating Risk

CAPT KEITH HENDERLONG
94 FTS
USAF Academy CO

There is one mission my crew accomplished in the Afghanistan area of responsibility (AOR) that really stands out as a mission we relied on ORM to survive. It started out as a typical C-17 airlift mission during the early stages of the operation. The FRAG took us from Doha, Qatar to Khandahar, Afghanistan, then on to Karshi Kanabad, Uzbekistan, and then finally back to Doha. The crew duty day was at its maximum for an augmented crew and our risk level was high due to unfamiliar fields and combat operations.

The first two legs of our mission flowed as planned until we landed at Karshi Kanabad, Uzbekistan. The ramp at this location operated under total blackout, nighttime conditions. The ramp was also very small and congested, with taxiways barely meeting C-17 minimums. At the time there were two C-17s on the ramp, to include our tail. You could barely see the offload operation underway on the C-17 just in front of us. As we

USAF Photo
Photo Illustration by Dan Harman

shut down, our crew decided to stay on the aircraft as much as possible due to the hectic, busy night operations underway. With this decision, we made the attempt to mitigate the risk of an accident on the ramp due to the congestion and rapid offload operation on two aircraft on a pitch-black, unfamiliar ramp.

This turned out to be a smart decision for our crew. When I was in the command post tent filing my flight plan back to Doha, I got word from the base commander that seven passengers on the ramp, walking to a C-130 for departure, were struck and run over by a large forklift carrying a pallet from the C-17 in front of our tail. Four soldiers were injured, one in critical condition. I was then informed they are considering using the C-17 in front of us for the emergency evacuation of the critical patient to Ramstein AB, Germany. The plan, according to the Air Mobility Division (AMD), was for the first C-17 to do the medevac and for us to pick up their mission into Bagram, Afghanistan at night. The only problem was that our crew was not NVG- or Bagram-certified. After later discussion with the colonel on duty at the AMD informing him of this problem, his solution was to waive the certification for our crew. At this point, we needed to take our safety into our own hands and take charge of the risk we were facing by accepting the waiver. We decided that it was an unacceptable risk to undertake when a better solution was so obvious: crew swap between the tails and we take the medevac patient to Ramstein.

It took about twenty minutes to convince the AMD of this plan, to which they took much offense, while the critically injured soldier was dying from a crushed femur, shattered hip and crushed skull. At that point in time, the AMD was more concerned with the location and flow of C-17 tails than a dying soldier. During our discussion pointing out the error in their ways in regard to AMD planning, I sent our co-pilot to start pre-flighting the jet and develop a flight plan to Ramstein. I had the other pilot get diplomatic clearances from the dip shop. And when we finally came to the agreement with the AMD, I was glad I had prepared for two reasons. First, when I hung up the phone with the colonel, we were ready to roll and the medical personnel were all set up on the jet with the patient. Second, as usual, we received no assistance from TACC or AMD in the flight planning process. I knew that filing capabilities were limited, so we decided to press on and get clearance from Air Traffic Control after takeoff. We were in the air and on our way to Ramstein 25 minutes after I hung up the phone on an angry AMD colonel. We accepted the risk in regard to not filing and departing tactically.

However, in the rush to depart and get this patient to proper medical facilities, we forgot to properly arm our Missile Warning System. As a result, shortly after departure, we received a missile launch indication and our system did not automatically dispense flares and we could not manually dispense since our system was not armed during pre-flight. In this instance, we failed as a crew to properly mitigate our manpad threat as a result of rushing through the pre-flight. Luckily, it was a false warning and there was no launch. What if it had been legitimate? It would have been a vital risk that we overlooked and ignored.

Being a medevac aircraft, we were able to pick up a clearance shortly after climbing into the enroute structure. We arrived in Ramstein with the patient still in critical condition. However, we later heard that he died at the hospital. Was it the twenty minutes I wasted on the phone with AMD that could have saved his life? Was it better to accept the risk of going into Bagram without Night Vision Goggles or being certified? What I do know is that we safely accomplished the mission of getting the patient to Ramstein even though the end result was not desirable. We did all we could within our capabilities using ORM to set the foundation for a safe and successful mission.

It is critical that you manage your own risk and not allow others to manage it for you. Only you understand the environmental hazards for a particular time and location. Only you understand the limitations of your crew. At times, you have to forcefully convey the risks and stand behind your convictions. Remember, you do not have to accept a waiver. Look at other options that will allow the mission to be successful and yet mitigate risk. You are the last defense in regard to your safety. Operational Risk Management may be your sole weapon to mitigate and defend yourself safely when operating in the AOR.

MACA

In The Crowded Skies

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Since September 11, 2001, the United States and its allies have converged on several different theatres around the world to do battle. In the combat environment—and going to and from combat—the airspace became very crowded. Mid Air Collision Avoidance (MACA) became a very real problem.

I will start this story like all stories at home in Louisiana start: "Ya'll ain't gonna believe this…" There I was, flying a typical 18-hour sortie (lovingly known as the "ass pain," for obvious reasons) in my B-52H out of a deployed location for OPERATION IRAQI FREEDOM. We were loaded down with a bomb bay and two wings full of pain for Saddam and his boys. To set the stage, realize that we flew for seven hours just to get to Iraq, flew cover as a CAS (close air support) platform for up to four hours and then flew back to the ranch. The sorties included several air refuelings and a whole bunch of circadian rhythm problems with a 24-hour duty day. This is not to whine, like any good aircrew would, only to let you know the fatigue factor. I would venture to guess, and other air crew I've talked to agree, everyone was working very long days and nights. This sets up a dangerous situation in countries where Air Traffic Control may not be the greatest and communications get jammed by all of the other aircraft fighting, and going to and from the fight. AWACS is also limited by frequencies, interservice communication problems, and that same fatigue factor that the rest of us deal with.

On a very hectic sortie in the middle of the night 20 miles south of Baghdad, I saw two very nice jets flash before my eyes. We were in the "bomber-designated altitudes," or so we thought. Well, evidently somebody didn't get the message about the altitudes for bombers. My copilot (an Instructor Pilot) was very experienced and very good at his job. I, on


USAF Photos
Photo Illustration by Dan Harman

the other hand, was a brand new Aircraft Commander with many combat sorties, but most of them from the right seat, mostly doing the comm. We were both wearing night vision goggles (NVGs) and we came to see that the two F-16 Fighting Falcons…uh, excuse me…Vipers also had their NVGs on! We knew this because we came close enough to them to see both of them looking at us. I would guess that their eyeballs were as big as the end of the goggles as soon as they saw the "stealthy" B-52 in their face. I know my eyes were as big as the wolf's in the old cartoon that saw the pretty lady and his eyeballs pop out of his head.

They were in a climbing left turn in close trail. Number 2 was roughly 500 feet below lead. We split the formation as I saw lead slightly above us and the copilot saw the one below us. We locked the columns as I pushed and he pulled. Zoooommm! Right between them. Needless to say, the copilot and I were then looking at each other, saying nothing, with the same dumbfounded looks on our faces. We couldn't believe how close we had come to having a bird strike of the metallic kind. I never found out who they were, not that it mattered. All I knew was it was time to review a few procedures and make sure we didn't foul the rules up. We dropped our ordnance and flew home uneventfully. Later the next day, after waking up and eating midnight chow (kind of like Waffle House only no beverages beforehand), I began to put some thought into how we can fix these problems.

Between the Air Force, Navy, Army and Marines, we have made great strides to improve communications during combat operations. We seem to all be able to talk or send beeps and squeaks most of the time to the people we are supposed to. We seem to be making good progress in comms with Have Quick, Satellite, etc. However, we have many MACA problems that persist in most military aircraft that could be solved with a little ingenuity and some greenbacks.

TCAS (Traffic Collision Avoidance System) is installed on many of our aircraft. However, the majority of Air Force aircraft are lacking in this department. Although it is not an end-all-be-all to avoiding traffic, it is a giant step in detecting and avoiding other traffic, both civilian and military. Many of the fighter aircraft have advanced radars that help them find and identify traffic. My fighter bros tell me the limits for their radars are azimuth and range. In the B-52, we depend on Air-to-Air TACAN and a very limited radar scope painting other aircraft. Obviously, the liability to this is the only time TACAN helps us is for refueling. So, we depend on our eyes and the Air Traffic Controllers for collision avoidance. Going across the pond, this becomes "eyes on target" only, as any yahoo could be flying out there talking to nobody!

In the civilian world, TCAS is required for all scheduled carriers (airlines). Many civilian light aircraft have found this system affordable and installed it on their planes. Why is it not affordable for us? Though we could not use this system in combat, it would be beneficial going to and from combat. This is where much of the threat came to us in Afghanistan and Iraq. I know that the Air Force is very safety minded. Why has this advantage for MACA not been put into the aircraft? My guess is cost effectiveness. And this is a valid point. How many aircraft have we run into lately? Not many. But we have come close many times. I bet you all have your own stories like mine.

I would say that with the amount that aircraft and crews cost to replace, we can't afford to lose them like we could in the past. For example, we have a very limited number of B-52s, and an even more limited number of B-2s. If we lose one B-2, we've lost five percent of our B-2 bomber capability. In the B-52, it would be 1.2 percent of the capability. The numbers don't sound huge, but the cost is. If we smacked these two planes together, the cost to the bomber force would be huge. (Lancer...ahem…BONE guys, sorry, I don't have your numbers here at safety school. I didn't mean to leave you out.) Can we afford to put TCAS in all of our planes? To answer a question with a question, can we afford not to?

