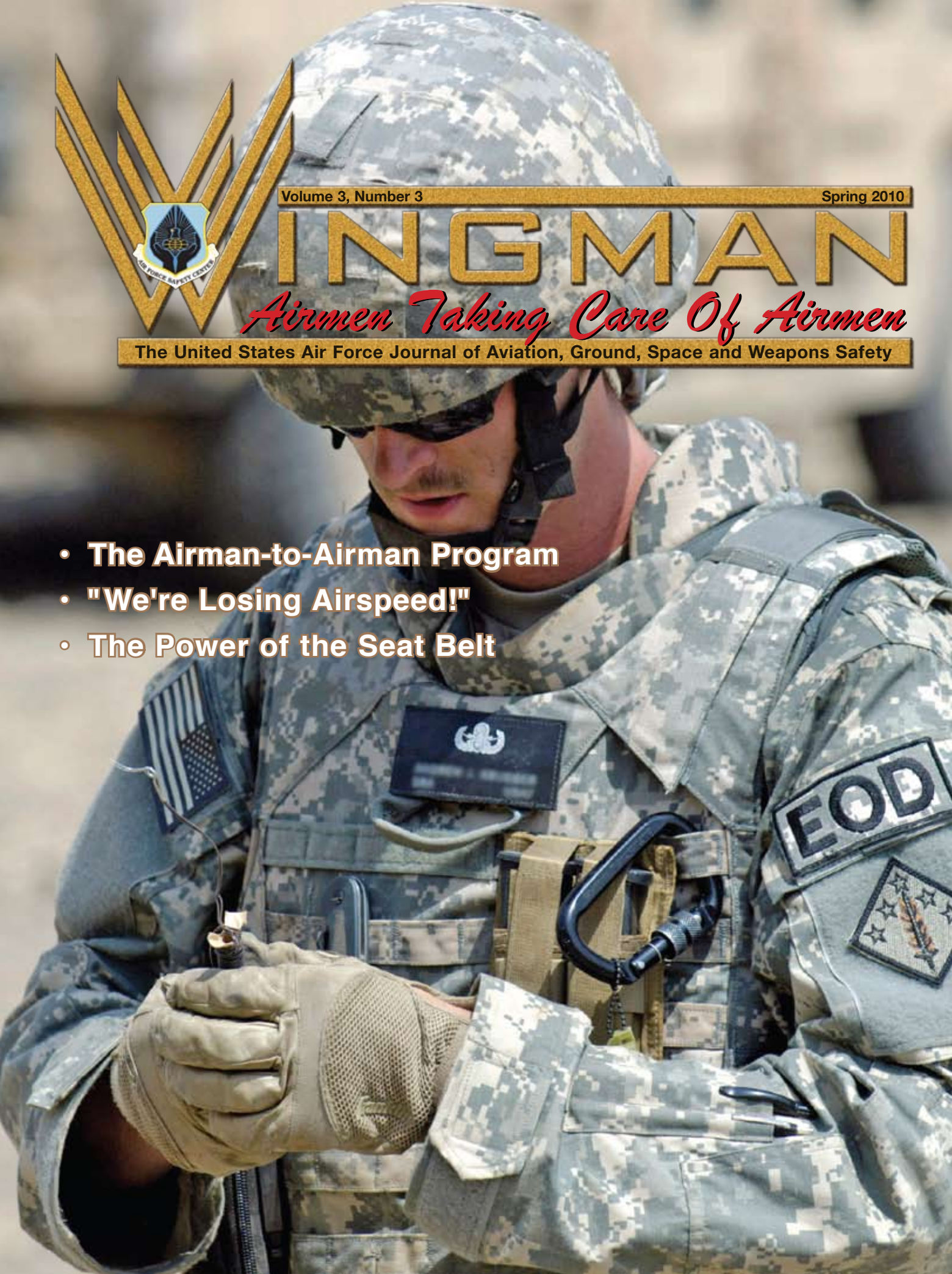
Volume 3, Number 3 Spring 2010

WINGMAN

Airmen Taking Care Of Airmen

The United States Air Force Journal of Aviation, Ground, Space and Weapons Safety



- The Airman-to-Airman Program
- "We're Losing Airspeed!"
- The Power of the Seat Belt

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CORRECTION TO WINTER WINGMAN 2010—The article published on page 32 entitled "Christmas and ORM" named the wrong author. The correct author is Maj. Jay Hughes from the 354th Fighter Wing, Eielson AFB, Alaska.

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Front cover photo: U.S. Air Force photo by Master Sgt. Jim Varhegyi

Year of the Air Force Family

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Background photo: U.S. Air Force photo by Tech. Sgt. Cecilio Ricardo

Spring Safety — Getting Outside!

MAJ. GEN. FRED ROGGERO
Air Force Chief of Safety and
Commander, Air Force Safety Center
Kirtland AFB, N.M.

Pictured from left: Capt. Aaron Reid, USAF ACC 333 FS/DOW; Airman 1st Class Nicholas Dryden, USAF ACC 4 AMXS/MXACS; Airman James Mcgaheran, USAF ACC 4 AMXS/MXACA and Maj. Gen. Fred Roggero, AF/SE

Spring's here, and the bitterness of winter is receding. Many of us have been holed up all winter waiting for a little sunshine to enjoy our outdoor sports and hobbies. Lots of us will be hitting the highways on day trips and spring break to have a little fun. I ask you to take a few moments to do some planning. Consider the hazards that could arise during your adventures and use a few brain cells to minimize those dangers. A good plan with safety in its foundation doesn't decrease your fun — it enables you to keep having it. So get outside and enjoy the sun!

This edition of ***Wingman*** contains articles on the Year of the Air Force Family discussing family safety initiatives and an introduction to our latest safety initiative, the Airman-to-Airman program. The Air Force Safety Center's Weapons Safety has been selected for this edition's "Division in the Spotlight." The staff has 24 hard-working weapons personnel meeting the safety needs of conventional and nuclear weapons programs. For those involved with weapons in their duties, take a few minutes to learn how Weapons Safety supports you.

The Aviation Safety section has several "There I was …" stories with a focus for spring on the areas of "Back to Basics" and "BASH," both needed as we knock off the winter rust and increase our awareness of the hazards associated with the spring bird migration.

Our Human Factors Division provides an in-depth article on spatial disorientation — how to recognize it, identify its hazards and prevent it from taking your life. This is a must read for all aviators.

The Ground Safety Division provides useful articles on risk management and driving safety. Of particular interest is motorcycles, focusing on drivers' responsibility to be aware and vigilant of these vehicles that are a little harder to see on the roads. Take a few extra seconds and save a life.

The Space Safety section addresses the ongoing issue of mishaps vs. anomalies where safety investigations are involved. Additional articles discuss risk mitigation during launches and the many hazards in orbit.

The Weapons Safety Division addresses nuclear surety training requirements, weapons safety in the joint environment and the task of security forces in protecting these assets — something never taken lightly.

Finally, we hear from Generation M on the very real issue of drowning.

In closing, my thanks to all contestants who participated in the Air Force Safety Slogan Contest. Unfortunately, there can only be one winner. From Headquarters Air Force Safety, Safety Issues Division, the winner is Dan Stanton for submitting this slogan: "Safety. It's an Attitude. Get One!" Congratulations, Mr. Stanton! ★★

U.S. Air Force photo by Senior Airman Whitney Lambert
U.S. Air Force Safety Shield by Amanda Carrillo
Illustration by Dennis Spotts

The Airman-to-Airman Program

LT. COL. TOM GREETAN
Media and Force Development Division
Air Force Safety Center
Kirtland AFB, N.M.

Last September, the Air Force Safety Center began its newest safety initiative, the Airman-to-Airman, or A2A, program. The goal of the program is to utilize 18- to 26-year-old Airmen, who have a unique experience in their background, to help us identify shortfalls in our safety messages and communications methods when targeting their age group. Eleven Airmen from the major commands were chosen to participate. They'll meet four times a year to address safety issues including distracted driving, alcohol usage, risky behavior and numerous others.

The first A2A Safety Advisory Council met Jan. 5-7, 2010, at AFSC, Kirtland AFB, N.M., with eye-opening results on both sides of the table. The AFSC staff learned that many of the safety messages are not getting to Airmen "on the line." The participating Airmen were shocked to see the statistics on the number of their fellow

wingmen who die every year in preventable mishaps. They then rolled up their sleeves, spent three days working and then briefed the Air Force chief of safety on their prevention recommendations targeting the topics assigned. They also recommended more efficient ways of communicating with their age group. Over the next few months, these recommendations will be evaluated by AFSC to determine the best ways to implement them.

In addition, six of the A2A Airmen were filmed telling their mishap story, the lessons they learned the hard way and what they wish they would have done differently. Their leadership was great! These six videos will join the two A2A videos produced by 99th Air Base Wing Public Affairs, Nellis AFB, Nev., on the AF Safety Center portal page.

This program is off to a great start, and we expect even more great things from these 11 Airmen! See page 8 for an article from one of our outstanding A2A Airmen.

U.S. Air Force photos by Dennis Spotts

The Weapons Safety Division

Spotlight on

Weapons Safety Division Chief
Col. Rodney Mason

Deputy Chief
Daniel Orchowski

AFSC Security Manager
Marge Zeleniak

Conventional Weapons Safety Branch (SEWC)
Lt. Col. David Wiesner - Branch Chief
Albert Webb - Chief, Explosives Site Planning
Richard Henry - Chief, Hazard Classification
Maj. Shane Frith - Military Munitions Response Plans
Lon Moyer, Sr. - Explosives Site Planning Team Superintendent
William Hutson - Explosives Site Planning Team Manager
Master Sgt. Sidney Guidry, Jr. - Explosives Site Planning Team
Master Sgt. James McMurry - Explosives Site Planning Team
Gary Campbell - Explosives Site Planning Team
John Lahoff - Explosives Safety (BAH)
Shawna Grant - Student Hire
Danica Gray - Student Hire

Nuclear Weapons Safety Branch (SEWN)
Francisco Carrillo - Branch Chief
Benny Martin - Chief, Nuc. Surety Policy
Dr. Steven Rademacher - Radiological Safety
Lt. Col. Bradley Buxton - Chief Engineer, Nuc. Wpns.
Lt. Col. Gene Hardinge - ICBM & Air-Launch Missiles
Lt. Col. Kenneth Pascoe - Directed Energy Wpns.
Maj. Darin Daggett - Program Mgr., Air-Launch Nuc. Wpns.
Capt. Richard Mutter - Program Mgr., Nuc. Aircraft Programs
Chief Master Sgt. Richard Stover - Prog. Super., Air-Launch Nuc. Wpns.
Master Sgt. Joseph Fontenot - Super., Nuc. Surety Oversight
Master Sgt. Miguel Garza - Super., Nuc. Aircraft Programs
Master Sgt. William O'Laverty - Super., Nuc. Wpns. Systems

LT. COL. GENE HARDINGE
Weapons Safety Division
Air Force Safety Center
Kirtland AFB, N.M.

The Air Force Safety Center's Weapons Safety Division is the keystone to ensuring conventional and nuclear weapons in the Air Force arsenal are safe, secure and reliable. Our division has several roles in ensuring weapons safety. We execute mishap prevention and investigation programs for conventional and nuclear weapons systems. We conduct explosives articles hazard classifications, approve explosives site plans, establish U.S. Air Force nuclear safety criteria and oversee certification/employment rules for Air Force nuclear energy systems. We also chair the Non-nuclear Munitions Safety Board, Explosives Safety Council and Nuclear Weapons System Safety Group.

The division is authorized 16 military, nine civilians and four contractor positions. We're divided into two branches: Conventional Weapons Safety and Nuclear Weapons Safety.

The Conventional Weapons Safety Branch provides leadership and guidance relating to hazard classification/testing, explosives safety testing and analysis, explosives site planning and the military munitions response program/explosives safety submissions. Hazard classification and testing is governed by T.O. 11A-1-47, *DOD Ammunition and Explosives Hazard Classification Procedures*. The branch serves as a member of various joint service and Secretary of Defense-level committees, coordinates on joint service hazard classifications and oversees inputs from hazard classifiers from Eglin AFB, Fla., and Hill AFB, Utah. For explosives safety testing and analysis, the branch verifies explosives hazards from conventional munitions and validates that personnel in the field are not exposed to unnecessary risks. The branch also has the vital role of explosives site planning. It's the final Air Force vetting authority for explosives site plans, receiving an average of 960 submissions per year. The branch is also responsible for the MMRP/ESSs. The ESS documents provide the specifications for conducting work activities at project sites. The branch reviews all aspects of the documents before submission to and approval by the DOD Explosives Safety Board.

The Nuclear Weapons Safety Branch ensures the Air Force maintains the four DOD safety standards found in DOD Directive 3150.2, *Nuclear Weapon System Safety Program*. The four standards serve as the foundation for all nuclear weapons safety matters:

1. There shall be positive measures to prevent nuclear weapons involved in accidents or incidents, or jettisoned weapons, from producing a nuclear yield.

2. There shall be positive measures to prevent DELIBERATE pre-arming, arming, launching or releasing of nuclear weapons, except upon execution of emergency war orders or when directed by competent authority.

3. There shall be positive measures to prevent INADVERTENT pre-arming, arming, launching or releasing of nuclear weapons in all normal and credible abnormal environments.

4. There shall be positive measures to ensure adequate security of nuclear weapons under DODD 5210.41, *Security Policy for Protecting Nuclear Weapons*.

The branch ensures these standards are followed through implementation of a variety of programs.

First, the branch develops and disseminates policy guidance governing the Air Force Nuclear Weapons Surety Program. This is done through the Nuclear Weapons System Safety Group. The NWSSG proposes weapons system safety rules for nuclear weapons systems. These rules require approval by the Secretary of Defense. The branch also administers the nuclear safety design certification aspects of the Air Force Nuclear Certification Program and evaluates weapons system hardware and software modifications against specific nuclear safety criteria.

Secondly, the branch works on the 91b Permitting Program. Paragraph 91b of the Atomic Energy Act of 1954 governs Air Force radiological activity and provides our division with regulatory authority over several radiological materials. These materials include residuals from nuclear weapons accidents, nuclear reactors, nuclear weapons maintenance in buildings and residuals from atmospheric testing sampling programs. Numerous nuclear weapons accident and maintenance sites over the past 50 years have been investigated and remediated under AFSC regulatory oversight. The branch keeps track of activity at 91b sites, governs future activity as determined by land's end use and issues permits when appropriate.

Next, the branch establishes Air Force overarching guidance and policy for directed energy weapons safety by chairing the Air Force Laser System Review Board and serving as a voting member of the Laser Systems Safety Working Group. The branch also provides oversight to the Air Force through nuclear surety visits, nuclear surety oversight inspections, unauthorized launch studies and the flagword reporting process.

AFSC's Weapons Safety Division continually works to uphold the highest standards in potentially high-risk munitions and nuclear operations, as well as management of growing directed energy weapons operations.

U.S. Air Force photo by Master Sgt. Francis M. Dupuis

A2A Safety Advisory Council

STAFF SGT. WILLIAM J. RUBLE
635th Supply Chain Management Group
Scott AFB, Ill.

On Jan. 5-7, 2010, 10 Airmen and I had the great privilege to be part of the Airman-to-Airman Safety Advisory Council at Kirtland AFB, N.M. The Air Force Safety Center created the "A2A" program to increase the efficiency of Air Force safety programs.

When we arrived at Kirtland, we all knew the basic reason for being there but were unsure of what to expect. On the first morning, we met with the AFSC team. They told us about their many safety programs already in effect. We had never heard of these programs, making the point very clear of one of the reasons we were invited to Kirtland.

The A2A program was created not only to promote safety, but to help ensure the safety message is getting through to people across the Air Force. We come from all different major commands. When we returned to our duty stations, we could start spreading the word and letting people know the beneficial programs that are out there for everyone to take advantage of. As the first day came to an end, the class became a unit of one. We knew we had to come together and complete the task at hand, not only for ourselves but for everyone in the Air Force as well.

Through the week, we gave input on different topics that affect us all: safety communication; responsible choices and peer pressure; distracted driving and fatigue; drinking and driving; risky and inexperienced driving; and motorcycle safety. All topics were for the group to suggest solutions to help resolve the problems. We came together and made great progress, especially with leisure and high-risk activities. The AFSC team was really excited about our ideas.

During our visit, one of the team members brought up a statistic that'll never leave my head. Since 9/11, 55 Airmen have died in war. During that same time period, the Air Force had lost 588 Airmen to off-duty fatalities. When I look at that number, it blows my mind! This is why safety is a big issue. After hearing that, I became really focused as did the rest of the class. We need to reach out to our fellow Airmen and let them know about the safety programs available so that the number doesn't rise to 589.

When at your next Commander's Call and a safety briefing is being presented, please listen up. The five- or 10-minute briefing you have to sit through just might be the information that could save your or your best friend's life. Safety is very important and needs to be taken seriously.

I would like to thank the entire AFSC team for letting me be a part of their A2A Advisory Council. I can't wait until our next meeting. Remember: AIR FORCE SAFETY IS NO ACCIDENT!

Digital photo and illustration by Dennis Spotts

Blue 2

COL. SID "SCROLL" MAYEUX
Chief, Aviation Safety Division
Air Force Safety Center
Kirtland AFB, N.M.

I remember "back in the day" when I was sweating all the math I'd have to learn to become a qualified aviator. Math wasn't my forte, but I soon learned that the U.S. Air Force would teach me all the numbers I would need to know. Those numbers have stuck with me like the opening film clip in the old AAFES movie theater at Spang: "… Welcome to your Army and Air Force Exchange Service Theater. …"

You remember the numbers, don't you? The one-to-60 rule, 332-1521 for cloud separation, 121.5 for VHF guard, x2 for UHF.

And the rules … East is least, west is best; NE — odd; SW — even. These are the foot-stompers, even today … the BASICS. No matter how much glass is installed in the cockpit, we can all hang our hats on these basic rules and numbers.

Six months ago, we spread the word that the Air Force finished out FY09 with the lowest-ever Class A aviation rate: 17 Class A aviation flight mishaps for a rate of 0.8 mishaps per 100,000 flying hours. That's phenomenal! At that time last October, I represented the Air Force at an international flight safety conference in India. I'll tell you, I was treated like a rock star. Delegates from 50 air forces' aviation safety offices wanted to know how we made that sort of progress. Even the chief of safety for the Russian air force (wow!) introduced himself and said with frustration, "I can't get our aviation rate anywhere below 3.5 per 100,000 hours, and you have a 0.8 rate. How did you do it?"

Back to basics, from the leadership all the way down.

We've been talking about "Back to Basics" for years. And I've often asked what that phrase means. Last year we actually quantified it for you.

"Back to Basics" is a leadership and peer cultural emphasis on discipline and compliance with guidance and operational procedures. It's book knowledge … knowing your jet, knowing your Dash-1 and Dash-34 and knowing the 11-series Air Force instructions for your aircraft. It's having a firm grip on your local area procedures. It's about thoroughly planning each and every flight, as if you haven't flown it in many moons, no matter how much you want to brief it as merely "standard."

It's about holding each other accountable for deviations. Debrief your flights thoroughly — not to hammer your buds, but to make sure all that fuel was burned to make you better fliers, rather than for the simple joy of slipping surly bonds.

So in this edition of ***Wingman***, I chose "Back to Basics" as our aviation theme for two main reasons. First, it's springtime. Like we said last year, now is the time of year when weather clears and all you warrior Airmen kick up the flight training programs to capitalize on the good weather; thus, the risk for mishaps goes up.

Secondly, our ops training experts and weapons officers are doing a great job introducing training events driven by our AOR tactics, which is as it should be. However, last year we lost three jets and four Airmen in tactics-driven training events. Not that the tactics caused the mishaps, but they all involved the BASICS to some extent. Get with your squadron FSO to review last year's fatal mishaps and then get back into those books. Know the rules, relearn the numbers and hold yourselves to the standard.

At the end of the day, I only care about two numbers: the number of takeoffs and the number of landings. May they always equal each other. Fly hard and fly safe!

Blue 2's engaged!

U.S. Air Force photos by Dennis Spotts

"We're Losing Airspeed!"

Anonymous

"We're losing airspeed" is not a good thing to hear in a climb when you're supposed to be maintaining a constant speed and not a good thing to hear from your shiny new co-pilot when you're a brand-spankin' new aircraft commander. A flash scan of the instruments confirmed his concern. I immediately felt the tiny hairs on the inside of my nose start to tingle. Panic started to fill my fingernails and quickly spread to my elbows. I looked at my co and gave him my best Clint Eastwood manly squint. He didn't buy it and barked, "We're going to stall!"

The day started out calmly enough. My crew and I were staying about 30 minutes from MacDill AFB, Fla., in the Tampa suburbs. We'd been flying about three times a week in Florida because our runway at Grand Forks AFB, N.D., was closed for the summer. It was a pretty nice gig, and our three-person crew had been flying together the whole month we were there. This particular Friday was no different from the previous 20-something days: beautiful morning, monster afternoon thunderstorms with huge, towering anvil clouds forecasted all around the Gulf Coast and clearing nightly.

Our crew was familiar with the daily flying routine by now. Show up four hours before takeoff, look over your mission and brief it up, then step to the jet about two hours later. This particular day was an afternoon sortie, so we were preparing ourselves for some heavy-duty storm dodging. Awesome.

We got out to the jet and started our preflight. Everything was going well — no maintenance problems or gremlins and no indications that things could get ugly. We even received our air traffic control clearance in a reasonable time. All checklists were called complete. We had this MacDill stuff shacked!

Air traffic control radioed, "Raid 44, cleared for takeoff, runway two-two." I replied, "Roger, Raid 44 cleared for takeoff, runway two-two."

It was my turn to do the takeoff so I got to practice the local procedures again. Because of the crowded airspace over the Tampa Bay/St. Petersburg area, we were restricted at or below 1,600 feet on our initial climb. After further coordination, we were given an unrestricted climb to FL210 — right through some building thunderstorms. We were climbing right on schedule through the clouds when I heard those sinking words …

"WE'RE LOSING AIRSPEED!" … "WE'RE GOING TO STALL!"

Any salty veteran could see we were still flying just fine. Heck, a contact-phase undergraduate pilot training student could figure that out! I still gawked at the instrument panel like it was a rectangular pterodactyl. We were still IFR so I expected the worst — thunderstorm penetration! The weather radar was showing only yellow, no red. I knew you could mess up the tilt and see nothing, even when you're in a huge cell, but the co-pilot had been doing a good job keeping up with the radar on this departure.

Since my airspeed indications started decreasing, I decreased my climb pitch and advanced my throttles to the stops. No help. I actually started a slight descent and yelled, "Tell Center we need to stop here!"

By this time, I was really scared. I moved my eyes like I was at a tennis match between the attitude and airspeed indicators. Luckily for me, there was a small red light flashing in the corner of the attitude indicator that caught my eye. The indicated mach number display was

flashing a .90 — then a .91. What? That didn't compute. We were obviously LOSING airspeed, not accelerating. What would cause the displays to conflict?

I didn't immediately think of circuit breakers — I thought of ice. Being a Grand Forks-trained warrior of the North, I had flown quite a few hundred hours in sub-zero weather. I knew that my pitot-static instruments can get obstructed easily in freezing rain and other nasty conditions, so I said, "Hey co, how's your pitot tube doing over there?"

I'll never forget his reply: "Uh, it would probably work better if I turned on the pitot heat."

Rule No. 8 of flying with a crew: Don't let your co-pilot kill you.

During the "Starting Engines and Before Taxi" checklist, Step 20 instructs: PITOT AND Q-INLET HEAT — ON (CP). The "CP" after the step indicates it's the responsibility of the co-pilot to do this step, not a coordinated checklist item between the pilot and co-pilot. Also, since the Q-Inlet heat was turned on, I assumed the pitot heat was also on. The AC can't see the pitot heat switches from the left seat.

If we had actually accomplished that step, we would've had normal airspeed indications and wouldn't have needed to decrease our climb-out pitch or descend. And I'd probably have more hair right now.

We turned on the pitot heat, and our indications returned almost instantly. I don't know if they would return 99 times out of 100 or one out of 100; I didn't care. It worked.

I learned a lot from that scare. A crew aircraft should never have this happen. Backing each other up on checklists is a fundamental part of crew resource management, even for individual steps and steps that are partially complete. Complacency can kill. Then again, so can your co-pilot.

U.S. Air Force photo by Darin Russell

"WE'RE GOING TO STALL!"

Complacency is NOT for the Birds

MAJ. ROB "HOOT" HOERITZ
349th Air Refueling Squadron
McConnell AFB, Kan.

The central portion of the United States has a serious issue when it comes to bird strikes, especially during migratory periods. McConnell AFB, located in Wichita, Kan., is no exception. During my requalification in the KC-135R, a flight in October without a bird strike seemed rare. Sometimes the crew heard the strike and performed a full-stop landing to allow for a maintenance inspection. Maintenance normally didn't find any damage. We'd go back to work and take off again until the next bird strike occurred or until we completed the sortie. Other times we flew an entire sortie and didn't realize we had a bird strike, or two or three, until accomplishing the postflight inspection and noticing the snarge. Snarge is the technical term for bird remains coined by the bird/wildlife aircraft strike hazard experts at the Air Force Safety Center. For every bird strike, we found ourselves filling out extra paperwork to report the mishap that only seemed to extend our day. The bottom line is I was slowly being conditioned to view a bird strike as only a time-wasting hassle and was becoming desensitized to its potentially devastating effects.

On one particular evening as I was nearing the end of my training, we were scheduled for a refueling mission followed by transition. After slipping our takeoff a few times for various maintenance issues, our refueling was cancelled. We finally were able to get airborne to complete the transition portion of the sortie. I was in the jump seat on the initial takeoff, and we proceeded to holding to do a seat swap. As I settled into the left seat and buckled up, I barely captured a blur out of my left eye's peripheral vision, followed by a large audible bang. At the time I wasn't sure what I'd seen, or if I'd seen anything at all, as the city lights of Wichita glared off of the side cockpit window. I glanced at the engine instruments with my focus on No. 1 and No. 2 engines; everything appeared normal and stable. Without a doubt, I knew I heard something loud as if somebody had slammed the Dash-1 on the crew entry grate. I asked the pilot in the jump seat if he had dropped something, but he said he hadn't. At that point I said, "Crew, I think we just hit a bird. Boom, please go scan the left wing and let me know what you see." Nobody else on the crew heard the bird strike, and the boom reported back that everything appeared to be normal.

In the moments that followed, I had many thoughts. Did I really hear something? Maybe we didn't hit a bird. Should I disregard my first intuition and try to knock out this training so we didn't have to manipulate the deployment schedule? These were my Type A "go-go-go" thoughts. But as is the case with many other decisions, I found myself asking if the juice was worth the squeeze. In the words of operational risk management, is the benefit and gain toward mission accomplishment worth the risk of the identified hazards?

The Dash-1 contains a specific caution that clearly and directly deals with this situation and reads, "Serious engine damage can occur from bird ingestion without accompanying abnormal indications on engine instruments. If bird ingestion is suspected, consider operating the engine at a reduced thrust setting and land as soon as practicable for inspection." If we had abnormal engine indications, deciding to land would be a no-brainer. Without the Dash-1 caution, the decision to land or continue the flight becomes a little grayer. If you believe your flight manual was written in blood, so to speak, then you might find yourself wondering what event occurred to bring forth a particular note, warning or caution. In this case, I questioned why the Dash-1 mentioned this caution that dealt directly with this situation.