Even though my experience in Iraq may not have been avoided with TCAS, it constantly reminds me of how bad it would be to get together with another airplane. With the cost of airplanes today, the cost of training crews, and the support that surrounds both, MACA has become a focal point for the Air Force. I propose the relatively cheap cost of TCAS is a way to mitigate this problem and put a serious dent in the HATRs. As operators, it is our job to impress upon leadership how valuable this tool could be in our aircraft. I could be wrong, but I don't think so…

Welcome To The Caterpillar Club

MAJOR MIKE TORREALDAY, USAFR
301 FS
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Tartan 4 saw what he described as gray/black smoke and a large orange fireball exit the back of my engine.

USAF Photo by SSgt Matthew Hannen

As professional aviators, we have a limited number of experiences from which to extract lessons for future error/mishap prevention. My hope is you can take my learning points—without experiencing my mishap—and use them to enhance your future flying operations.

I had just arrived at "Base X" from a one-year operational remote in Korea, and the current wing was ramping up for the upcoming Operational Readiness Inspection (ORI). I felt ready to contribute since I had spent the previous year practicing my operational F-16 skills during Operational Readiness Exercises (OREs) culminating in, you guessed it, an ORI.

That morning's mission was an opposed, four-ship, dry (simulated), Surface Attack Tactics (SAT) to the Utah Test and Training Range (UTTR). I was number two in the four-ship flight. The plan was to depart the base, proceed at medium altitude until inside the limits of the UTTR, where we would join the planned low-level route. Established on the low-level enroute to the Initial Point (IP), the plan was to threat react against opposing F-16s in order to update our Low Altitude Awareness Training (LOWAT) currency. Our profile concluded with a fly-up to a medium altitude attack via High Altitude Dive Bomb (HADB) deliveries followed by alternating from medium to low altitude attacks until reaching bingo fuel and returning to base.

Everything up to and including low-level entry, LOWAT threat reactions, and the first SAT attack went according to plan. As we were repositioning our flight for the second fly-up medium altitude attack, I was at approximately 2500 feet AGL, 480 KCAS and descending/accelerating. I was looking at my wingman to monitor our formation when I experienced a violent engine failure. I say "violent" because I heard a loud bang and felt like I had just hit a brick wall while experiencing rapid deceleration and having my feet knocked off the rudder pedals! I instinctively zoomed the jet, jettisoned my centerline fuel tank, turned toward the nearest emergency field (Wendover, Utah), and transmitted on the primary UHF radio, "Tartan 2, Knock It Off, I've lost my engine."

Tartan 4, trailing me by approximately two nautical miles (NM), saw what he described as gray/black smoke and a large orange fireball exit the back of my engine. During the zoom, after I had shut the engine off and attempted an air start, a grinding, growling, metal-on-metal friction sound located aft/below my seat, generally where the engine sits on the jet, began to worry me a tiny bit. While ensuring my Emergency Power Unit (EPU) was operating and my glide speed was correct for my weight, I noticed the Fan Turbine Inlet Temperature (FTIT) on my engine at or above 1100° C—not good! I placed the throttle to off, selected Secondary (SEC) Mode for engine start and continued an engine-out glide toward the emergency field. I lined up the aircraft on the longest runway and attempted an air start twice more. During the third and final attempt, I noticed the RPM gauge frozen at zero and an alarming ground rush. I estimated my altitude at approximately 2300 feet AGL and noticed the emergency runway threshold rising on my Heads Up Display (HUD). I was not going to make the runway with the altitude I had left and prepared to eject.

I was not going to make the runway with the altitude I had left and prepared to eject.

I ensured all my harness leads, belts, helmet chin strap and visor were secure, and my seat was armed. I attempted to zoom the jet in order to reach the slowest practicable airspeed before going up the rails and jettisoning the jet. All the "Old Heads" who were members of the "Caterpillar Club," those who've ejected, advised slowing down to reduce injury/pain. I felt the jet settle to the left, and I pulled on the handle, launching my seat and me into the relatively calm wind stream. The gravity forces kept my eyes closed and soon I felt like a rag doll floating in the air (seat-man separation). I was brought back to reality by the force of the opening shock and was delighted to see a big, beautiful canopy that was performing perfectly. I quickly performed my post ejection checklist and readied for a "perfect" Parachute Landing Fall (PLF). I considered it "perfect" since I walked away from it without injuries.

USAF Photo by SrA Isaac G. L. Freeman

The jet flew approximately 1.5 more miles before impacting the ground and was totally destroyed. I was standing in the middle of the Utah desert two minutes and 41 seconds after the engine failed, although I thought it took considerably less time. After I hit the ground, and again on the helicopter ride back to "Base X," I kept recounting the sequence of events from the initial deceleration to the PLF. I wanted to know if I could have done something different, or better. I felt I did the best I could and would let the investigation boards determine the answer to those questions.

After the Safety Investigation Board (SIB) and the Aircraft Investigation Board (AIB) gave me their verdict, I found that, as always, there were learning points and areas for improvement. First, I learned the engine suffered a catastrophic failure due to the liberation of the #19 stage-one fan blade. This blade suffered a high-cycle fatigue crack propagation, which caused it to liberate and strike other first stage fan blades, causing large portions of 11 out of 32 stage-one fan blades to liberate. All this metal flew back into the stage-two/three fan blades, which in turn activated a titanium fire, which consumed or liberated all High Pressure Compressor (HPC) blades and consumed sections of the Variable Stator Vanes (VSV) activation rings. In the end, the engine seized and was incapable of windmilling after it failed.

Second, I learned that at my flameout glide speed for the weight of the jet, approximately 210 KCAS, when I attempted to zoom the aircraft prior to ejection, the jet swapped ends but did not climb and kept descending at an imperceptible rate of approximately 120 feet per minute (FPM). I thought I had initiated ejection around 2000 feet AGL. I was wrong. I actually left the jet at approximately 1380 feet AGL, well below the flight manual minimum recommended 2000 feet AGL due to the imperceptible descent rate. Although I had plenty of time to perform my post ejection checklists and ready myself for a PLF, those 620 feet I lost could have been invaluable if I had experienced a parachute malfunction.

Third, I learned that when the engine seized, it significantly increased drag and decreased my flameout gliding ability. Although I had "cleaned" the jet by emergency jettisoning my external stores, this seized engine caused the equivalent configuration drag of two AIM-120 missiles, two AIM-9 missiles, four CBU-87 cluster bomb munitions, two 370-gallon external wing tanks, an Electronics Countermeasures (ECM) Pod and associated suspension equipment. The F-16 flight manual recommends a straight-in flameout landing be started at a minimum of 8 NM (no wind) and 7000 feet AGL at maximum range airspeed. At the top of the zoom, the jet was approximately 7100 feet AGL, 196 KCAS, and 13 NM from Wendover airfield. Results based on simulator and flight manual data showed I was never in a position, after the engine failed and seized, to execute a successful flameout landing at Wendover airfield.

Finally, I learned that once a critical emergency occurs, you have to rely on your training, and that training along with good common sense (airmanship) will see you through.

As professional aviators, we have a collective knowledge base and responsibility that is invaluable to flight safety. Ultimately, the same can be said about safely making it back to the bar and/or your loved ones at the end of the day. I hope my lessons learned can prevent you from making some of the same mistakes in your future flying operations.

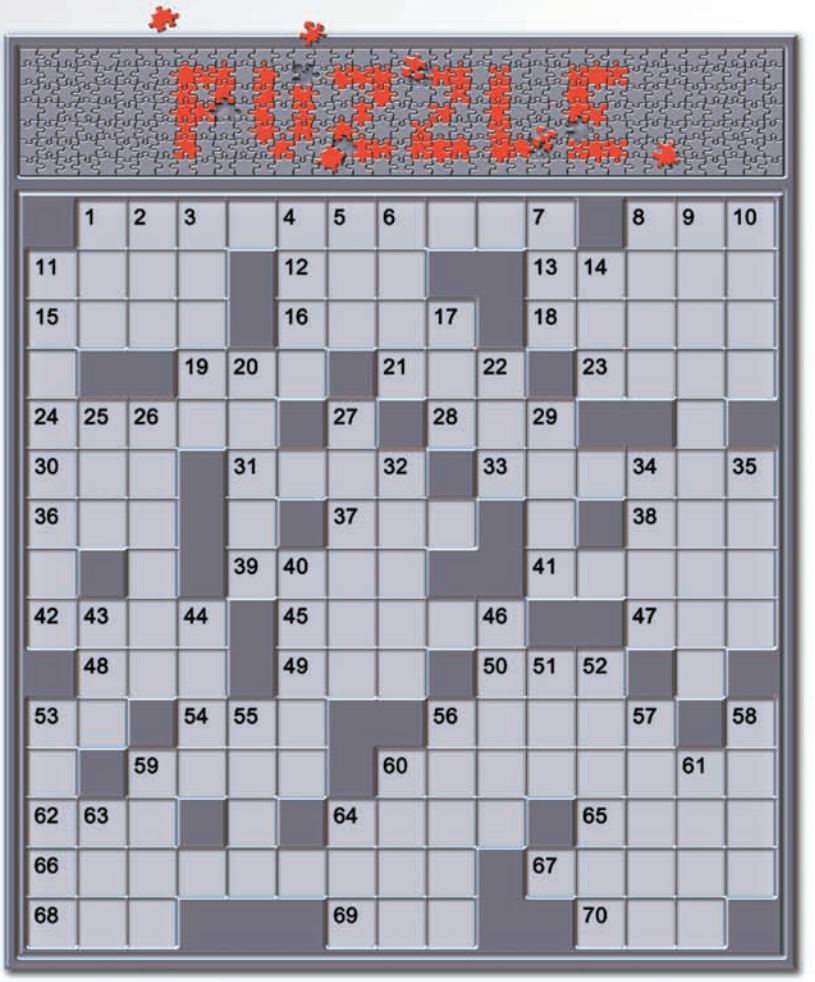
Check Six.