If a bird strike was suspected, but no damage was immediately noted or observed, then a pilot might be inclined to continue the mission. However, minor and undetectable damage may have occurred that could potentially lead to significant damage, failure, costly repairs or perhaps even worse consequences over time. With this realization, I knew it was time to "knock it off," land and have the aircraft inspected. Chances were pretty good that maintenance would check out the aircraft and clear us to fly. Once again,

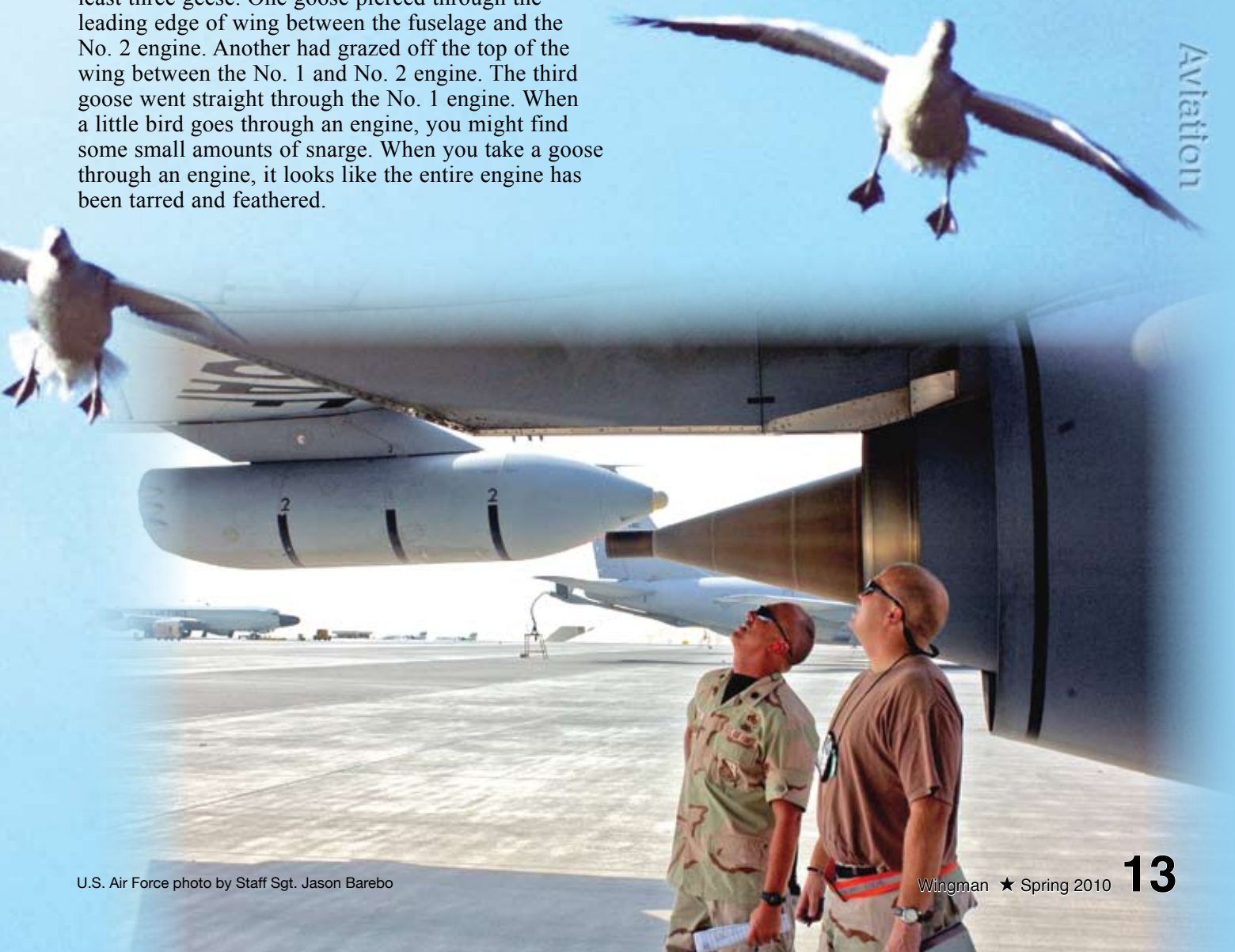
it was just going to be another late night dealing with bird strike inspections and filling out paperwork for the safety office.

We performed an uneventful, four-engine ILS to the runway for the full stop. As we taxied into our parking spot, I noticed a few maintenance folks pointing their fingers toward the left wing. They waved their buddies over, pointing with a little more expression and excitement. At that juncture, I figured maintenance had identified a bird strike. After chocks were installed, the crew chief came up on the interphone and said, "Sir, you can shut her down; you ain't going anywhere." By this point, it seemed the entire late shift had gathered around to get a peek at this bird strike.

The suspense was killing me. I opened my sliding window, slung my head out and was in awe with what I saw. There was a large gaping hole through the leading edge of the wing. It looked like a bowling ball battled the aircraft and won. I was in utter disbelief. On the walkaround, we realized we had taken out at least three geese. One goose pierced through the leading edge of wing between the fuselage and the No. 2 engine. Another had grazed off the top of the wing between the No. 1 and No. 2 engine. The third goose went straight through the No. 1 engine. When a little bird goes through an engine, you might find some small amounts of snarge. When you take a goose through an engine, it looks like the entire engine has been tarred and feathered.

After viewing the damage, I once again had many thoughts. What if we had continued the mission? What if we had lost both engines? I can't believe the plane flies just fine with a big, gaping hole in the wing. These engines are pretty durable. This could have been much worse. Thank goodness for the caution about bird strikes. I'm sure glad we decided to land.

This is not just a story about birds, but one example of parallel stories most of us have experienced displaying typical human behavior. The first time we encounter an issue with our aircraft, environment or crew, we use great caution while closely monitoring the issue. After multiple exposures with no significant effects, we become a little more relaxed and desensitized to the issue, which generates complacency. This attitude is generally one of the links in the chain to a mishap. I challenge each of you to avoid this pitfall. Remain on top of your game and never underestimate your current situation. NEVER hug a lion and ALWAYS fly safe!



U.S. Air Force photo by Staff Sgt. Jason Barebo

Of Weather

CAPT. WYCK FURCRON
62nd Fighter Squadron
Luke AFB, Ariz.

It was early July on the high plains of New Mexico. Anyone that has ever been to Clovis, N.M., will tell you there is a clear weather pattern that runs across the plains every summer. Thunderstorms can be predicted almost every day in this area of the country but they don't stop flight operations at the 27th Fighter Wing.

I'd been assigned to the 522nd Fighter Squadron for over two years and had grown used to the fickle weather patterns of the state. On average, Cannon AFB, N.M., is shut down two or three times a week for varying amounts of time due to summertime thunderstorms. The upside to this weather pattern is the rate of change. While the storms may close the field down or force instrument flight rule conditions, visual flight rules can rapidly return, keeping diverts low.

I checked the schedule one afternoon to find myself scheduled for continuity training, basic flight maneuvers, the next day with a young wingman just out of mission qualification training. There's nothing better than taking out two of the Vipers to do nothing but improve at BFM. My wingman wanted to work on long-range offensive BFM and short-range defensive BFM. I referenced the flying currencies and decided we also needed to do a formation takeoff due to currency issues. With the basics of the mission planned, we met at brief time the next day for what was expected to be a good time.

The mission briefing was uneventful. Like most CT missions, it was short and to the point. We talked about G awareness and weather considerations for our risk management. Both of these topics were discussed as "what if's." Radar-assisted trail departure and recovery were briefed as backups to our primary game plan, with no more discussion on either.

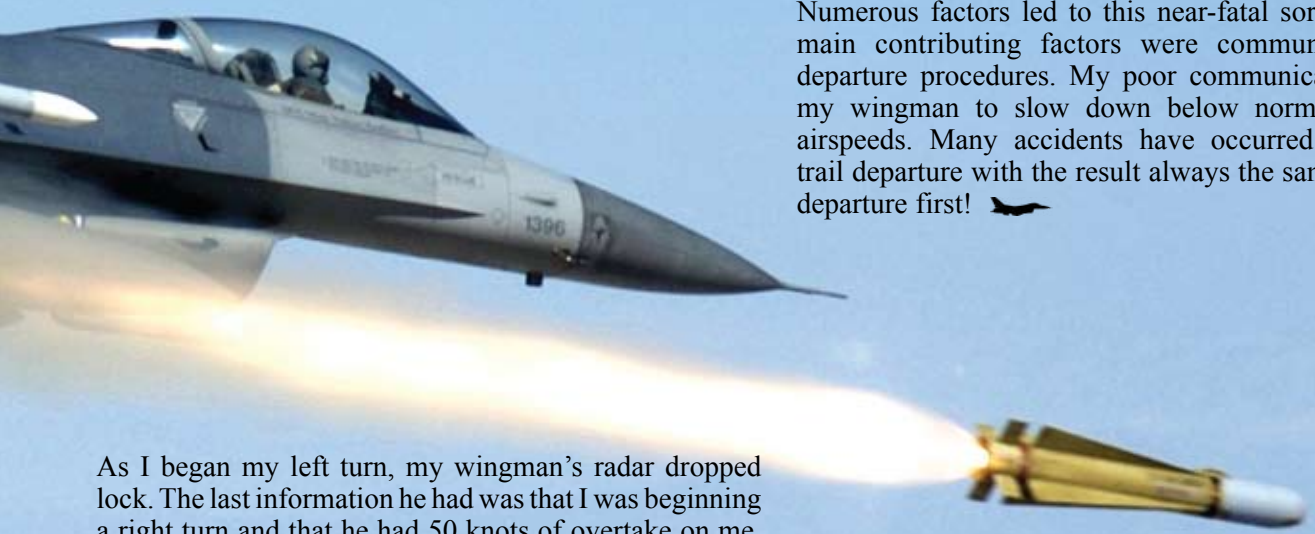
At the brief and at step, the weather was VFR with a broken deck at 4,000 feet above ground level about 6,000 feet thick. I changed our primary takeoff game plan to a radar trail departure. With no additional words, we stepped out the door. Step through arming went as briefed. A light rain began to fall but the runway remained dry. We finished arming up and pulled up to the runway ready for takeoff. Nonstandard formation was approved for our radar trail departure, and I began my takeoff roll.

As briefed, my wingman delayed his takeoff roll 20 seconds after mine. Shortly after I expected him to be off the ground, my wingman transmitted, "Python 2 tied," indicating that he had a radar lock, and I could now completely focus on flying the departure.

I began a left turn passing through 7,000 feet when I entered the weather. The air traffic controller cleared me for a right turn to a heading 30 degrees off my nose,

and Wingmen

and I was told to level off at 10,000 feet. This was approximately 3,000 feet below the top of the broken deck. ATC told me to expect to extend 10 miles to the south for thunderstorms in the area. I started to pull my power to slow down and conserve gas but didn't transmit these parameters to my wingman. Over a minute later, I was cleared for a left turn with a climb up to 18,000 feet. I was cruising at a max range airspeed of 290 knots. When I slowed down to this airspeed, I had no idea I had set off an unfortunate series of events that would lead to my wingman going out of control.



As I began my left turn, my wingman's radar dropped lock. The last information he had was that I was beginning a right turn and that he had 50 knots of overtake on me. He smartly pulled power while starting a climbing left turn. He never told me that he had lost lock and became disoriented as he started the climbing left turn. He had attempted to use air combat mode to relock me.

In the F-16, air combat maneuvering radar mode doesn't show the pilot pitch ladders or steering information. There was no information to tell him that he had climbed through the assigned altitude and turned past the assigned heading. He became so disoriented he didn't remember to power up the engine to maintain the airspeed that I didn't tell him I was going to maintain. His radar never regained the lock because it had failed and began a reset. As he continued the left turn (thinking he had rolled out), his airspeed decreased to 110 knots at over 50 degrees nose high. The jet stopped responding to his inputs as it rolled over left to recover from the impending stall.

The beauty of the F-16 is that it will almost always recover itself before going into an out-of-control situation. My wingman did the smart thing and immediately applied critical action procedures. The aircraft initiated its recovery at 8,000 feet AGL, and the aircraft came out of the dive at 2,000 feet AGL. The bailout altitudes for the F-16 are 6,000 feet out of control and 2,000 feet in control.

Numerous factors led to this near-fatal sortie. The two main contributing factors were communication and departure procedures. My poor communication caused my wingman to slow down below normal departure airspeeds. Many accidents have occurred on a radar trail departure with the result always the same — fly the departure first!

U.S. Air Force photo by Master Sgt. Michael Ammons

Is the Risk Worth

CAPT. STEPHEN JONES
62nd Airlift Wing
McChord AFB, Wash.

As aviators, we pride ourselves in accomplishing any mission we're assigned. The missions we fly often require a lot of skill and considerable job knowledge. Our ability to complete these missions is dependent on many factors that we may or may not be able to control. No one wants to be the person that cancelled a mission for what others would consider to be trivial reasons, so we often go to great lengths to get the job done. As we mature as pilots, our understanding of our abilities increases; we realize there's no shame in making decisions based on these abilities. Sometimes this takes an experience in which we potentially pushed ahead more than we were capable of doing. I was lucky enough to learn this by listening to a pilot who had learned the hard way.

Aviation

For a first-assignment C-21 pilot, it doesn't take long to become an aircraft commander. The job isn't that difficult, and it doesn't take long to become familiar with the intricacies of running the mission and aircraft. You get tasked on a mission the day before and then work as a crew to plan it. I was tasked on a mission to fly a high-ranking distinguished visitor from a small, uncontrolled airfield in California to Stockton, Calif. I'd been to both airfields before, as had my co-pilot, so the mission planning wasn't terribly difficult. We were to drop off the DV in Stockton and return to home station to end what would hopefully be a relatively short day.

The first leg of the flight was uneventful. We were well ahead of schedule in getting to the first airfield. Upon landing, we rechecked all of our NOTAMs and weather and checked in with the DV's aides. They informed us that they had an additional passenger, so we updated our manifest and started to calculate the takeoff and landing data. Although it was hotter than forecasted and we had more passengers than we'd originally planned, our single-engine climb gradient still met the Air Force instructions requirements. We were ready to press.

The DV and his party showed up to the jet on time, and we were on our way. Since it was my leg to fly, I briefed the departure and all required items, to include emergency return considerations. We made our uncontrolled airfield takeoff calls, ensured that there was no conflicting traffic and started our takeoff roll. Just after rotation, my co-pilot called out a bird directly in front of us. I had minimal airspeed to maneuver and knew it would be close. I thought that we had potentially struck the bird, but my co-pilot was pretty sure we had missed it. All engine indications were normal and neither of us heard or saw anything that would lead us to believe we had a bird strike. A flight surgeon had been on the headset also and felt we had missed the bird as well.

We decided to continue with the originally briefed clearance rather than divert back to the airfield, confident that we had narrowly avoided potential disaster. We climbed up to cruise, ran the rest of the normal checklists and turned on the autopilot. The flight was only scheduled to last an hour, so it wasn't long until we began our descent into Stockton. The weather was VMC, so I decided to fly a normal straight-in visual approach. As we began to slow and configure, the No. 2 engine began minor oscillations on the fan reading. It was nothing drastic. The co-pilot and I assumed it was the engine sync, so we turned it off, which didn't affect the oscillations. We decided it was minor enough that we could leave the engine up at its current power level, complete our approach and further investigate the situation on the ground. We landed without incident. After unloading the passenger luggage and shutting down both engines, we went to take a look at the No. 2 engine.

On the leading edge of the nacelle, we noticed there were bird feathers and blood that trailed through the fan blades and out through the tailpipe. Upon closer inspection, a few of the fan blades were slightly bent with damage that seemed fairly minor. I immediately called our safety officer who reminded us of the proper paperwork for a bird strike. My next call was to our maintenance shop. After describing the damage, the maintainer felt like the damage was insufficient to create any problems. He

U.S. Air Force photo

the Reward?

suggested that we either stay at Stockton and have it checked out by a maintenance team the next day or fly the jet home and have it looked at that afternoon.

I felt like the engine would hold up fine; I'd often seen nicks and dents on blades that were written up as acceptable. Although there had been fan-speed variations, they were minor enough that I wasn't terribly concerned. I had all but convinced myself that we were good to go, but something just didn't feel right. I decided to call one of our ADOs whose experience and judgment was highly respected in the squadron to get his take on the situation.

I explained the entire situation to the ADO, and he agreed that coming back might not be a big deal. He then followed it up with some advice that completely changed my mind. He pointed out that our mission was already accomplished, we had no follow-on passengers and the risk level was something that I had to be comfortable in accepting. No one would fault me either way as it was truly my decision to make. It seems painfully obvious now, but as a young aircraft commander, my desire to accomplish the mission was blurring the fact that taking any kind of potential engine problem into the air could be catastrophic. While single-engine flight is something that C-21 pilots accomplish on a regular basis, the majority of C-21 mishaps occur as a result of in-flight, real-life, single-engine emergencies. This risk was clearly not worth the reward.

After the phone call, I realized there was no harm in being cautious. Although I might take some grief about the convenience of breaking in a nice place when I could have flown home, the risks of continuing far outweighed any reason to continue. Had I not made the last minute decision to call the ADO, I could have put myself and my co-pilot in an extremely hazardous situation.

No matter how much an aircrew may pride themselves on high mission accomplishment rates and no matter how many times these rates are briefed to commanders, there are still situations in which the risks need to be carefully considered that could result in cancellations. It's important to take all considerations into effect and make the safe decision. While each aircraft commander has different levels of comfort, we all have to be comfortable with our own skill level and be willing to accept that sometimes it's just a better decision to wait for more favorable conditions.

U.S. Air Force photo by Master Sgt. Val Gempis

Backed

CAPT. BRANDON R. LEIFER
92nd Air Refueling Wing
Fairchild AFB, Wash.

I was on my first combat air-refueling sortie as an aircraft commander and my adrenalin was really pumping. I was trying to stay calm and collected but my unfamiliarity with the area of responsibility had left me very anxious. The brief and preflight were uneventful, except that we were a few minutes late for engine start. We fell behind the planned timeline while helping the boom operator load communications. The late start shouldn't have been a problem, but after looking back, it was a contributing factor to the situation that was about to unfold.

Taxiing at this deployed location was somewhat tricky due to the congestion and host nation inadequacies in the International Civil Aviation Organization procedures. We had also recently experienced a Class A mishap, so the atmosphere was somewhat tense between all parties. As a crew, we thoroughly briefed all phases of the flight and paid particular attention to the takeoff and taxi.

Due to the language barrier, the airfield used a local liaison who clarified any confusion between air traffic controllers and the aircrew. With a sound plan in place, we proceeded to put it into action. We were running late and hurried the taxi. As we approached the hold-short line, I prepared for the back-taxi by asking the other pilot to explain the visual cues he used to complete his 180-degree turn. We were required to back-taxi from Charlie taxiway due to the host nation parking aircraft between Alpha and Bravo taxiways. The tower then cleared our aircraft to back-taxi and line up on the runway. Just as we passed Bravo, the tower came over the radio and directed us to "expedite" our back-taxi because of inbound host nation traffic. Just as we started our 180-degree turn, the tower cleared us for takeoff and in a somewhat tense tone, once again said, "Expedite."

The controller responded once again,
"TURN RIGHT NOW!"

into a Corner

We were already in a hurry, so at that point I made the decision to continue the turn and not exit off the runway at Alpha taxiway. The consequences of exiting at Alpha would have been detrimental to mission completion as we probably would've had to shut down engines and be towed out because we would've been stuck. It probably would've been the safest action at that point. I pushed up the throttles and made my final safety checks as we lined up. After getting the safety calls from the rest of the crew, I released brakes, pushed up the throttles and called for the pilot not flying to fine-tune the throttles.

The aircraft accelerated perfectly, and we made our 90-knots check as we were rolling down the runway. At this point, things began to get pretty exciting. In broken English, the tower controller cleared the airliner on final to land. I confirmed with the liaison that the airliner was just cleared to land. He expressed the same concern I did because we were still on the runway. Just as we approached delta and just above our decision speed, the tower exclaimed, "TURN RIGHT NOW!" Unable to physically stop the aircraft, I expressed to the controller in a loud tone, "WE ARE COMMITTED!"

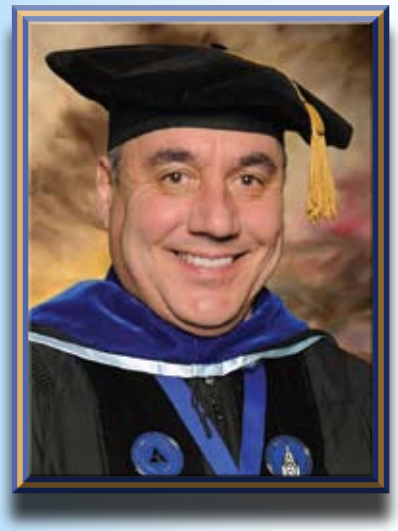
The controller responded once again, "TURN RIGHT NOW!" I responded, "NEGATIVE; WE ARE TAKING OFF!" I reacted to the situation the only way I knew how. Over the tower's frequency, I told the airliner to go around. The controller had seemed to lock up and wasn't saying anything, even though we were still on our takeoff roll. The airliner complied and responded that they were breaking left. I looked over my left shoulder to see the aircraft in a left turn over the threshold. I had the pilot not flying tell the tower that we were going to execute our departure to the right to deconflict with the host nation aircraft. The departure and the rest of the air-refueling sortie went on without any additional excitement. Upon returning, we discussed the situation with the squadron commander and decided as a crew to file a hazardous air traffic report.

During the crew debrief, we had time to analyze everything that had happened and determine how we had ended up in that particular situation. One thing I learned was that I shouldn't have taken the runway until I had a clear situational awareness of the environment. Knowing the environment was hazardous to begin with might have made me think twice about blindly taking the runway. I would have much rather explained why I had a late takeoff than be involved in a HATR or, even worse, bending metal. Make sure you never back yourself into a corner that you cannot get out of!

U.S. Air Force photo by Senior Airman Christopher Bush

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.

The Aviation Well Done Award is presented to Crew 8 of the 7th Expeditionary Airborne Command and Control Squadron, Al Udeid Air Base, Qatar, in recognition of exceptional performance during an emergency that occurred on March 13, 2009. While flying an operational sortie in Southwest Asia, an E-8C JSTARS aircraft developed a fuel leak and crack in its left wing. The crew worked together as a cohesive team to save the crippled aircraft. The mission crew immediately began a multitude of tasks, including informing the command and control agencies and shutting down the mission radar systems. The flight deck coordinated a return to base and performed an aircraft controllability check, knowing that a fuel leak in the wing meant potential structural failure. Finally, due to thoroughly briefed and rehearsed procedures, the entire crew egressed the aircraft in less than one minute after landing. If not for the incredible technical expertise and crew resource management of the entire crew, the loss of a $363 million asset would have undoubtedly ensued. The outstanding leadership and safety awareness displayed by Crew 8 reflect great credit upon themselves, the Air National Guard and the United States Air Force.



The Air Force Safety Center and Air Force chief of safety proudly congratulate Col. John W. Blumentritt, Air Education and Training Command chief of safety, on his completion of a Doctorate of Philosophy in Leadership Studies from the School of Business and Leadership, Our Lady of the Lake University, San Antonio, Texas.

Well Done, Col. Blumentritt!

FLASHphotography courtesy photo

The Mishap That'll Kill You

CAPT. SHAWNEE WILLIAMS
BRIAN JOHNSON, Contractor
Human Factors Division
Air Force Safety Center
Kirtland AFB, N.M.

What if I told you I knew what flight parameters would set up a pilot for a fatal mishap? You'd probably think I'm either misinformed or overconfident. After analyzing 11 years worth of Air Force Safety Center data, we've identified what kills pilots more than anything else.

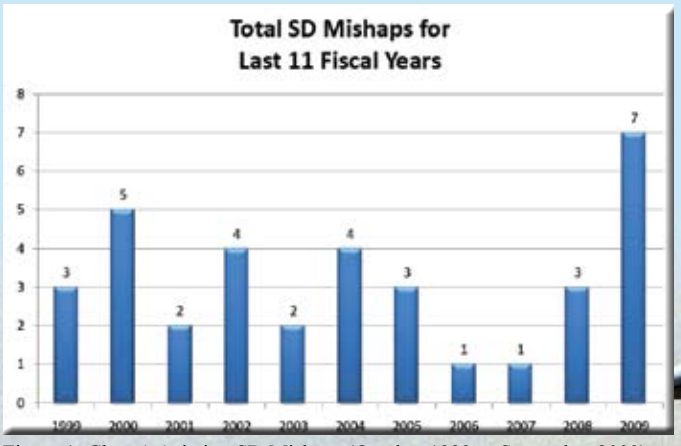


Figure 1: Class A Aviation SD Mishaps (October 1999 to September 2009).

So what is the major cause of Class A mishaps over the last decade?

Spatial disorientation was responsible for 11 percent of all aviation Class A mishaps over the last 11 fiscal years (see Figure 1). Of the fatal mishaps, 42 percent were attributed to SD. Even more striking is the fact that 65 percent of the fatal SD mishaps occurred in fighter aircraft (see Figure 2). SD is an incorrect perception of one's linear and angular position and motion relative to the plane of the earth's surface. Specifically, in the flight environment, SD is an erroneous perception of any of the parameters displayed by aircraft control and performance flight instruments (Air Force Manual 11-217, *Instrument Flight Procedures*, Vol 1, Ch 17).

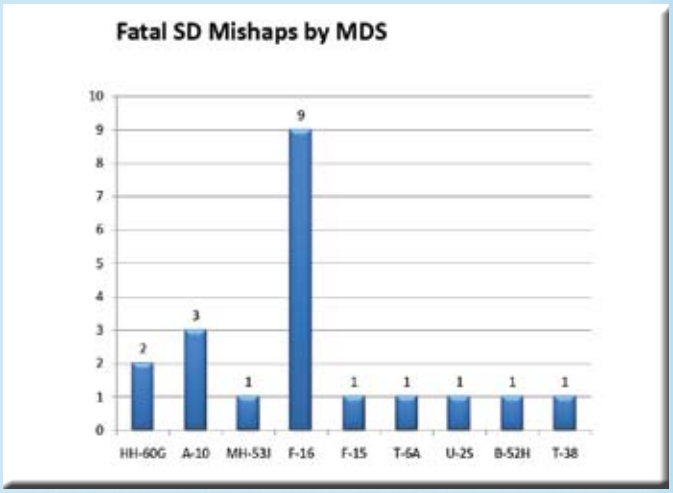


Figure 2: Class A Fatal SD Mishaps by MDS (October 1999 to September 2009).

This erroneous perception is due to a mismatch between the visual and vestibular systems. The visual system is dominated by conscious thought while the vestibular system is controlled subconsciously. Pilots become disoriented when their vestibular system becomes the dominant means for orientation. When your attention is focused on something other than maintaining attitude and altitude or channelized on a specific task, the vestibular system takes over. This often gives unreliable and incorrect inputs, putting aviators at risk for unrecognized SD or Type I SD.

Which flying communities does this apply to and what portions of the

U.S. Air Force photo by Staff Sgt. Aaron Allmon II

mission leave a pilot more susceptible to SD? Pilots of high-performance, single-seat fighters have a higher propensity for SD than pilots of multi-place aircraft and helicopter pilots; more specifically, aviators with an average of 2,500 flying hours in the F-15, F-16 and A-10 communities. Thirty-four percent of the SD mishaps occurred in the F-16C/J communities with the F-15E/A-10A airframes comprising another 17 percent (see Figure 3).