Once a critical emergency occurs, you have to rely on your training along with good common sense (airmanship) to see you through.

USAF Photo by Staff Sgt. Bennie J. Davis III

Human Factors

By 1LT TONY WICKMAN
Alaskan Command Public Affairs



ACROSS

1. Human factor tool pilots use to state their schedule and expected routes to avoid errors (two words)
8. Beginning of American naval vessels
11. African country
12. Be sick
13. Odd
15. Wife of a rajah
16. New Mexico town
18. Movie genre
19. Approves
21. Afternoon British drink
23. Various double sulfates of a trivalent metal
24. Value
28. Dada or Fauvism movements
30. ___ de Janeiro
31. A chill or fit of shivering
33. The result of a human factors error
36. Type of tree
37. Tool used by pilots in darkness to avoid human factor errors
38. Airport abbrev.
39. 29th state in the Union
41. Mistake, like human factors
42. Singer Braxton
45. Tool used by flyers to know distance/position to avoid human factor errors
47. Rapper Dr. ___
48. This "walk" can help avoid 33 ACROSS, key component in AF Safety
49. Hue
50. Everything
53. Tailmarking for Academy aircraft
54. Mining goal
56. Abides by
59. Tool used to sharpen images in daylight or night for pilots to avoid collisions
60. Critical item that can be used to help flyers avoid human factor errors
62. Spring mon.
64. Orderly
65. Haul
66. Item used by flyers to organize events to avoid human factor errors
67. Dutch colonists in South Africa
68. Rest on one's laurels
69. Article
70. Federal org. that protects U.S. information systems

DOWN

1. Federal org. concerned with family homes
2. System that links together electronic office equipment
3. Dolt
4. Head covers
5. Actress Carrera of Wayne's World
6. Scheme
7. Actor Beatty
8. Russian river
9. Tools pilots use to become proficient to eliminate human factor errors
10. Joint
11. Physical item necessary for flyers to avoid human factor errors (two words)
14. Baseball stat
17. Arabian or Caspian
20. Uniforms made of light brown or yellow cloth
22. Appendage
25. Engine need
26. Hard, sharp cheese of Italian origin
27. Tarmac, what pilots must line up to take off or land
29. Newsweek competitor
32. Avoid a mid-air collision
34. Bunch of animals
35. Snip
40. A technical one can help to eliminate human factor errors
43. Light position
44. FOX TV show American ____
46. Capital of Morocco
51. Aloha gift
52. ____ Baines Johnson, 36th President
53. E-3 Sentry; plane to help control airspace to avoid mid-air collisions
55. Type of operational management that can mitigate human factor errors
56. Lecture
57. Fathers
58. Urges; ___ on
59. Fume
60. Singer John
61. First fixed capital of Japan (710-784)
63. 21st letter of Greek alphabet
64. Unit of illuminative brightness

I've Got A

On My Tail

CAPT MIKE CUMMINGS
144 AS/FSO
Kulis ANGB AK

USAF Photos
Photo Illustration by Dan Harman

I walked into the flight room recently to find one of our pilots describing a "There I Was" to a small group. As he used his hands to describe the event (Top Gun style, shooting his watch with his trailing hand), I assumed he had to be the guy doing the killin'. Turns out he was describing his near mid-air collision with a Boeing 747 in the restricted area, and *he* was the watch.

How well do you know your local airspace? Are you aware of the local letters of procedure and Air Traffic Control (ATC) statuses of your restricted areas? Most aircrew are not. We operated incident free for years in that same area, but when runway 32 at Anchorage closed for construction, one of our C-130s found itself in the gun sights of a China Airlines 747. What came out of this near-miss was the knowledge that we didn't have a very good grasp of our local letters of procedure.

Our C-130 crew had just HALO (high-altitude low-opening) dropped two Pararescue Jumpers at Malamute drop zone at 10,500 feet and were in a descending turn to maintain visual position of the jumpers, when the Drop Zone Controller alerted them to traffic at their seven o'clock position. They received another call from the drop zone about traffic at nine o'clock and closing. Finally, on the third call from the drop zone calling the traffic at nine thirty, the crew got the China Airlines 747 in sight. They tightened their turn radius and increased their descent rate in an attempt to avoid the traffic. Then they got a TCAS (Traffic Collision Avoidance System) "Resolution Advisory" telling them to climb at 3000 feet per minute to avoid the conflict. In the "Mighty Herc," not likely. The crew only had time to arrest their descent and start a shallow climb before they received a "Clear of

Was it HOT, AMBER or COLD?

Letters of procedure are basically letters of agreement between local controllers and users of airspace that detail the responsibilities of all of the players involved. There was also confusion on the status of the restricted area. Was it HOT, AMBER or COLD, and what did that mean? In our situation in Anchorage, this specifically deals with R2203, or the Malamute DZ/LZ complex. The Anchorage area is an extremely congested air traffic area with nine airfields in close proximity including Anchorage International Airport, Elmendorf AFB, Merrill Field (the busiest general aviation field in the country) and Lake Hood (the largest and busiest seaplane base in the world).

Conflict" advisory and resumed their monitoring of the jumpers. The C-130 was operating VFR and the China Airlines 747 was on an IFR clearance departing the Anchorage area to the East. The aircraft came within 1000 feet vertically and one quarter of a mile horizontally. Too close when they are behind you and closing. The aircraft never violated VFR/IFR traffic separation, but the incident caused the aircrew to file a HATR (Hazardous Air Traffic Report) upon return to base.

Further investigation and analysis into the event highlighted two areas of concern. First was the confusion concerning the status of the restricted area at the time of the drops. Malamute drop zone

was NOTAM'd that day for parachute drop operations from the surface to 13,000 feet. This NOTAM did nothing to change the status of the drop zone. The Official ATC status of the drop zone that day was "COLD." According to the letter of procedure, this "denotes that there are no activities requiring activation of R-2203, nor any requiring a NOTAM. Military aircraft utilizing R-2203 airspace shall be advised to contact Range Control for advisories." Daytime paratroop drops are OK with advisories and are considered "No Hazard." Basically, this means that when the drop zone is "COLD," ATC does nothing different than they do to normally route traffic through the restricted area. When the restricted area is designated as "HOT" this "denotes that R-2203 had been activated for any designated activity, and may include non-associated aircraft." These activities include ground fire, artillery fire, nighttime lit paratroop drops (although nighttime lit paratroop drops is an "AMBER" condition, we use "HOT" procedures for added safety).

This brings up "AMBER." "AMBER" is a term used only to describe coordination between range control and Elmendorf tower for traffic advisory purposes. For ATC, "AMBER" is also considered "No Hazard" with daytime paratroop drops OK. During an "AMBER" condition, the controller's screen will actually reflect "COLD." It's no wonder there is confusion on this topic. I had to have the letter right in front of me to write this. Our normal training does not include the letters of procedure for the drop zone. It is actually an agreement between ATC, Elmendorf Tower and Range Control. Most aircrew interviewed after the incident were mistakenly under the impression that when a NOTAM is issued, ATC protects the airspace for the operations taking place. My personal knowledge of the statuses was that "HOT" was for live fire only, "AMBER" was for other operations, such as airdrop, and "COLD" meant that there was no activity in the drop zone. This was the understanding of much of the aircrew polled. I don't remember where I heard it, but it sounded reasonable, so I never questioned it.

It sounded reasonable, so I never questioned it.

Our second concern was the misunderstanding between ATC and the aircrew concerning communications requirements when operating in the drop zone. FAR Part 105 addresses parachute jumping and section 105.13 specifically addresses radio equipment and use requirements. To paraphrase, the regulation states that radio communications must be established between the aircraft and ATC at least five minutes before the parachute operation begins. It also states that the aircraft must continuously monitor the appropriate ATC frequency from initial contact until the pilot notifies ATC that the drops are complete. The C-130 crew contacted approach control to notify them of their intention to enter the drop zone for parachute drop operations and were told, "Radar contact. Resume normal navigation into the restricted area. Altitude pilot's discretion." They then contacted the drop zone controller and coordinated the rest of the operation with them. The crew made no further contact with Approach Control until leaving the restricted area. Approach Control also made no further inquiries of the C-130, nor did they give any traffic advisories. During the shift change at Approach Control, the departing controller mentioned the C-130 at 12,000, but was not sure of their intentions. The new controller stated that he turned China Airlines to the East as appropriate for the Minimum Vectoring Altitude restrictions and to pass under the C-130 at 10,500 feet. He also stated that the C-130 started a descent while his attention was diverted to other traffic. Approach Control did call out the C-130 to the China Airlines jet, but this is the same airline that took off from a taxiway in Anchorage a couple of years ago. Let that be a barometer as to how much you trust their traffic avoidance ability. As a rule, I take little comfort in other traffic calling me in sight. I want to get my eyes on them.

Big picture: We know how to talk to the drop zone, and we know how to put the troopers "on time, on target," but in order to do this in an extremely congested training environment, we need to be aware of our local letters of procedure. This is where a lot of the information relating to status and communications are located. Instead of expecting crews to seek this information on their own, it needs to be detailed in the local in-flight guides, directives and drop zone surveys. Our unit has now incorporated these procedures into Chapter 10 of our 11-2C-130V3 (Local Procedures Chapter).

We also invited the local FAA out to the unit for a Safety Day briefing. They described the incident from their perspective and what they would like to see from us to make their jobs easier. It was a non-confrontational environment that was a good learning experience for both sides. I would encourage any unit that operates in a high-density traffic area to establish a good working relationship with their local Air Traffic Control through cooperation like this.

Lastly, communication, communication, communication. Although it is difficult during an airdrop operation in a heavy traffic area, inform ATC of your intentions as much as you possibly can. The heads-up drop zone controller, the use of TCAS, and the quick response of the crew averted this near catastrophe, but it never had to be that close.

Crowded Skies

Damn, that traffic jam!

USAF Photos
Photo Illustration by Dan Harman

TAKE YOUR SEAT!

USN Photo by Photographers Mate 1st Class Edward G. Martens

CAPT DAVID P. ALLSOP
9 SOS/DOP
Eglin AFB FL

The weather was "clear and a million." It was about 2000 hours on a cool winter night in the panhandle of Florida. What was supposed to be the simplest mission I would ever fly turned into something just a little bit more interesting.

The purpose of the mission was to fly an MC-130P Combat Shadow from Hurlburt Field back to Eglin AFB where our squadron and aircraft are stationed. We bring our airplanes over to Hurlburt on a fairly regular basis for periodic maintenance and inspections. So on this night, we just needed to bring it home. That's all there was to it, a simple .3 for the log book.

It is not unusual after such extensive maintenance to have lengthy delays before receiving a crew-ready aircraft, and this day was no exception. Our scheduled takeoff was between 1300 and 1400, and we kept receiving sliding ETICs for one thing or another. It was roughly six o'clock when we finally were given the aircraft. Now, it might seem unusual to some crews in different weapon systems to wait so long, but we are quite accustomed to this, since our newest airplanes are 35 years old and our oldest, a youthful 40.

By the time my copilot and I arrived at the aircraft, the flight engineer and loadmaster had completed their respective preflights with no deficiencies—so far, so good. So we jumped in the seats and started running checklists. Everything from "Before Starting Engines" through the "Before Takeoff Checklist" went as advertised, with nothing to mention whatsoever. Then came the takeoff roll, and that's when the .3 became interesting.

For most C-130s, if we have a good long runway and a light airplane, refusal speed is normally around 130 knots. So, standard practice is to take VMCA and make that our takeoff speed. This night was no different, as our takeoff speed was 104 knots, with refusal speed considerably higher. Standard procedure for a typical takeoff roll is for the pilot to push the throttles up to takeoff power and keep his or her left hand on the nose wheel steering. At roughly 65 to 70 knots, you normally transition from the nose wheel to the yoke. Again, this night was no different. Except what followed was far from the norm.

As we accelerated down the runway, I did as previously stated and transitioned from nose wheel steering to the yoke at about 70 knots. As we accelerated towards our takeoff speed of 104 knots, I glanced down at the airspeed for the last time, which at that moment read 100 knots. About one second later, just as we reached 104 knots and the copilot stated "go," my seat became unlocked and slid completely aft to the stops (about 18-24 inches).

This, as you can imagine, is not an ideal situation for a couple of reasons. First and foremost, for a

brief moment in time, nobody is flying the airplane. Second, as I slid back, had I held onto the yoke, we would have had such a severe deck angle that I probably would have stalled the aircraft, and at that altitude it would have surely been catastrophic.

My copilot that night was still fairly young, but he was thankfully on the ball. As my seat slid back, the first thing I could get out of my mouth was "!@#$," which was immediately followed by "copilot's aircraft." When the copilot took over the controls, we were already past takeoff speed, and we also had a vector towards the grass off the left side of the runway. I would say our greatest deviation from centerline was about 15 to 20 feet. Thankfully, we already had flying airspeed, and rather than attempt a high speed abort, he simply took us airborne. I was stuck at the aft stops for approximately 15 seconds, when I had the copilot level off so I could slide my seat forward where it once was. I am happy to say the remaining .2 was totally uneventful. I took the aircraft once I got my seat adjusted and relocked, and we landed via the VFR traffic pattern at home station. This incident could have really ended up ugly had the copilot not been ready to take over the controls immediately, and he was appropriately recognized with AFSOC's Quarterly Safety Award.

Early the next morning, we had a scheduled Commander's Call, where normally we'll mix some safety briefings and ground training into the day's events. At the first opportunity, I stood up and told the squadron what happened the night prior, for two reasons. First was to inform all pilots and copilots of this potentially ugly situation and to watch out for it in the future. My second reason was to recognize my copilot for staying calm and executing his job superbly. Had I known then what I know now, I would certainly have filed a HAP (High Accident Potential) with the safety office. But at that time I had never even heard of this reporting requirement.

Once I finished speaking to the squadron, at least two other aircraft commanders spoke up and said the identical thing happened to them on that very tail number, only not right at takeoff speed. It apparently happened to them at brake release so the other pilot stopped the aircraft immediately with brakes. Once again, had I known then what I know now, I would have immediately filed a HAP given the new information I just received from my peers. I would have stressed that maintenance take a close look at all aft sliding seats and assure they were serviceable.

Clearly this is not the worst thing the aircraft could hand us in the way of emergencies, but what happened that night, and then again the next morning at Commander's Call, taught me a couple of important lessons.

One: Everyone on the aircraft should check and double check the security of their seats before the takeoff roll.

Two: The safety office is there for us to use. Had any of the other aircraft commanders filed a HAP report, what happened to us that night could have possibly been avoided.

USAF Photo by SSgt Jerry Morrison

"Knock It Off...I Said East Of The Banana!"

MAJ WILLIAM R. JONES
21 FS/SEF
Luke AFB AZ

USAF Photo by SSgt Jeffrey Allen
Photo Illustration by Dan Harman

It was a dark and stormy night, and the sea was angry, my friends…well, not really. In fact, it was a bright, sunny day with unlimited visibility, and I was hard pressed to even find a cloud. And the mission? Well, it was one I had briefed and flown a hundred times before. So naturally, it was very unexpected when my four-ship of F-16s at 500 feet above the ground wound up in a very close, high-aspect pass in what closely resembled the Thunderbird bomb-burst maneuver.

Only two hours prior to the bomb-burst, I briefed the four-ship low-altitude surface attack tactics (SAT) mission. I had briefed this same low-altitude ingress, pop-up attack, and low-altitude egress plan enough times that the brief flowed smoothly, with little thought to it. It wasn't really a "canned" mission, but routine enough that I could navigate the ingress, fly the attack and egress the target area just by looking at the terrain. In fact, I had names for each landmark and reference point and pictured them in my mind as I pointed them out on the 1:50 scale topographic map from which I briefed the attack.

The plan was to ingress at 480 knots ground speed, 500 feet above ground level (AGL) in a two plus two four-ship offset container formation with two nautical miles between the front and back elements. This is a standard low-altitude formation which allows for massed firepower, maneuverability and four-ship mutual support. To achieve surprise, we terrain-masked behind the "Granites," as everyone called the mountain range, and shot through the "Gap" at the last possible minute. At this point, the trail element would fall back to between six and nine nautical miles of spacing. The purpose of this spacing was to ensure the trail element did not fly through the weapons fragmentation envelope of the lead element's pop attack. The downside to this, however, was the transition from four-ship visual mutual support to two-ship visual mutual support with some type of element deconfliction plan.

In this scenario, the deconfliction plan was geographic; meaning stay on the planned ground track and the elements cannot cross paths, regardless of timing. After the spacing, the ground track or black line was direct to the "Tony" Initial Point (IP), eight or so nautical miles north to the "Main Airfield," execute the attack, egress the target area east of the "Banana" and down the "Wash" back to the south. The key to this geographic deconfliction was for the lead element to flow off target to the east of the "Banana." It was a beautiful plan and a beautiful brief, with only one problem: My student, number two, had no idea what the "Banana" or the "Wash" was.

The only difference from this brief and the previous time I gave the brief was my audience. This was one of my first few rides instructing Taiwanese pilots. Of course, everyone told me about the cultural and language barriers, but I didn't fully understand what that meant to me. Talk slower and louder? These Taiwanese pilots are extremely motivated, skilled and dedicated professionals with lots of hours in the F-5 and anywhere from 500 to 1000 hours in the F-16. All were handpicked to train in the United States, and all were trying to be the best.

In the Chinese culture, however, asking questions or not understanding can be seen as a sign of weakness, definitely something less than "the best." With that logic, it was his fault and not mine that he didn't understand my egress plan. Furthermore, the English they learn at the Defense Language Institute is far different from the English I learned in the Tennessee Public School system. Stop and think about how much of your daily speech is slang, colloquialisms or euphemisms—or profanity, for that matter. You will not realize just how much until you try to stop using them.

Anyway, the fact he spoke English as a second language really did not matter; I was the one at fault. Bottom line, I failed at the most basic level of instructing any topic:

(1) Tailor your brief to your audience.

(2) Watch for signs that they either understand or are missing the key elements.

Certainly, target area deconfliction was a key element we all needed to understand, not just number one and number three. If I had been watching for the non-verbal signals during the brief, I am sure I would have noticed losing number two somewhere during my eloquent, yet animated, dialogue about getting lit up, popping flares, digging low around the Banana and hauling ass down the Wash.

Even before that, however, I failed to tailor my well-practiced brief to my new audience. I should have replaced the slang terms of getting lit up, popping flares, digging low around the Banana and hauling ass down the Wash with, "We may be engaged by the ground threats in the target area, so we will employ Infrared Counter Measures (IRCM) and reduce our exposure by quickly descending back down to 500 feet AGL. We will flow east of and terrain-mask behind this unique terrain feature in the shape of a large banana and fly down the dry river bed. It is critical we stay to the east of this banana-shaped rock formation so we don't hit number three and four as they begin their attack."

Since this was such a key point, I should have asked direct questions of the student. Not questions with a yes or no response, but questions to get him to tell me where he was going to fly and how he was going to get there. It really was a simple concept to fly from the IP north to the target, east to the only hill near the target, go behind it and then back to the south. My communication of this idea worked for everyone before this ride. But this was a different audience, and the same briefing did not work for them.

As it happened, number two flew a 180-degree turn off target, instead of the 110-degree turn required, and opposite direction back down the black line…and yes, right into the trail element. At 500 feet AGL, there is nowhere to go but up, and that is what number two, three and four did. The bomb-burst was over before anyone could key the mic.