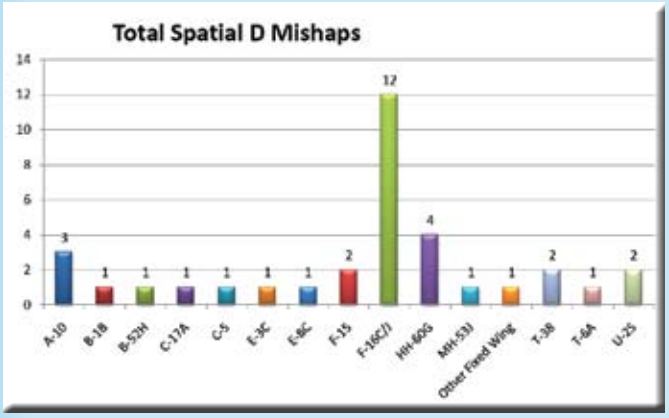


Figure 3: SD Class A Mishaps by Airframe (October 1999 to September 2009).

Most aviators assume that the setup for Type I SD is in the weather (i.e., the leans). However, recent AFSC analysis shows exactly the opposite. While experiencing Type I SD in the weather is dangerous, it'll most likely not lead to a fatal mishap. Rather, task-intensive parts of the mission at night, low altitude, low-to-moderate G's, slight bank and tactical employment are what will put you at the highest risk for Type I unrecognized SD. This is the most dangerous type of SD.

Does your "Motherhood" brief state, "Caution: if you experience SD, recover on the round dials and declare a knock-it-off"? Does it also include the threats of weather and SD? As stated before, if you believe weather is your greatest hazard to SD, you're not capturing the real threat.

The human factors threat arises when aviators lose track of the fundamentals. Pilots must be informed of the compounding effects during their entire sortie. The combination of flying at night under moderate G's while performing maneuvers such as tactical intercept, surface attack tactics or strafe, create the perfect environment for Type I SD. This information must be applied throughout your entire brief. For example, capture the times during tactical employment that your 2/4 ship is at risk for Type I SD and explain how to mitigate the risk.

One TI example consistent with the SD setup is radar work while flying the Doppler notch. While in the notch, you're focused on the runway reading and flying at a moderate two to three G's. You're now set up for Type I SD and are in an inadvertent overbank due to an unrecognized sub-threshold roll and/or the G-excess illusion. Was this

U.S. Air Force photos by Tech. Sgt. Jeffrey Allen

part of your mission brief? Did you brief on where you expected to get task-saturated or that a sub-threshold roll can increase your risk for SD? The vestibular system has a recognition threshold of two degrees per second. That means in a slow roll while distracted for 10 seconds, you can enter a 20-degree bank and not feel it until you bust through the floor. On the other hand, were you simply focused on not "gimbaling" a sensor and staying in the weapons engagement zone? These are elements of the mission that should scare you.

The same guidance applies during SAT. A good setup during SAT is the "safe escape maneuver." Again, you are at moderate two to three G's turning at a low altitude, visually clearing ground fire and employing chaff and flare. Where are you looking during this process? Are you looking back to ensure there are no adversaries/ground fire, or are you looking at the path of flight? You're now in the envelope for the unrecognized illusion that causes an inadvertent overbank. Just as a reminder, these scenarios occur on a clear-and-million day/night.

Just as TI and SAT missions can impose risks in the sub-threshold zone, so can strafe missions. The hazard with this is the distraction that can occur while "putting eyes on target." When pilots are focusing on the target, taking the shot and losing track of the attitude, altitude, etc., this is the point where too many pilots have experienced a controlled flight into the terrain. How can you "recognize, confirm and recover" when you never even recognize the threat?

Inattention, distraction and channelized attention were present in 78 percent of the Type I SD mishaps. These three human factors precipitate SD by keeping the pilot from maintaining an effective instrument cross-check (AFMAN 11-217, *Instrument Flight Procedures*,Vol 1, Ch 17). What this means is the pilot needs to be aware of the most hazardous parts of the TI, SAT and strafe missions.

When experienced pilots operate in task-intensive situations, they must understand what part of their environment is going to set them up for Type I SD and incorporate these elements throughout the mission brief.

You will not recognize, confirm and recover from Type I SD. The only way to save your life from a leading killer of fighter pilots is to prevent SD. Take the challenge and consider tactical events that set you up for unrecognized disorientation. Brief that threat and fly like your life depends on it … because it does!

AFDW — Pacing

ED ADAMS
Air Force District of Washington
Andrews AFB, Md.

Imagine an Airman serving a combat tour in Iraq or Afghanistan and returning home safely, only to lose his life months later in a vehicle mishap. Unfortunately, in today's Air Force, that scenario is not too far-fetched. The Air Force has lost more Airmen in vehicle fatalities than any other cause, including combat. Included in these fatalities are motorcyclists. In FY09, the Air Force lost 20 Airmen to motorcycle mishaps.

One unit — the Air Force District of Washington — has tried to counter this trend over the past two years with a proactive initiative in motorcycle safety. Headquartered at Andrews AFB, Md., a part of the National Capital Region, this initiative has included the leadership and involvement of multiple units and safety offices at Andrews AFB.

Tech. Sgts. Jami Kesselring of the 89th Airlift Wing, Heath Benton of the 316th Wing and Chris Orbits of the AFDW are safety professionals who spearheaded a harmonious working relationship between their organizations and the 11th Wing at Bolling AFB, Washington D.C., the U.S. Navy and the Green Knights Military Motorcycle Club — a club represented by members of the Air Force, Army, Navy, Coast Guard, Air National Guard and military retirees. These units formed a coalition to provide the NCR with a strong, noteworthy motorcycle safety program that puts emphasis on training and awareness.

Professionals in the NCR have carved out a smorgasbord of accomplishments. First, they made a concerted effort to ensure there were enough instructors trained to meet the high demand of motorcycle rider training. Over the past

two years, Andrews AFB has acquired nine motorcycle instructors to teach two primary motorcycle courses in the District of Washington area: the Motorcycle Safety Foundation's Basic Rider Course and the Experienced Rider Course. Additionally, AFDW teamed up with the Navy District of Washington to provide a centrally located training course to support joint services within the NCR. This is the highest concentration of qualified motorcycle instructors in one area.

It's rare to find so many safety professionals who are motorcycle enthusiasts concentrated in one area. This enthusiasm has been well-received and netted good results. Sergeant Orbits instructed the first three MSF courses on Andrews AFB and, to the surprise of many, each course was greeted by the installation's senior leadership who briefed and validated the importance of motorcycle safety.

Last year, the NCR safety professionals supported the NCR Summer Safety Campaign with Sergeant Orbits providing a briefing to the White House Communications Agency, followed by a briefing at the AFDW Summer Safety Call. In support of the 89 AW's Motorcycle Safety Day, Sergeant Orbits and others supported the event by

U.S. Air Force photo by Master Sgt. Jim Varhegyi

the Way!

"*Motorcycle safety and training is the number one noncombat safety concern across the Services.*"

Joint Service Safety Council

joining a ride to southern Maryland. Col. Stephan Shope, the 89 AW vice wing commander, lauded the effort and even led the event on his motorcycle.

In May 2009, Sergeant Orbits was voted the president of the Green Knights Military Motorcycle Club. He began his tenure as president by leading the Green Knights on 700 miles of mishap-free rides to Valley Forge, Pa.; the Civil War battlefields of Gettysburg, Pa.; Antietam, Md.; Harper's Ferry, W.Va. and Manassas, Va. These rides coincided with an NCR joint motorcycle safety event at the Pentagon — an event for all services promoting motorcycle safety as the theme of the day. Vendors and NCR safety professionals provided free motorcycle safety information and introduced and demonstrated safety features of the newest model motorcycles, to include personal protective equipment. The keynote speaker, Maj. Gen. Fred Roggero, Air Force chief of safety, thought the day was a success and was happy to see the installation leadership, safety professionals and motorcyclists promoting safety awareness and working together to reduce risks on the road.

Due to the partnership forged by the safety professionals of the NCR, the AFDW experienced a 75 percent reduction in motorcycle mishaps, with zero fatalities the past couple of years. This partnership resulted in better education, training and mentoring for motorcycle operators from all branches of the military. The initiative and effort are ensuring loved ones come home every night.

"I have investigated fatalities and have seen firsthand what a fatality takes away from families and loved ones," said Sergeant Orbits. "I've seen how a unit is affected. We have missions to complete, and that is made more difficult to accomplish without you. Be smart; ride safe."

U.S. Air Force photo by Dennis Spotts

The Power of the Seat Belt

MASTER SGT. DANIEL RAMSEY
172nd Airlift Wing
Jackson, Miss.

Is wearing your seat belt really that important? Just taking a Sunday afternoon cruise? With airbags in your vehicle and all of the latest safety features, do you really need to wear your seat belt? Every year vehicles are tested to be safer and safer, so do you really need to wear that uncomfortable belt, even if it's just to the store five miles from home?

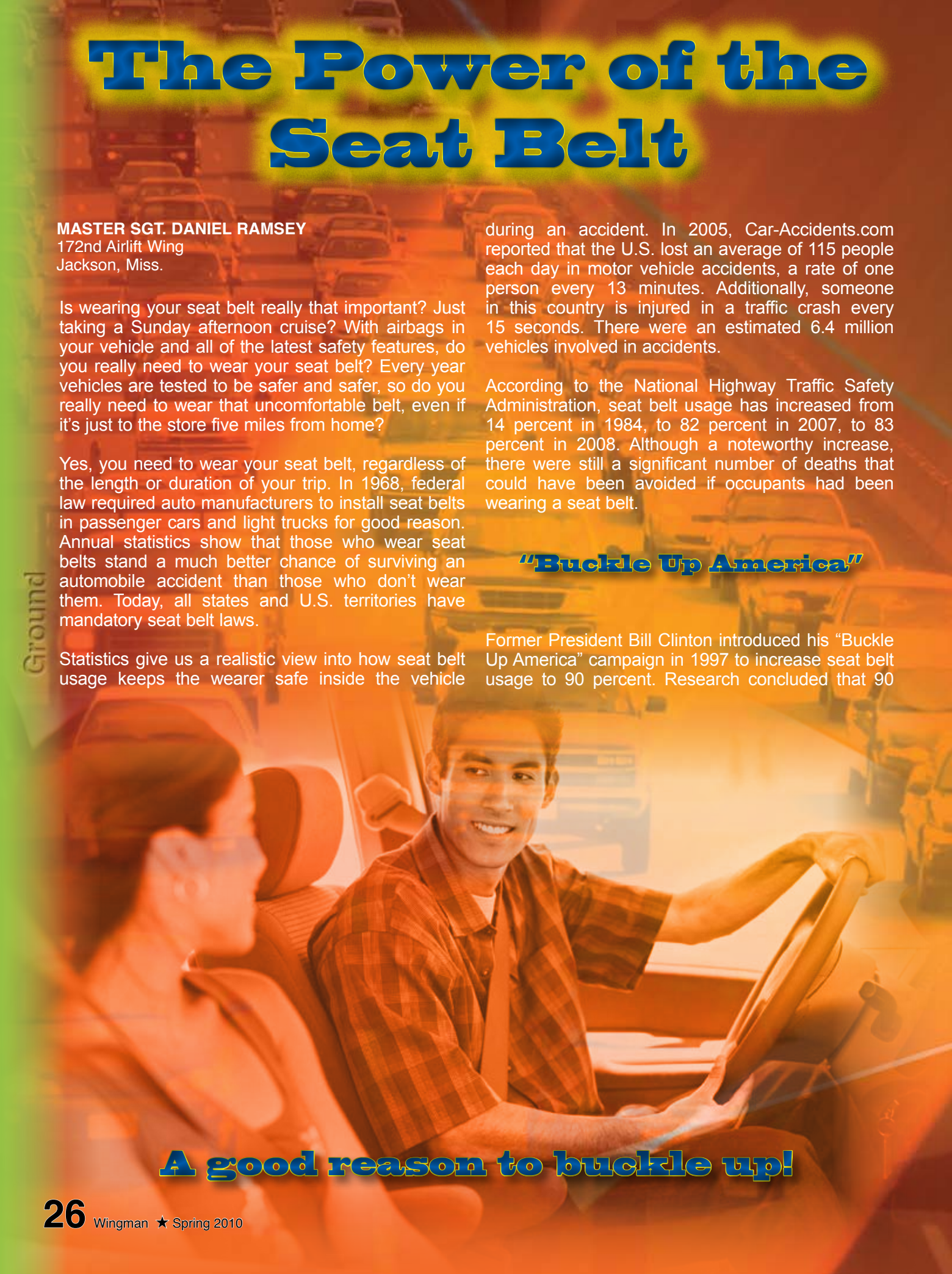
Yes, you need to wear your seat belt, regardless of the length or duration of your trip. In 1968, federal law required auto manufacturers to install seat belts in passenger cars and light trucks for good reason. Annual statistics show that those who wear seat belts stand a much better chance of surviving an automobile accident than those who don't wear them. Today, all states and U.S. territories have mandatory seat belt laws.

Statistics give us a realistic view into how seat belt usage keeps the wearer safe inside the vehicle during an accident. In 2005, Car-Accidents.com reported that the U.S. lost an average of 115 people each day in motor vehicle accidents, a rate of one person every 13 minutes. Additionally, someone in this country is injured in a traffic crash every 15 seconds. There were an estimated 6.4 million vehicles involved in accidents.

According to the National Highway Traffic Safety Administration, seat belt usage has increased from 14 percent in 1984, to 82 percent in 2007, to 83 percent in 2008. Although a noteworthy increase, there were still a significant number of deaths that could have been avoided if occupants had been wearing a seat belt.