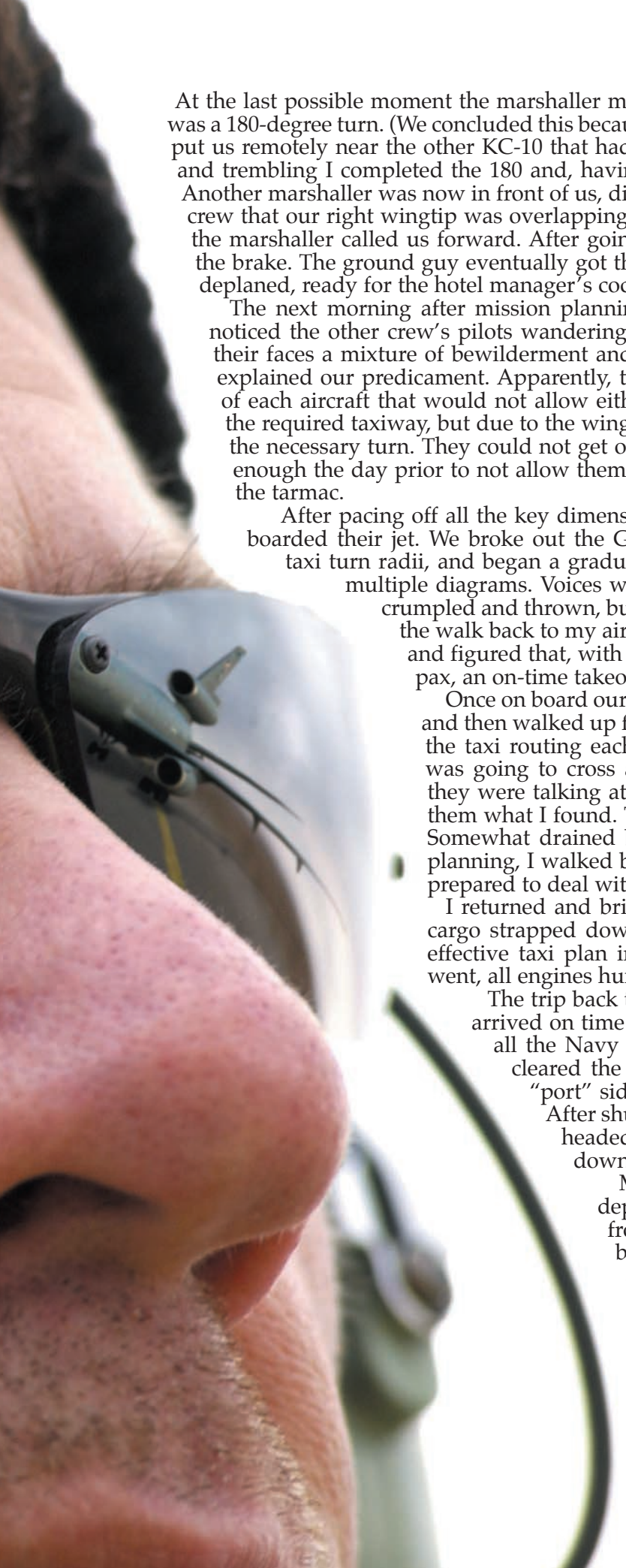
That's Enough Experience For Now, Thank You...

MAJ MATTHEW W. LACY
32 ARS
McGuire AFB NJ

USAF Photos
Photo Illustration by Dan Harman

It was my first time going on the road as a new KC-10 aircraft commander. The mission was a JA/ATT (Joint Airborne/Air Transportability Training), in which our aircraft and another KC-10 were to go from McGuire AFB, NJ, to Yuma, AZ, to RON, load up with Marine Corps cargo and pax, and drag a squadron of AV-8B Harriers to MCAS Cherry Point, NC. I had never been to Yuma or Cherry Point, and had never been anywhere "running the show" in the 10. It had been two assignments ago that I was an MWS aircraft commander, and I was looking forward to getting an AC mission under my belt. Little did I know just how much experience I would get before the trip was over.

The flight to Yuma was uneventful. Our two KC-10s did some good AR work, each taking turns as receiver and then tanker. After landing at Yuma, the ground crew gave us our first challenge. The Follow Me took us to an awaiting marshaller, who stood not at all where we expected him to stand, urging us forward toward an area in an impressive state of disarray due to construction. Not sure where this was leading or what his plan was, I tried to balance maintaining momentum with the ability to stop at any moment. For those not familiar with taxiing the KC-10, an experienced evaluator I know likens it to "driving an apartment complex around." I was not comfortable taxiing under the best of circumstances, and was surely out of the zone now.



At the last possible moment the marshaller made nonstandard signals for what we all agreed was a 180-degree turn. (We concluded this because it was the only possible maneuver that would put us remotely near the other KC-10 that had arrived about 20 minutes before us.) With fear and trembling I completed the 180 and, having crunched no metal, breathed a sigh of relief. Another marshaller was now in front of us, directing us forward. It was apparent to the whole crew that our right wingtip was overlapping the line of the other 10's right wingtip, but still the marshaller called us forward. After going as far as I felt comfortable, I stopped and set the brake. The ground guy eventually got the hint and stopped waving. We shut down and deplaned, ready for the hotel manager's cocktail reception.

The next morning after mission planning, I headed out to the jet. As I approached, I noticed the other crew's pilots wandering between our two aircraft pointing and pacing, their faces a mixture of bewilderment and higher math. When I approached, they briefly explained our predicament. Apparently, the ground crew had found the exact placement of each aircraft that would not allow either of us to taxi out of parking. I was closest to the required taxiway, but due to the wing overlap could not roll forward enough to make the necessary turn. They could not get out of my way because I had pulled forward just enough the day prior to not allow them to stay on the appropriately stressed portion of the tarmac.

After pacing off all the key dimensions of our situation, the other two pilots and I boarded their jet. We broke out the Giant Report and the Dash-1 section addressing taxi turn radii, and began a graduate level discussion of geometry, complete with multiple diagrams. Voices were raised, challenges were issued, papers were crumpled and thrown, but we eventually came up with a plan. As I began the walk back to my aircraft, I glanced at my watch. I did the pilot math and figured that, with the delay we were currently having loading the pax, an on-time takeoff was going to be tight.

Once on board our aircraft, I checked on the progress of the loading and then walked up front to explain the plan to the Co. As I explained the taxi routing each aircraft would take, I realized the other crew was going to cross a taxiway not stressed for their weight. Seeing they were talking at the top of their air stairs, I hiked over to show them what I found. They agreed, and we soon came up with Plan B. Somewhat drained by the mental gymnastics required for the taxi planning, I walked back to my jet thinking, "Man, I've still got to be prepared to deal with engine failure."

I returned and briefed the Co. We eventually got all the pax and cargo strapped down, started engines, and put the ungraceful but effective taxi plan in motion. It worked like a champ, and off we went, all engines humming, to NAS Cherry Point.

The trip back to the East Coast was smooth and enjoyable. We arrived on time to our destination and I struggled to remember all the Navy terms I learned as a T-34 IP in a prior life. We cleared the "duty" runway, sighted the Follow Me to our "port" side, and followed it down the "inboard" taxiway. After shutting down, the Co and I took dinner orders and headed off to mission plan while the rest of the crew downloaded the pax and cargo.

Mission planning was a breeze. The Cherry Point departure procedure terminated a short distance from where we'd pick up the Sea Isle Four arrival back into McGuire. It was to be a 45-minute trip in all, and the weather that night looked great. I felt good about the many challenges the crew and I had overcome to make the mission happen, and was looking forward to getting home. Yet one fairly significant challenge remained.

Start and taxi were uneventful. It was the copilot's takeoff, and I transferred the controls to her as we lined up on centerline of RWY

5L. She called for takeoff power, and the flight engineer fine-tuned the throttles to the appropriate setting. I called out the required speeds, and at rotate speed the Co smoothly brought the yoke back. We broke ground...

…And, apparently, the jet. As we lifted off, the airplane began to drift slightly to the right.

"Let's come back left," I said.

"Roger," the Co dutifully replied.

Yet still we drifted. As I watched the runway tracking to the left of the nose, I glanced at the copilot and began to make a more directive comment. At the same time, I felt the airplane settle ever so slightly, and a light just under my glare shield blinked on, then off in an instant. Since the wind shear warning light is located right about there, I added it to the drifting and settling sensations and concluded we were encountering a shear. Apparently, the flight engineer had surmised the same from the events of the last three or so seconds, and went heads-down to check the wind readout in his FMA. At about that time, the boom operator exclaimed, "(Expletive)! We just lost a (expletive) engine!" This, as you can imagine, got everyone's immediate and undivided attention.

Now, you can yell those words out in a sim. You can yell them out in a bar. You can yell them out in a boat, a train, or an automobile. You can yell them anywhere on the face of the earth at any time, and it will not have nearly the same effect as it does when yelled while piloting an airplane. You can almost feel the collective pause in everyone's breathing, heartbeat, and brain functioning. For a well-trained crew, the pause only lasts a second or two. But from that moment on, everything proceeds in a Matrix-like fashion—something akin to, but not quite, reality. As advertised, the training does take over. Still, if a simulator EP is jogging, a real EP is jogging in deep mud. You complete each step, but your thoughts feel sluggish.

The copilot, though fairly young, was rock-solid and made the required calls per the Dash-1. We had just been switched to departure, and I checked in with all the cool pilot voice I could muster, tacking on to my usual call that we had just lost an engine and were declaring an emergency, stand by for the rest. After a brief but noticeable pause, the controller gave us a "Roger, standing by, when able blah blah blah…"

The engineer and I took care of the boldface. The boom operator checked off to the back to scan the No. 3 engine. I told the Co she was doing great and asked if she was OK. She calmly responded in the affirmative. The engineer was getting out the appropriate checklist. Satisfied we were safely climbing away, I requested vectors back to runway for—hmmm, what approaches does that runway have? I usually brief an emergency return to the field prior to takeoff. As it turns out, "usually" is not quite often enough.