"Buckle Up America"

Former President Bill Clinton introduced his "Buckle Up America" campaign in 1997 to increase seat belt usage to 90 percent. Research concluded that 90



A good reason to buckle up!

percent of Americans buckling up would prevent more than 5,500 deaths and 132,000 injuries and save $8.8 billion annually. Seat belts are the most effective safety devices in vehicles today and are estimated to save 9,500 lives each year. Still, only 83 percent of motor vehicle occupants are buckled. With the staggering numbers of deaths and injuries we sustain annually, wouldn't you want something as simple and effective as a seat belt protecting you?

Do you have teens that drive? If you do, then serve as an example for your children. Teenagers have the highest fatality rate in motor vehicle crashes of all age groups; data shows half of the teens we lose to crashes are completely unrestrained. Young adults ages 17 to 24 are 7.7 times more likely to be involved in a fatal accident from not wearing their seat belts.

To understand why it's important to wear your seat belt, it's paramount to understand what actually happens during a crash. For some, this may be a little graphic. Did you know that every motor vehicle crash is comprised of three collisions?

The first collision is known as the car's collision. This causes the car to buckle and bend as it impacts something and comes to a stop. Amazingly, this occurs in approximately one-tenth of a second. Fast, isn't it? The crushing of the front end absorbs a little of the crash's force and cushions the rest of the vehicle. As a result, the passenger compartment comes to a more gradual halt than the front of the vehicle.

The first collision is known as the car's collision.

The second collision is called the human collision. It happens as the occupants hit some part of the vehicle. At the moment of impact, all occupants without seat belts fastened are still traveling at the vehicle's original speed. Within nanoseconds (split seconds) after the vehicle comes to a complete stop, the occupants not wearing their seat belts will impact the steering wheel, windshield or another part of the vehicle's interior. Another factor in the human collision is person-to-person impact. This impact results in many serious injuries when those in the vehicle who aren't wearing seat belts collide with other people in the vehicle. It's not unusual for occupants in the front seat to strike and injure passengers in the rear seat or vice versa. The failure to wear a seat belt has the potential to make everyone in the vehicle a flying object or possibly be victims of those not wearing seat belts. If occupants in a vehicle are wearing seat belts, the second collision becomes much less of a factor in the severity of the crash.

The second collision is called the human collision.

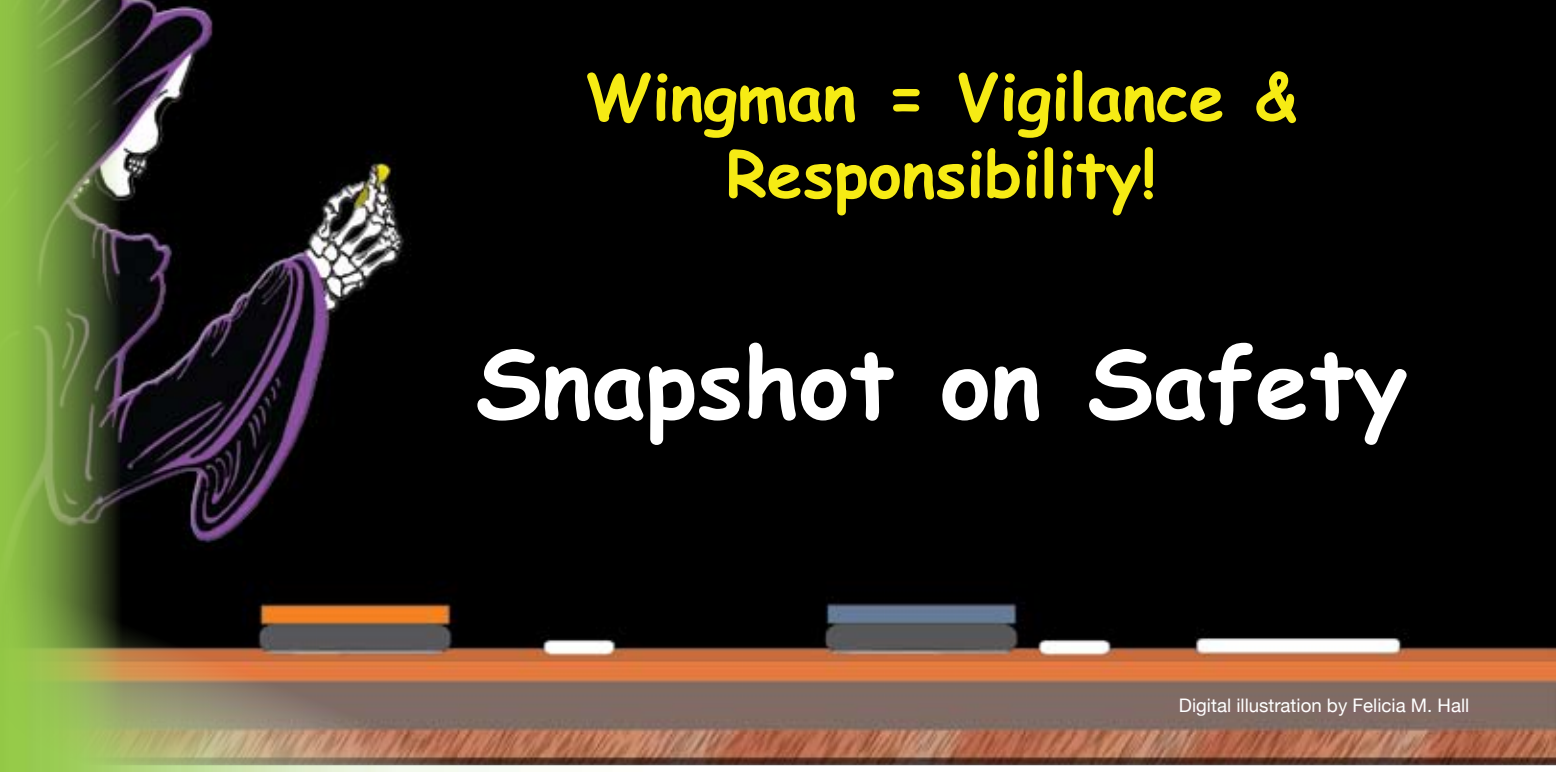
The third collision is the internal collision. Even after an occupant's body comes to a complete halt, that person's internal organs are still moving forward. These organs can hit other organs or the skeletal system. The internal collision often causes the most serious, and sometimes fatal, injuries.

The third collision is the internal collision.

We can't always control when human factors will come into play or when another motor vehicle might hit our vehicle, but we can be a little more prepared. So, is wearing your seat belt important? I hope you answer yes! The statistics show this, and laws require it. It's policy, from the Air Force chief of staff to your unit commander, from federal law to local law — it saves lives. And if you don't think that's important, sneak a peek at your kids tonight while they're sleeping or look at the person next to you in bed. That should be motivation enough.

The Air Force and your family need you. Wearing that seat belt may just save your life. Mission first and safety always!

Digital illustration by Dennis Spotts



Digital illustration by Felicia M. Hall

Wingman = Vigilance & Responsibility!

Snapshot on Safety

LARRY JAMES
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Kirtland AFB, N.M.

Ground

Up, Over and Around

On a sunny, spring day, Airmen 1 and 2 (A1 and A2) decided to go to the mall. Both Airmen wore their safety belts while on base but took them off after leaving the base. After shopping, A1 was speeding on the way back to the base. The vehicle went through a dip and became airborne, and when the vehicle came down, A1 lost control and went into a skid. The car slid off the road, rolled onto its side and struck a utility pole. Without seat belts, both Airmen were thrown around inside the car and ended up one on the other, pinned between the passenger seat and the crushed roof. A2 suffered multiple broken bones, and A1 was paralyzed from the waist down. Alcohol and fatigue were not factors in this mishap.

Lessons Learned

Personal risk management was not effectively used in this mishap. Choosing to drive at more than double the posted speed limit greatly increased the likelihood of losing control of the vehicle. Choosing to disregard the law and not wearing seat belts increased the probability of injury. Wearing a seat belt not only protects you in a mishap, but holds you in place, allowing a better chance to regain control of the vehicle. A2 failed at being a good wingman. Even when the ride became scary enough that A2 tried unsuccessfully to secure the safety belt, there was no effort to get A1 to slow the vehicle down. Always wear your seat belt, no matter where you're seated in the vehicle. Be a good wingman and speak up if you think you're in danger or the driver isn't making sound decisions that could affect the safety of everyone in the immediate area. Think about the possible consequences and slow down, or the next fast ride you take could be in the back of an ambulance.

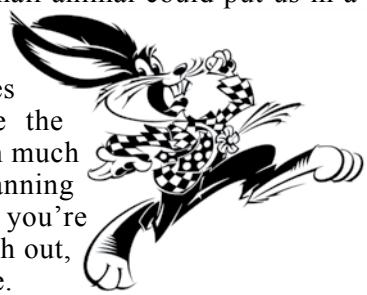
Rabbit-punched

After attending a promotion ceremony, Airman 1 (A1) and two buddies went on a short motorcycle ride to a nearby base. They chose a good route, a rural road with good scenery and many sweeping curves. With A1 in the lead and the others trailing behind at a safe distance, A1 approached a curve with the bike positioned appropriately and at a sufficient angle to negotiate the curve. As A1 navigated through the curve, a rabbit ran out from the brush at the side of the road, directly into the path of the motorcycle. A1 maneuvered the bike to avoid the rabbit and in doing so, left the edge of the road. As A1 attempted to maintain control of the motorcycle, the front wheel entered a drainage channel, stopping all forward motion and propelling A1 over the handlebars and through a clump of trees. A1 sustained several fractures, cuts and contusions from the mishap. Alcohol and fatigue were not factors in this mishap.

Lessons Learned

As spring arrives, we feel the need to go outside after being mostly relegated to indoor activities during the winter. While there was no specific failure of personal

risk management in this mishap, there are always things we need to think about when interacting with nature. Rural areas are often teeming with wildlife and as we lean hard to take a curve at maximum speed, we don't leave ourselves an out if something "pops out" just around the bend. On a motorcycle, hitting or trying to avoid even a small animal could put us in a position where we can no longer control the bike. In this case, cuts, bruises and broken bones were the result. It could have been much worse. When you're planning your next ride, remember you're not alone out there. Watch out, take care and arrive alive.



Hard Rocks and Cold Water

On a warm, May afternoon, Airmen 1 and 2 (A1 and A2) left their residence to go rock climbing at their favorite spot. While en route, A1 and A2 noticed they were low on gas, so they decided to climb at a closer venue, one they were unfamiliar with. Upon arriving at the new location, both Airmen walked around the shoreline of the lake, looking for a suitable place to rock climb. A2 noticed a rock face across the arm of the lake that looked just right. There was a "No Swimming" sign posted. Both Airmen waded into the lake to gauge the temperature. When discussing if they should swim across to the opposite shore, A1 had doubts about the swim. A2 reassured A1 that if anything went wrong, rescue was at hand. A2 went first and swam across without trouble, but when A1 got halfway across, panic set in. A2 dove in to help A1 to shore, but after being dragged under by A1, A2 had to return to shore to keep from drowning. A1 disappeared from sight and was found approximately four hours later. All efforts to resuscitate A1 were unsuccessful. Alcohol and fatigue were not factors in this mishap.

Lessons Learned

While both A1 and A2 were experienced rock climbers, they made some errors in personal risk management that proved to be tragic. By choosing a new location at the last minute, A1 and A2 went into unfamiliar surroundings with hazards they weren't prepared for. Choosing to swim across the arm of the lake, even after A1 had some reservations, proved to be a poor decision. A2 led A1 to believe that A2 was capable of rescuing A1 if anything went wrong, even though A2 had no rescue training. This created a false sense of security and influenced A1 into making a fateful decision about the swim. Finally, ignoring the "No Swimming" sign was the last mistake both Airmen made — one that cost A1's life. Risk management is a decision-making process, but you have to use the information available to you to make the best decisions. When there are multiple warning signs, or you get a feeling of dread or doubt, you should heed the warnings. Pay attention to the signs and decide to live.

Four Seconds from Success

On a May evening, Airman 1 (A1) was participating in a bull-riding event at the local arena. After a successful first ride, A1 was given the opportunity for a bonus ride. On A1's second ride, the bull busted out of the chute, bucked to the right and launched A1 off its back and onto the ground. While trying to get to the safety of the arena railing, the bull head-butted A1 to the ground and stomped on A1's chest and torso area. A1 was provided immediate medical attention and was transported to the nearest medical facility. Upon arrival to the hospital, it was determined that emergency surgery was warranted. During surgery, A1 died from a severed liver, due to the trauma to the chest and abdomen. Alcohol and fatigue were not factors in this mishap.