I remembered that the PAR was the only precision approach to RWY 5R, and requested it. The controller began vectoring us. As the engineer and I worked through the checklist, I handed the approach book to the boom operator, who was a commercially-rated pilot, and asked him to look up the radar approach minimums for the runway we were heading to. A minute or so later, he said that there was no PAR approach. I glanced back at him and saw he was looking in the wrong section of the book. I asked him to let me take a look and opened to the correct page. Frustrated that he couldn't find it for me, he began asking questions about where radar approach minimums were listed. I suggested we might want to wait until we were on the ground to discuss it. He agreed.

With all the checklists cleaned up and the approach briefed, I took the controls. As we approached midfield on radar downwind, the controller gave us an unexpected 45-degree turn and told us to stand by for the final controller. The copilot and I gave each other the Blues Brothers cross-cockpit glance, looked at our respective HSIs, then at one another's HSI. I looked out in front of us and saw the runway lighting for RWY 32L. "They're taking us to the wrong runway," I said.

I told the controller that we requested the PAR to RWY 5R, and that's what we want. "OK," he said, "But can I ask why you want that particular runway?" Trying to remain cordial, and only partially succeeding, I told him that we requested that runway, were told to expect that runway, were indeed expecting that runway, and had paced ourselves for that runway. I added that this was not the particular approach I wished to be rushed and behind on. He seemed to get the message and gave us a correction vector.

The remainder of the approach and landing were uneventful. We taxied clear and eventually made it back to the chocks and shut down. I spent the remainder of the evening learning more than I cared to about the TACC, LRC and MRT. Back at the hotel, I replayed the incident many times over, considering things I could have done better or things I had learned. Briefly, here is what I concluded:

The importance of being mentally prepared. "Be mentally prepared for an engine failure," commands the Dash-1 of an airplane I used to fly. Sound advice. Rest assured, I now treat my predeparture briefing with renewed interest. I never really blew it off per se, but there were times I've summed it up on the second or third leg of a trip as "standard" or "same, questions?" This is a last chance to review key procedures before you may need them. On the other hand, I do not subscribe to the painfully drawn out, unnecessarily detailed brief either. I think a quick statement of each critical action combined with hand motions and/or pointing to key controls and instruments is a good idea.

Every now and then, have each crewmember state their actions during a takeoff emergency. I've seen this done on mission planning day as a way to keep everyone involved; why not keep them involved when it really counts? If this had happened on the first takeoff of the day out of Yuma, with the Mother of All Taxi Plans and pax loading delays, we all would have been a bit more distracted.

Another aspect of being mentally prepared is a sound knowledge of the surrounding terrain, departure weather, and local airspace. We all have a basic plan for takeoff emergencies. Tailor your plan in base ops each mission for the environment. Visualize key factors like terrain and turn direction prior to takeoff. You don't want to have to do a lot of thinking on the day you cross the line from Those That Will to Those That Have—because you won't be able to do a lot of thinking.

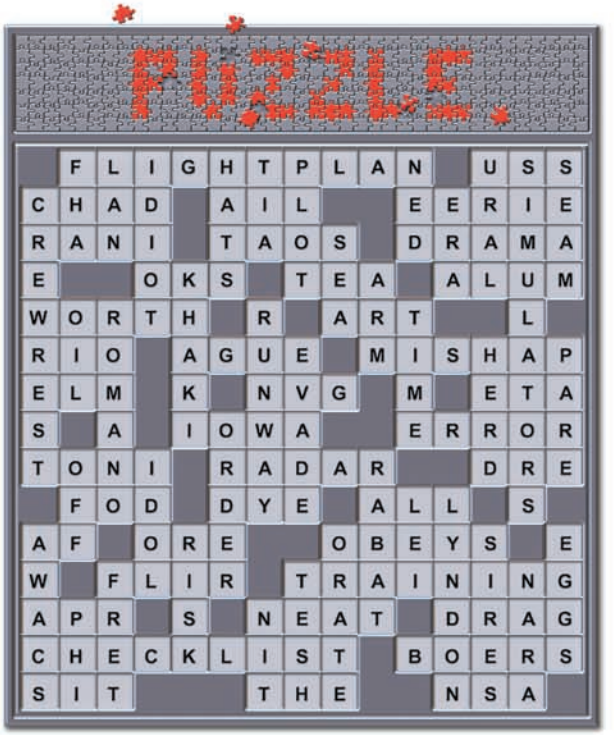
Things don't always happen the way they do in the sim. The light that blinked on for an instant on my glare shield was the engine failure light. In the sim, it always comes on and stays on, which is a big reason I thought it was the wind shear light. Of course, we got that settling feeling and drifted right because our thrust had just decreased by about a third. Ah…it all seems so clear now. Of course, you really want it to be clear in the jet, not the hotel room later that night. Should I have glanced at the engine instruments sooner? Well, that would have been good, but this all transpired in a few seconds during rotate, and I was looking at pitch, airspeed, and ground track. There was no engine noise decrease, bangs, pops, or thumps. The light and the settling feeling led me down the wrong path initially.

Also, ATC's vectors to the wrong runway and subsequent desire to chat about my preferences were an interesting twist. Not sure what to do with all this info, but just know it happens.

An alert and knowledgeable crewmember is worth his or her weight in gold. With three people right up front near all the dials, displays and gauges, it was the boom operator who noticed we had lost an engine. He has a much poorer view then the pilot, copilot and engineer, yet he's the one who so eloquently informed us of the problem at hand. Good on him. Furthermore, he did not wait for me to tell him to scan the engines (I was busy jogging through mud), but took the initiative and checked off to the back. Finally, I tried to get a little more out of him by having him open the approach book to the radar minimums. That's way out of his normal duties—but a good plug for taking some drone time over the ocean or desert to learn some good tidbits about each other's jobs. You never know when it will come in handy.

Everyone else worked great together. The Co flew very well and appeared calm and collected. The engineer paced the checklists at an urgent but unrushed clip. Everyone chimed in on safety checks and multiple reviews of each step to make sure we covered all our bases.

I believe my crew and I handled the whole trip professionally. We passed the ultimate test; that is, we did not cause any more damage to the airplane or hurt anyone. When this happens again, each of us will do it better because we've lived it once and are now better prepared. If I've accomplished my goal on these pages, you'll be better prepared, too. ✈



Solution to puzzle on page 13.

OPS TOPICS

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

This edition is about cargo problems. They all come from HAPs submitted by the workers in the field. No major damages, but the potential for the loss of an aircraft or life was present. Be careful as you move the world, as Murphy may come along for the ride if you aren't careful.

Pallets Versus Cargo Floor

Mishap crew 1 (MC1) was loading palletized cargo on their C-5 and ATOC personnel presented them with a load plan, requiring the on-load of a 29,840 pound generator mounted on top of an airdrop platform train. MC1 had no experience loading airdrop platforms, but knew there was guidance in the Ops Group FCIF. After reviewing the FCIF, MC1 decided the cargo would not be secured in the logistics rails, but loaded "slightly off center provided the runners are kept on top of the rollers." MC1 followed the FCIF method 1—out of the rail system. The cargo was pushed into position without incident, and secured with chains to the cargo floor.

Normally, these airdrop platforms are situated in the center of the C-5 cargo compartment on top of rollers designed to accommodate the platforms. However, airdrop platforms can be configured to fit in the pallet logistics rail system. Airdrop platforms have longitudinal beams (feet) which support the platform. They do not have a flat-bottomed surface, as does the standard 3-463L pallet. Although standard rollers are capable of supporting airdrop platforms, there is potential that the platform feet could roll off standard rollers when not secured in the logistics rails or loaded on the airdrop platform rollers.

MC1 then flew the aircraft on the first leg of the journey. A second crew (MC2) accepted the airplane and cargo, did not detect any damage or questionable cargo configuration/placement and flew the aircraft to the cargo's destination. While attempting to download the airdrop platform using the cargo winch, MC2 heard popping sounds and stopped the winch operation. The aft inboard corner of the platform had shifted toward the cargo floor centerline and the platform feet were off the rollers. The shift overstressed many of the rollers, liberating them from their mounts. The platform feet were now in contact with the aircraft cargo floor. After reporting the incident, aerial port personnel and MC2 agreed they would not be able to offload the generator without inducing additional aircraft damage.

A third crew flew the mishap cargo back to home station where the cargo was safely unloaded. Lesson learned from this mishap? Airdrop platforms are designed for a specific purpose with airdrop rollers and should not be used to transport cargo outside the logistics rails while on top of the standard "small" rollers. We deliver a lot of cargo, but in this case we paid to have the cargo delivered and returned with a damaged aircraft. This caused a lot of headaches for a lot of people, and the cargo didn't get to where it was needed.

Shifty C-17 Pallets

Upon engine shutdown, following an overseas flight, the loadmaster (LM) at the forward LM station initiated power by pushing the sidewall panel switch and the electrical power switch both to "on." Simultaneously, with this action the LM heard a loud noise from the back of the aircraft and saw that his aerial delivery system (ADS) lock status panel indicated all the ADS locks had released, allowing the pallets to shift forward. The pallets did not shift forward enough to cause damage to the aircraft, but could have done so had it occurred in flight.

Maintenance personnel determined that the intermittent power transfer that led to the release of the rails was caused by an electrical short in the LM panel. The faulty panel has been sent to depot for further inspection. Luckily this didn't happen in flight, and the aircraft wasn't damaged. Be ready for the unexpected, and ensure your cargo stays where you want it.