Lessons Learned

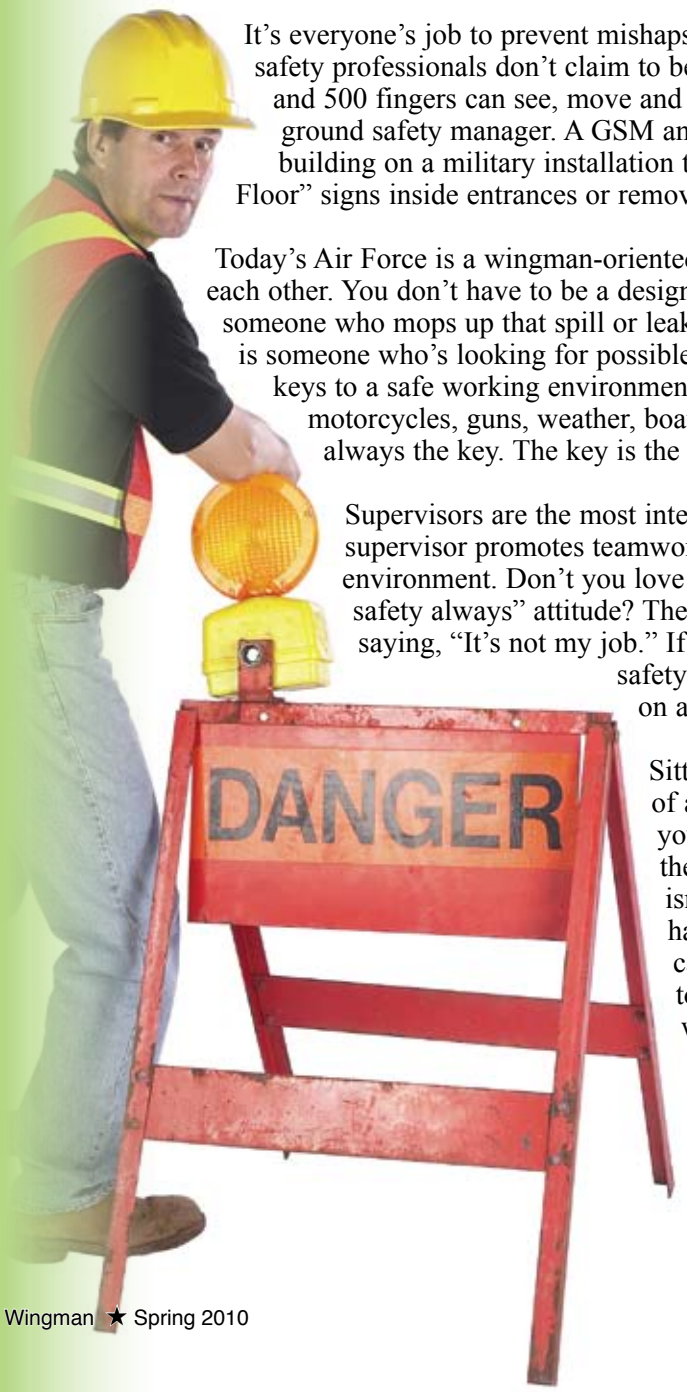
When deciding to participate in high-risk activities, we know there's always a chance something could go wrong. In this instance, A1 did everything that should be done. A1 was an experienced ex-champion bull rider and took a refresher course a few weeks before competing in this event. A1 notified the command and co-workers about the event and got all appropriate authorizations. A1 wore all of the best personal protective equipment, including a Kevlar vest that protects the torso from trauma. However, even when doing everything the right way, the outcome is not always good. Bull riding definitely meets the definition of being a high-risk activity. Sometimes when involved in such activities, even when we do everything right, it just isn't enough.

Before you decide to take part in any high-risk, life-threatening activity, gather all information available and weigh risks vs. personal rewards. Make an informed decision and if you choose to take the risk, do everything you can to make it as safe as possible. Hope that your luck holds out and your efforts are enough to keep you safe.

Whose Job Is It?

MASTER SGT. CHRISTOPHER LINDSAY
970th Airborne Air Control Squadron
Tinker AFB, Okla.

Too often there seems to be a passing of the buck when an issue arises concerning safety. We sometimes hear, "That's not my job; it's the safety office's responsibility." Where did this concept originate? Isn't safety everyone's responsibility? How many people must fall and get injured before someone decides to put a sign down that says "Wet Floor" or gets a shovel to clear snow off the steps? Hopefully it won't have to be the safety guy's job to conduct the investigation as a result of the mishap.



It's everyone's job to prevent mishaps and ensure the workplace is a safe environment. We safety professionals don't claim to be math geniuses, but 50 people, 100 eyes, 100 hands and 500 fingers can see, move and identify more potentially hazardous items than one ground safety manager. A GSM and his staff of five, six or seven can't be at every building on a military installation to shovel snow off sidewalks and stairs, post "Wet Floor" signs inside entrances or remove debris from parking lots after a windy night.

Today's Air Force is a wingman-oriented buddy system. We must look out and be there for each other. You don't have to be a designated driver to be a wingman; a wingman can be someone who mops up that spill or leak or identifies a tripping or fall hazard. A wingman is someone who's looking for possible hazards at all times. Vigilance and initiative are the keys to a safe working environment. Briefing a handful of people about the dangers of motorcycles, guns, weather, boats, food, fire, drugs, fatigue, etc. is helpful but not always the key. The key is the supervisors and the Airmen underneath them.

Supervisors are the most integral piece when it comes to safety. A good supervisor promotes teamwork, the wingman concept and a safe work environment. Don't you love the supervisors who promulgate the "safety first, safety always" attitude? These are the same supervisors who don't believe in the saying, "It's not my job." If it's your unit, if it's your Air Force, it's your job! If safety is not the job of every Airman, military and civilian, on a military installation, then whose job is it?

Sitting in the back row of commander's call at the end of a duty day, just before a holiday weekend, with your mind drifting in and out of consciousness while the GSM is giving you a safety briefing, probably isn't going to prevent mishaps. The supervisor who has personal contact with members and imparts true caring and insight about safety is going to do more to prevent mishaps. The military is a dangerous workshop, and safety is paramount.

An organization that has 20, 50 or 200 personnel has 20, 50 or 200 safety personnel to make the unit a safe working environment. When it comes to safety, whose job do you think it is? It's your job!

Year of the Air Force Family: *Helping People Reach their Goals*

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July 2009 to July 2010 has been designated the "Year of the Air Force Family" by the secretary and the chief of staff of the Air Force. In keeping with the long tradition of taking care of each other — being a good wingman — the YoAFF program focuses on Airmen and their families to ensure a good quality of life.

The concept of YoAFF began at the Caring for People Forum held in April 2009 in Arlington, Va. More than 200 family support professionals from around the Air Force gathered to assess current programs and make recommendations to enhance these programs. The Air Force will use YoAFF to highlight many successful programs already in place on base and in the community to inform Airmen and their families of developments in enhanced and new programs.

One such safety program is the Private Motor Vehicle Campaign, concentrating on personal motor vehicle mishaps, with a goal of eliminating off-duty reckless actions. Commanders will be provided tools to enhance engagement with Airmen and their families. Behavioral training and risk management will be offered to Airmen to ensure better decision-making skills and risk management assessments.

In order to communicate effectively with family members, we've initiated Key Spouse focus groups to gain feedback from wives, husbands, children and parents of Airmen about the messages and venues that will be most effective in helping them speak up about safety.

Maj. Gen. Fred Roggero, Air Force chief of safety, has initiated the Airman-to-Airman Mishap Reduction Program to increase and evaluate communication efforts with Airmen. Each major command was invited to nominate an individual to serve on the A2A Safety Advisory Council for a period of one year. Selected members will travel to the Air Force Safety Center, Kirtland AFB, N.M., twice per year to participate in round-table discussions and public service announcements. The Airmen are 18-26 years old, have a compelling safety message, possess leadership qualities and wish to help others learn from their mistakes.

Family members, friends and co-workers are encouraged to work with their Air Force unit to keep each and every Airman safe, not only on duty, but at home and at play as well. Too many Airmen have been lost to personal motor vehicle accidents, and we need to work together to eliminate car and motorcycle mishaps. A startling fact is that since 9/11 we've lost *588 Airmen to off-duty fatalities while 55 have died in combat. Of those 588, over 70 percent were due to PMV accidents.

YoAFF is built around four pillars of excellence. Safety plays a part in all aspects:

- Health & Wellness: Physical health, psychological health, spiritual wellness, financial health, safety, recreation/leisure and social networking/wellness.
- Airman & Family Support: Single Airmen programs, deployment support, special needs, child care and youth programs.
- Education, Development & Employment: Support and advocacy for children and spouses; personal and professional development for Airmen (includes civilians).
- Airman & Family Housing: Safe, affordable and available on- and off-base housing for single Airmen and families; housing referral and relocation assistance.

The strength of the Year of the Air Force Family initiative and the renewed focus on PMV mishaps will reinforce safety efforts on personal risk management and off-duty safety. The Air Force is a great place to work, live and play … our focus is to make it even better!

**** Air Force Safety Automated System statistics as of 1-12-10***

Year of the Air Force Family

"I Didn't See Him!"

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Kirtland AFB, N.M.

The phone rang just as we were about to lock up the safety office for the weekend. It was the command post. They wanted to notify us that an Airman was just involved in an off-base motor vehicle mishap; it was his car vs. a motorcycle driven by a young local national.

When I arrived at the scene, a Security Forces member met me and gave an overview of the mishap. He then took me to interview the Airman who had been driving the car. When the SF member introduced me to the obviously upset driver, the first words out of his mouth were, "I didn't see him!"

Looking at the scene, I had to wonder, how could he not see the motorcyclist? It was a clear sunny day, an open two-lane road with no obstacles. The motorcyclist had been wearing an orange vest, and the motorcycle's headlight was on.

The motorcyclist was fine. It was a low-speed impact, and the rider only suffered minor bruises. He was wearing all his safety gear and had actually anticipated the car might pull out in front of him, so he had already rolled back on the throttle.

As I continued to talk to the Airman, he said he was pulling out of a parking lot and had looked both left and right but "just didn't see anything" coming down the road from his left. He saw the motorcycle a split second before the impact, and he couldn't do a thing about it.

This scenario unfortunately happens repeatedly to motorcyclists who are involved in mishaps with other vehicles. The problem for some four-wheeled drivers is that they don't expect to see a motorcycle on the road. When at an intersection, you look left and right for traffic and naturally expect to see a vehicle similar in size to what you're driving, or at least something with four wheels. When you see traffic, you make decisions based on brief instant information: pull into traffic, wait, make the turn, etc. To visualize this, hold your forefinger and thumb about 3 inches apart. That's the approximate space a car, truck, bus and most other typical vehicles on the road will take from your viewpoint when looking for traffic. Now move your fingers to about a half-inch apart. That's the space a motorcycle will take from your field of view; quite a difference!

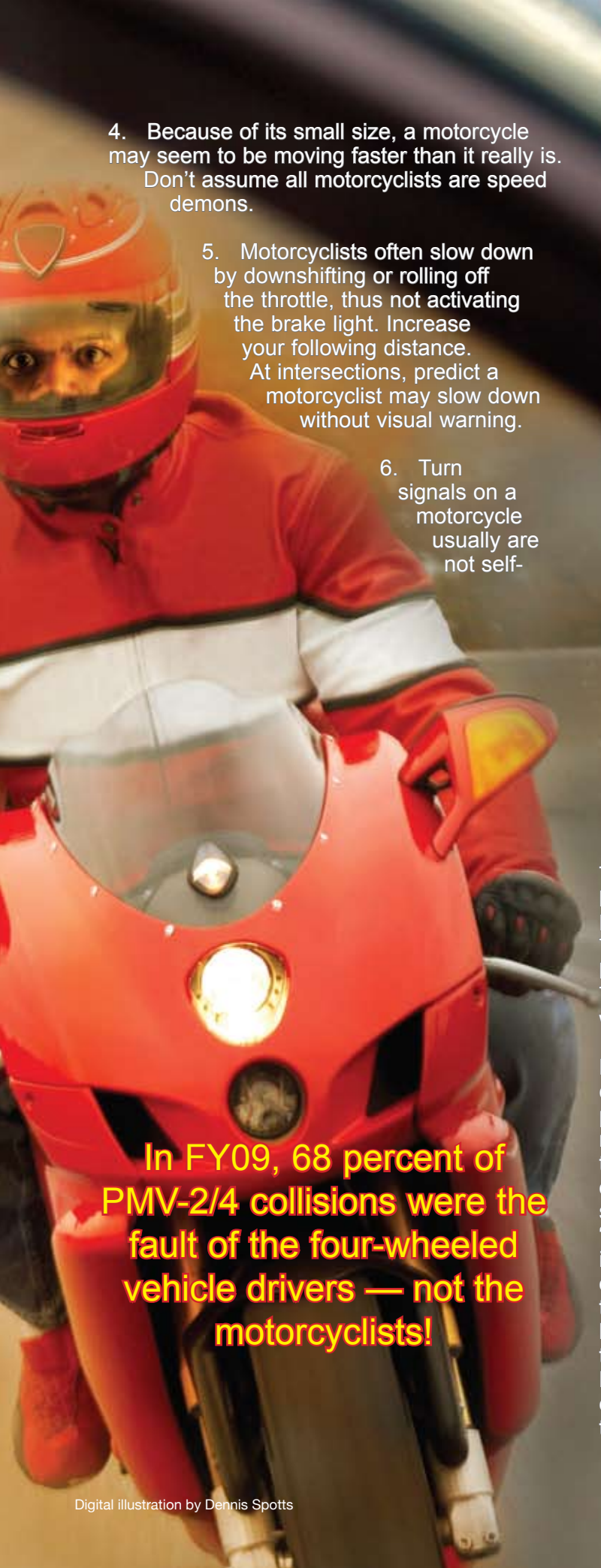
The Air Force recorded 229 motorcycle mishaps in FY09. This included the unfortunate loss of 20 Airmen. The 229 mishaps revealed 79 (35 percent) were two-wheeled vehicles vs. four-wheeled. Of those 79 mishaps, 54 (68 percent) were documented to be the fault of the four-wheeled vehicle drivers — not the motorcyclists!

Four-wheeled drivers, it's imperative we take a few extra seconds to look for and recognize the motorcyclists who share our roadways. The Motorcycle Safety Foundation has developed a list of tips worth reading: "Ten Things All Car & Truck Drivers Should Know About Motorcycles."

1. There are a lot more cars and trucks than motorcycles on the road, and some drivers don't recognize a motorcycle — they ignore it (usually unintentionally). Look for motorcycles, especially when checking traffic at intersections.

2. Because of its small size, a motorcycle may look farther away than it is. It may also be difficult to judge a motorcycle's speed. When checking traffic to turn at an intersection or into or out of a driveway, predict a motorcycle is closer than it looks.

3. Because of its small size, a motorcycle can be easily hidden in a car's blind spots (door/roof pillars) or masked by objects or backgrounds outside a car (bushes, fences, bridges, etc). Take an extra moment to thoroughly check traffic, whether you're changing lanes or turning at intersections.



4. Because of its small size, a motorcycle may seem to be moving faster than it really is. Don't assume all motorcyclists are speed demons.