Leaky C-17

Three C-17s were each uploaded with three 3000-gallon bladders and one pump assembly module IAW tech data. The bladders were outfitted with a vent hose that ran along the floor, then connected to the aft cryogenic vent port to vent fumes. Supply filled each bladder with 2500 gallons of JP-8, and no leaks were observed. The aircraft then took off to deliver the fuel to thirsty customers. Fuel operators supervised the loading and noticed nothing unusual during the flight. However, at some time during the mission, fuel vented from the bladders through the cryogenic vent ports. Upon arrival, the fuel was pumped from the bladders of the mishap aircraft to the customer. When the aircraft crew chiefs conducted their post flight inspections, one of them found puddles of fuel (approximately 1-2 gallons) in the aft pod hydraulic pump access panel compartment. The crew chief then observed fuel leaking onto the main landing gear, and a ground emergency was declared.

Here we have a minor hardware problem that allowed fuel to leak into an aircraft and then onto the ground. Luckily, there was no fire or explosion, and all we had to do was clean up the fuel spill. The potential for disaster was there and we got lucky. Make sure when you are transporting hazardous cargo that everything is in proper condition, and we reduce the risk of carrying the stuff that will get you killed.

Violent C-130

The towed paratrooper retrieval system (TPRS) retriever assist strap (RAS) was properly secured using the retaining clip at FS 773. Upon landing, the RAS pulley (weighing approximately five pounds) broke free from its retaining clip and slid forward on the anchor cable, striking a seated passenger in the head. The landing was normal, with no significant yaw or touchdown forces. Upon inspection of the clip after flight, it was apparent that the RAS could shift full forward in the retaining clip, making it highly likely that any small side-to-side forces could cause it to work free. The force required to break the RAS pulley free from the clip was very small, and would be commonly encountered on a normal landing. Although the injuries sustained by the passenger were minor, the potential for future injury is high using the current rigging procedures. Something else for the loadmasters to watch out for during and after flight. Make sure everything stays where it belongs.

Shifty C-130

The mishap aircraft took off to accomplish an overhead pattern to a low approach, then a noodle departure procedure and transition to a low-level route. The aircraft accomplished the low-level route at 300 feet AGL and flew the route uneventfully until after the pre-slowdown checklist. When the left-hand rail cargo locks were retracted, the 8300 pound HMMV and airdrop platform released from the right-hand rail cargo locks and rolled aft. The platform stopped when it contacted the cargo ramp. Emergency procedures were accomplished and the loose platform was secured. The event aircrew elected to do a controllability check because of the platform-induced aft center of gravity. The crew then landed uneventfully back at home base. A case where the locks failed and the crew had to react quickly to prevent a mishap. Once again, be ready for the unexpected. Murphy is alive and well in our cargo operations.

Loose KC-10

The mishap aircraft (MA) departed base with two active duty boom operators one instructor boom (MB1), one student boom and a reserve boom on board. The positioning leg to destination was uneventful. Cargo was on-loaded by a load team with boom operator supervision upon arrival. The mishap Humvee was secured using a Weissenfel chain. The boom operators were unaware that this chain was securing this Humvee. The entire load was checked for proper configuration and security after completion of on-load. All three booms arrived the following day and again rechecked cargo for security with no discrepancies noted.

At some point during departure, the forward Weissenfel chain pulled loose from the tie-down device. The increased load added to the one remaining aft restraint (forward chain) caused the other forward chain to also be pulled from its tie-down device. The Humvee slid aft 4-5 feet, contacting the crew chief's toolbox and the interior wall of the cargo deck. As the MA was climbing out passing 10,000 feet, MB1 was cleared to check the cargo. He returned to the flight deck and directed the pilot to level off. A Humvee had broken loose from its two forward restraints. MB1 requested the assistance of the other boom operators, three crew chiefs, and the army load team personnel to re-secure the cargo.

There are no procedures for cargo coming loose in flight in the KC-10, so the boom operators discussed options and decided to reposition the Humvee and restrain it with two new forward tie-down devices. The original tie-down devices were removed and set aside. There was no damage to the aircraft or Humvee, and the flight continued without further incident. Murphy was on board this flight and made life interesting for a little while. Keep aware of what is going on, and make sure you use the right gear to secure your cargo.

Maintenance Matters

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

Ground mishaps always seem to pop up on the flightline from routine tasks. Here are a few cases where we did some high-priced damage or had a close call as we moved aircraft or ran engines on the flightline.

KC-10 Pops a Tow Bar

A KC-10 was being towed to the wash rack hangar for a routine aircraft wash. The conditions outside the hangar were snow and patchy ice, so the tow vehicle had chains installed. After towing the aircraft into the hangar, the tow vehicle came to a sudden stop and was pushed approximately three feet. There was a loud "pop" as the tow bar sheer pins broke. The tow bar had lifted up vertically, separated, and impacted the lower portion of the nose gear. The tow team supervisor ordered "stop," and the brake rider applied brakes, stopping the aircraft. Damage was confined to the tow bar, nose gear strut, and one nose tire.

A simple routine task complicated by the extra risk of snow and ice and chains on the tow vehicle. Make sure you take the extra precautions and prevent a mishap when the risk factors go up for a routine task.

F-16 High Jump

The aircraft was undergoing post phase engine runs, and shortly after mishap worker 1 (MW1) stabilized the engine at 85 percent, the aircraft jumped the installed rope chocks and accelerated forward. The aircraft entered a left turn, and slid to the right, contacting the taxiway pavement and skidding on its nose and right main landing gear tires before rolling to the right. The aircraft came to rest on its nose and right main landing gear and right wing tip.

This mishap occurred when the aircraft was pushed beyond safe operating parameters through a combination of inputs including a very light configuration, worn aircraft rope chocks, low pavement RCR, engine power setting and ambient temperature. The aircraft was run at the maximum limit for an unrestrained engine run with an ambient temperature of -13°F that resulted in higher thrust production than normally expected. Engineering analysis determined the thrust produced was 500 pounds *over* the power to exceed the holding capability of aircraft brakes. Other pertinent issues included control of maintenance engine runs, the aircraft chocks, engine run training and response to the emergency.

Another simple routine task, post-phase engine run, that went from normal to "Oh s—t" in a heartbeat. The biggest lesson learned was that this mishap was set up for a long time, as the process for approving engine runs, coordinating run spots and dealing with the weather were not adequate. When was the last time you looked at your routine flightline processes to see if you were setting up your troops to be involved in an accident? When was the last time you, the worker, identified to your supervisors that the system is broke and needs fixing? It is everyone's responsibility to fix the problems.

Bouncing F-16

The mishap aircraft was undergoing a routine tow operation from a hardened aircraft shelter to a hangar. The mishap tow crew (MTC) consisted of three personnel, the mishap tow supervisor (MTS), mishap tow driver (MTD), and mishap brake rider (MBR). The crew prepared for the tow IAW tech data. The tow took place at night with weather conditions consisting of ice and snow on the ramp area. The MTD, using an MB-4 tow tractor (mishap tow vehicle [MTV]) and an MD-1 universal tow bar (mishap tow bar [MTB]), made a right-hand turn into the ramp entrance, which has a downward slope. Following the

turn, the aircraft was straight inline with the MTV when the MTD applied gradual brake pressure, attempting to slow the aircraft on the icy ramp. The MTV began to slide, and braking became less effective. On the patchy ice, the aircraft pushed against the MTB and started to bounce violently. The MTB then sheared uniformly at the connecting forked bars. The MBR activated the parking brake switch to engage the MA's brake. As the aircraft rolled forward, its pitot tube penetrated the cab of the MTV, below the rear window and narrowly missed the MTD and MTS, who were both riding in the MTV. This tow crew was fully qualified and complied with tech data requirements and local rules for bad weather. A higher risk level for a simple routine task. Make sure, if you are the one making the tough choices, that the risk doesn't outweigh the potential gain. A damaged aircraft or injured worker is never worth the cost of waiting to complete a task when the risk is lowered to a more acceptable level.

Jacks Versus Landing Gear

An F-16 was undergoing landing gear TCTOs, and the removal of the existing landing gear and partial installation of the new ship-set were uneventful. Mishap personnel 1 (MP1) and mishap personnel 2 (MP2) reported for duty and swing shift had installed both tension struts and both shock struts except for step 13 of the tech data, which directs the technician to reconnect the retract actuator to the tension strut. This step had not been accomplished due to the fact that three TCTOs were being accomplished simultaneously. The intent in accomplishing these TCTOs simultaneously is to have them done in "parallel' as opposed to "serial" to prevent unnecessary additional time associated with reaccomplishing certain tasks. In order to complete the three TCTOs in a reasonable time, individual tech order steps are left unaccomplished—this is an accepted "workaround." In the final stages, the entire gear is reassembled, operational and rig checks are accomplished, and the gear is ready to use.

Furthermore, a landing gear hydraulic servicing unit hose assembly was not available to perform the follow-on maintenance landing gear rig check that needed to be accomplished upon completion of the TCTOs. The disconnection of the retract actuator was recorded in the AFTO Form 781A pre-prints for the TCTOs and had not yet been signed off. MP1 and MP2's task was to perform initial servicing on both left and right main landing gear shock struts, and then complete the landing gear rig check. MP1 and MP2 reviewed the swing shift turn over log and AFTO Form 781 series forms for the aircraft's current status prior to performing work on the aircraft. MP1 and MP2 proceeded to accomplish initial servicing of the right main landing gear shock strut in accordance with tech data. The current tech data for initial strut servicing does not address the retract actuator installation prior to performing this task. Additionally, the TCTOs do not contain step-by-step guidance for their accomplishment. Changes to all these deficiencies had been previously submitted but not acted upon.

MP1 placed the jack under the right main landing gear and began compressing the shock strut while MP2 watched for hydraulic fluid overflow out of the servicing Schrader valve. The retract actuator rod end was resting on top of the tension strut knuckle while the right main landing gear shock was being serviced. This resulted in the 341.80 bulkhead sustaining damage beyond repairable limits. A simple task with workarounds that caused damage to the aircraft. If you aren't sure of what's going to happen with a workaround, you shouldn't be using it. If the right equipment for the task isn't available, stop and get the right equipment. Here, a unit was working smart to reduce aircraft downtime, and ended up with a bunch of extra work that negated their savings. Work hard, but work smart!

Hot MH-53 Blades

A main rotor blade on an MH-53 was damaged due to auxiliary ground power unit (AGPU) exhaust during ground maintenance operations at a deployed location. The incident occurred while a technician performed routine maintenance repairs to the aircraft. In preparation for starting the repairs, the AGPU was positioned next to the MA inside of the arc of the main rotor blades and directly under one of the blades. The technician then started the AGPU and commenced aircraft repairs. No one, including the technician or any on-duty shift supervisors, noticed the improper AGPU positioning or any damage to the blades during the course of the maintenance action. After completion of the maintenance and during removal of the AGPU, maintenance personnel discovered the blade damage. Upon further inspection by the crew chief, quality assurance and supervisory personnel, the damaged blade was deemed unrepairable.

This sequence of events is in direct violation of written guidance on positioning the AGPU in preparation for maintenance operations. Specifically, the applying external electrical power checklist, states—"ext power unit-serviceable and positioned with the power cord fully extended." Once again, improper procedures resulted in a damaged aircraft. Perhaps the most basic preventative measure is to increase the maintenance supervisor's role in preventing these mishaps; a more hands-on, routine supervision of the operation by experienced personnel would certainly have broken this chain of events. Aggressive risk management by all personnel should help prevent these costly losses in the future.

FY04 Flight Mishaps (Oct 03-Apr 04)

12 Class A Mishaps
7 Fatalities
5 Aircraft Destroyed

FY03 Flight Mishaps (Oct 02-Apr 03)

19 Class A Mishaps
10 Fatalities
14 Aircraft Destroyed

05 Oct		A C-17 had an engine failure (upgraded to Class A).
09 Oct		A KC-135E experienced a number 3 engine fire.
14 Oct	✈	A T-38 crashed during takeoff.
17 Nov		A KC-10 experienced a destroyed engine.
18 Nov	✈	An A-10 crashed during a training mission.
23 Nov	✈	An MH-53 crashed during a mission. Four AF crewmembers were killed.
31 Jan		A KC-10 experienced an engine failure.
03 Feb		An E-4B had an engine failure in flight.
04 Feb		A C-5B had a right main landing gear failure.
25 Feb	✈	An A-10 crashed after takeoff. The pilot did not survive.
27 Feb		A B-1B departed the runway during landing .
03 Apr	✈	A T-6 crashed on takeoff. Both pilots were killed.

Editor's note: The 01 Mar F-15 mishap has been downgraded to a Class B mishap.

- 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.kirtland.af.mil/AFSC/RDBMS/Flight/stats/statspage.html.
- **Current as of 26 Apr 04**.

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AVIATION

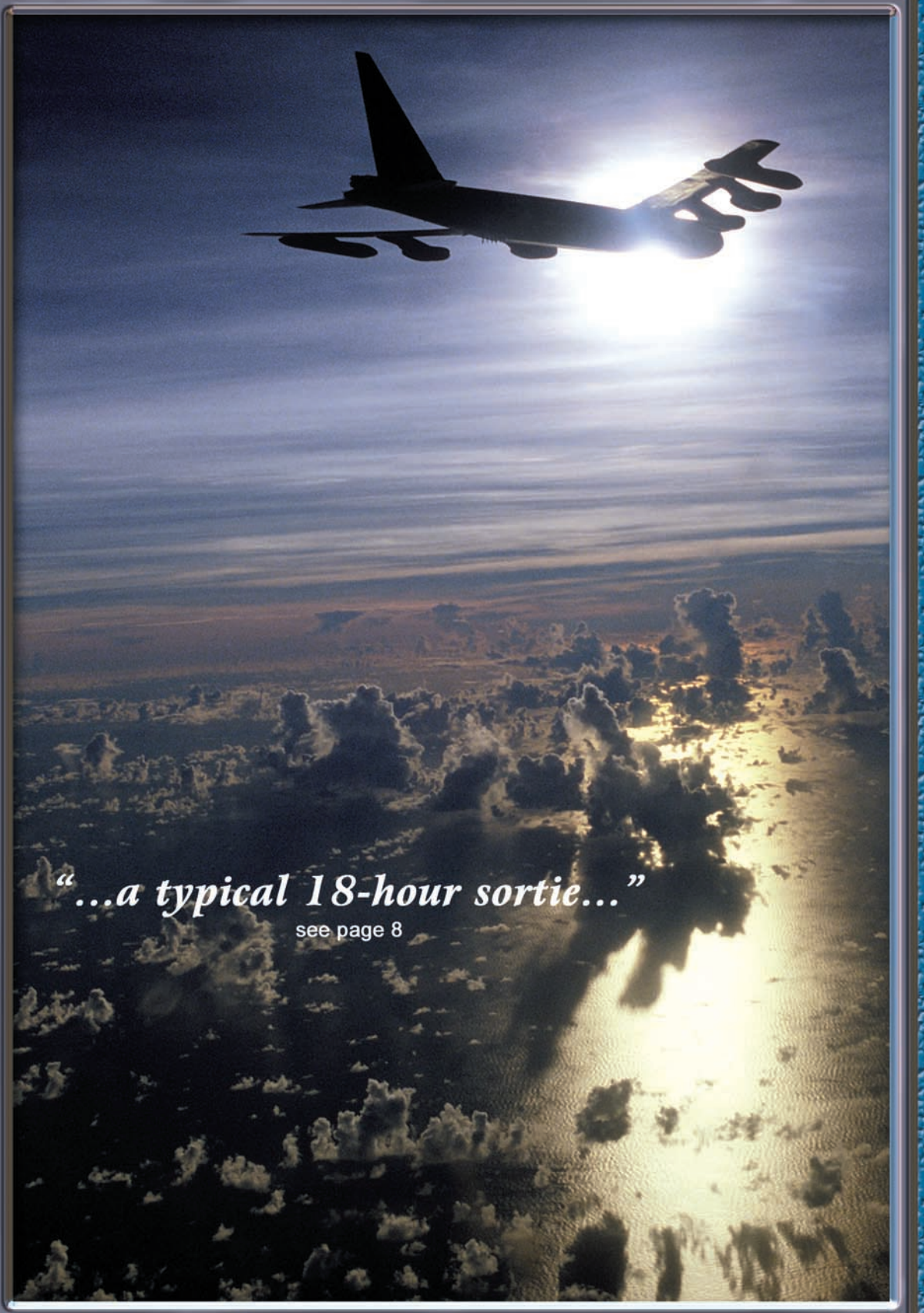
The Aviation Well Done Award is presented for outstanding airmanship and professional performance during a hazardous situation and for a significant contribution to the United States Air Force Mishap Prevention Program.

MAJOR MARK LANTZ
466 FS/DOW
Hill AFB UT

On 15 July 03, Maj Mark Lantz was number two of a four-ship SAT sortie. His F-16 had external fuel tanks, live munitions, suspension racks and training missiles, which brought the total gross weight close to the 37,500-pound limit for the aircraft. The weather at Hill AFB was clear skies with light winds, air temperature 104 degrees Fahrenheit, and ramp temperature 110-115 degrees. On takeoff, as Maj Lantz began to rotate his aircraft, he saw pieces of small black matter accelerating at high speed out the right side and then the left side of the aircraft. He also felt the aircraft yaw to the left and heard a loud "thump" from somewhere on the left side. Suspecting a blown tire, Maj Lantz elected to continue the takeoff as opposed to exercising a heavyweight abort with live munitions at a high pressure altitude. Tower controllers and a call from number three confirmed that he had indeed blown a tire. He continued to climb in afterburner, accelerating to 275 KCAS, then pulled the throttle out of AB and maintained below 300 KCAS to avoid over-speeding the extended landing gear. He quickly scanned his engine instruments to determine he did not have a more serious problem with FOD or engine damage.

Maj Lantz declared an IFE, veered his aircraft away from populated areas and proceeded directly over the Great Salt Lake due to the live munitions and jettison/dropped object potential. He coordinated a rejoin with number three as his chase ship, who confirmed that the left tire on the aircraft had delaminated and there was significant damage to the left underwing, fuselage and, more importantly, the left ventral strake which holds internal aircraft fuel. Maj Lantz then coordinated with the SOF and his flight mates and came up with a game plan after referencing checklist procedures. His plan was to stay away from populated areas, expend his live ordnance, burn down gas, and prepare for an approach-end arrestment. He then employed his live munitions on a live impact area. He correctly and efficiently applied checklist procedures by turning on the ground jettison enable switch, allowing him to expend his ordnance with his landing gear extended. Once his munitions were expended, he burned down fuel for the next 45 minutes. After discussion with the SOF, he coordinated to land other flight members first due to possible runway closure. He then accomplished approach end arrestment procedures with the SOF and set up for a straight-in approach to the active runway, discussing options if he needed to execute a go-around or the potential to blow the delaminated tire upon landing. Maj Lantz then flew a flawless straight-in approach and engaged the cable on his first try.

Maj Lantz's outstanding airmanship, decisive actions, and expert handling of a unique problem during a critical phase of flight prevented possible loss of life, minimized damage or loss of a valuable combat Air Force asset.



“...a typical 18-hour sortie...”

see page 8