5. Motorcyclists often slow down by downshifting or rolling off the throttle, thus not activating the brake light. Increase your following distance. At intersections, predict a motorcyclist may slow down without visual warning.

6. Turn signals on a motorcycle usually are not self-canceling, thus some riders (especially beginners) sometimes forget to turn them off after a turn or lane change. Make sure a motorcycle's signal is for real.

7. Motorcyclists often adjust their position within a lane to be seen more easily and to minimize the effects of road debris, passing vehicles and wind. Understand that motorcyclists adjust the lane position for a purpose, not to be reckless, show off or allow you to share the lane with them.

8. Maneuverability is one of a motorcycle's better characteristics, especially at slower speeds and with good road conditions, but don't expect a motorcyclist to always be able to dodge out of the way.

9. Stopping distance for motorcycles is nearly the same as for cars, but slippery pavement makes stopping more difficult. Allow more following distance behind motorcycles because they can't always stop "on a dime."

10. When a motorcycle is in motion, see more than the motorcycle — see the person under the helmet who could be your friend, neighbor or relative.

In FY09, 68 percent of PMV-2/4 collisions were the fault of the four-wheeled vehicle drivers — not the motorcyclists!

These 10 items should help you understand a little more about motorcycles and their abilities. But what can you do to help yourself see them? The first challenge is for you to learn to look, really look, and recognize a motorcycle approaching you. Then you must give it the same courtesy as you would a semi-truck!

Motorcycle riders are taught in MSF training courses to watch the road and be vigilant for potential risks or collision traps. Once they learn to recognize the potential traps, they must then learn to react appropriately to the potential risks. As the operator of a four-wheeled vehicle, you have the same challenges — look around and ask yourself "what if" to the situations you're driving in. Whether it's heavy traffic, bad weather or an easy cruise on an interstate, none of these are risk-free. As the driver, you must always maintain control and be prepared to react to any situation, including the motorcycle that just appeared out of nowhere. Learn to watch for and expect motorcycles everywhere you go. Don't put yourself in a position to say, "I didn't see him!"

Digital illustration by Dennis Spotts

Safety Shorts

Fire Safety Plan

Do you have a fire safety plan at home? House fires are frightening, especially for young children. To many, firefighters in full gear are more frightening than the fire itself. It's necessary to teach and prepare your family for a fire by establishing and practicing a fire safety plan.

Talk to your family about fire safety. Train them on the use of fire extinguishers and invest in an additional extinguisher to do actual training, especially for your children. Plan an escape route from every room in the house and conduct actual fire drills. "Practice makes perfect" cannot be overstated in this situation.

Teach your family members how to do the following: crawl under smoke to find an exit; cover their mouths and noses with their shirts to assist breathing; stop, drop and roll if fire is on their person; climb out of a window. For families with two- or three-story houses, it's a good idea to invest in window ladders.

Smoke detectors and fire alarm systems should be tested monthly — no less than quarterly. Everyone should know the family's plan if a smoke detector or fire alarm goes off. Ensure everyone knows that hiding in a closet or bathtub because of fear is not acceptable. Decide on a meeting place outside the house to account for everyone. Once two family members have met outside, have one go to a neighbor's house and call the local fire department.

Source: National Fire Protection Association

Safety Belt Facts

Safety restraints in motor vehicles save lives. The following facts support this statement and are intended to arm you with pertinent data to make conscious, life-saving decisions.

- Motor vehicle crashes are the leading cause of death among people age 44 and younger and the No. 1 cause of head and spinal cord injuries.
- For every 1 percent increase in safety belt use, 172 lives and close to $100 million in injury and death costs could be saved each year.
- Properly used safety belts reduce the number of serious traffic injuries by 50 percent and fatalities by 60 to 70 percent.
- Approximately 35,000 people die in motor vehicle crashes each year. It's estimated that roughly 50 percent (17,000) of these people could be saved if they wear their safety belts.
- Seventy-five percent of crash deaths and injuries occur within 25 miles of home. More than half of all injury-producing motor vehicle crashes involve speeds less than 40 miles per hour.
- Motorists are 25 times more likely to be killed or seriously injured when they are thrown from the vehicle than when they are properly belted and remain inside the vehicle.
- In a 30 mph collision, an unbelted 160-pound person can strike another passenger, act as a projectile through a windshield and/or slam into the vehicle's interior with a 4,800-pound force.
- A common cause of death and injury to children in motor vehicles is being crushed by adults who are not wearing safety belts. One out of four serious injuries to passengers is caused by occupants being thrown into each other.
- Approximately 80 percent of all injuries to children in car crashes are injuries to the head, causing brain damage, permanent disfigurement, epilepsy or death.
- Of every 100 children who die in motor vehicle crashes, at least 80 would most likely have survived if they were properly secured in an approved child safety seat or safety belt.
- An estimated 80 percent of American children are immunized against contagious diseases; less than 10 percent are properly restrained when riding in a motor vehicle.

Source: Virginia Department of Motor Vehicles

Mishap or Anomaly?

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Every time I brief the Chief of Safety course or the Board President's course at the Air Force Safety Center, someone asks me, "When does an anomaly become a mishap?" It's a fair question.

There is a common misperception that space is a continuation of the air domain. On the contrary, space is a separate and distinct domain. In the words of Air Force Doctrine Document 2-2, *Space Operations*, "Space power operates differently from other forms of military power due to its global perspective, responsiveness and persistence." Because of these differences, programs initially established for the aviation community don't always translate directly to the space community. What's important, though, is that the intent of those programs is met.

U.S. Air Force courtesy photo

The intent of the Air Force mishap prevention program is to preserve combat capability by preventing the loss of assets. Whether temporary or permanent, the asset loss is a reduction in capability to the warfighter. While space mishaps occur much less frequently than aviation mishaps, the consequences can be much greater. Space systems are low-density, high-demand assets; their loss can have a global impact. Correctly identifying and reporting an on-orbit mishap is key to preventing future mishaps.

Before I can answer the posed question in the first paragraph, I need to define a mishap and an anomaly. To define a military term, we usually turn to our official glossary. However, neither Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, nor AFDD 1-2, *Air Force Glossary*, provides definitions for these two terms. To find these definitions, we need to dig a little deeper. Air Force Policy Directive 91-2, *Safety Programs*, generally defines a mishap as an unplanned occurrence that results in damage to DOD property or damage to public or private property caused by Air Force operations.

The term "anomaly" is not a widespread Air Force idiom; it's found more commonly in the satellite operations arena. Air Force Space Command Instruction 10-1204, *Satellite Operations*, defines an anomaly as "… an unexpected or unplanned condition or event affecting the space, ground or communications segment that does not meet system performance parameters." An anomaly can last hours, days or even months, but its operational impact will likely be immediate.

With the anomaly and the mishap, the common denominator is an unexpected or unplanned condition, occurrence or event. The difference emerges when there is damage. For space systems, damage is defined not only as physical damage, but also as a degradation or failure of any of the satellites' missions. This definition is

deliberate. It's derived from the OPREP-3 reporting criteria in Air Force Instruction 10-206, *Operational Reporting*, and is the basis for the mishap criteria specified in Air Force Manual 91-222, *Space Safety Investigation and Reports*.

Anomalies are not uncommon; operators routinely experience unexpected or unplanned conditions. Fortunately, most anomalies are resolved before they become reportable. Some do become reportable, but that doesn't necessarily make them a mishap. So, when does the anomaly become a mishap?

Traditionally, if the damage is determined to be permanent, it's declared as a mishap. Often, however, a team working to resolve an anomaly is unwilling to concede defeat, and that determination may be months in coming. Don't get me wrong; expending every last effort to recover a satellite is a good thing. Nonetheless, all that expenditure of time and labor is a direct cost to the Air Force and is reportable. That cost will turn an anomaly into a mishap.

DOD Instruction 6055.07, *Accident Investigation, Reporting and Record Keeping*, directs the head of the DOD components to report standardized property damage data in order to provide a factual basis for the allocation of resources in support of DOD mishap prevention programs. It further states that the direct cost of the damage will be computed "using the actual cost of repair or replacement, including work hours."

When you have an on-orbit anomaly, you won't have a materiel cost since you cannot physically repair the spacecraft. What you will have are labor costs associated with resolving the anomaly and restoring operational capability. AFI 91-204, *Safety Investigations and Reports*, explains that labor costs are calculated by adding the labor cost of DOD personnel and the labor charged by the contractor. For DOD labor, the number of hours of labor expended by DOD personnel to repair the damage (i.e., resolve the anomaly) is multiplied by a standard hourly labor rate provided by AFSC. For contractor labor, the actual cost charged to the government for repairs performed by contractors is used. Costs to repair damage must be reported even if the Air Force is reimbursed or if the repair is accomplished under warranty.

If the total cost of the labor expended to resolve the anomaly exceeds the mishap classification cost thresholds in AFI 91-204 ($50,000 for Class C), then the anomaly becomes a mishap. The mishap should be declared as soon as that threshold is met. After the anomaly is declared, the anomaly resolution team will continue to do its work while the interim safety board stands up. The safety investigation may be conducted simultaneously as anomaly resolution but will operate independently; one team to resolve the anomaly, and one team to find out why it happened and to make recommendations to prevent future occurrences.

This interpretation is a departure from previous reporting practices. The reporting criteria outlined here are more in concordance with the intent of the guidance (DODI 6055.07, AFPD 91-2, AFI 10-206 and AFI 91-204) than previous interpretations and should be applied to current and future anomalies.

Anomaly resolution by itself is not sufficient for mishap prevention purposes. Commanders cannot make effective risk management decisions without the knowledge gained through mishap investigations. Inculcating a risk management and mishap prevention culture throughout the Air Force space community will help to preserve combat capability and support mission accomplishment.

U.S. Air Force photo by Airman 1st Class Antoinette Lyons

What on Earth

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There is a great deal of confusion, even among space professionals, about what space safety is. It's easy to understand safety applied to everyday working environments: turn off the coffee pot before leaving; lift with your legs, not your back; don't eat the cafeteria's beef stroganoff. It's even easy to understand how safety applies to nuclear weapons and airplanes; after all, human lives are involved. But space is big, and barring manned spaceflight, launch pad explosions and the extremely unlikely chance of being hit by falling space debris, no human lives are lost when space mishaps occur. So why do we care?

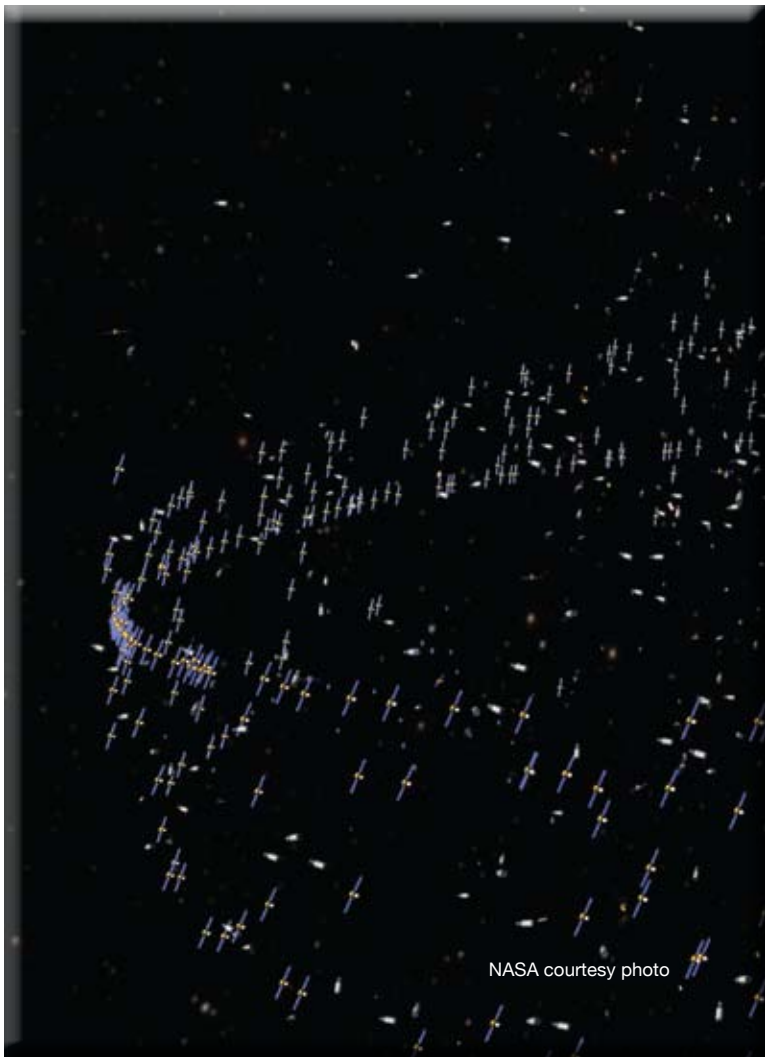
We care because space is no longer as big as we might think. And while the loss of a single fighter jet might cost tens of millions of dollars, the loss of a large satellite can cost hundreds of millions, and sometimes billions, of dollars. We care because contrary to conventional wisdom, there can be a human cost — the cost of a poor navigation signal, an inability to communicate or a missing piece of crucial intelligence that puts the warfighter in danger on the ground. We're increasingly dependent on space; it only makes sense to safeguard the high frontier.

So what are we worried about? Let's start with some obvious hazards. On Jan. 11, 2007, the Chinese performed an anti-satellite test against one of their aging weather satellites. Aside from the military implications of this test, the destruction of the satellite produced over 2,500 pieces of debris that were large enough to be tracked by the North American Aerospace Defense Command. The debris is now scattered across the crowded low-Earth orbit region of space, home to hundreds of operational satellites as well as the International Space Station.

The Chinese ASAT test is far from the only cause of orbital debris. Since the dawn of the space age, pieces of debris from dead satellites, rocket bodies, paint chips and explosion fragments have been accumulating on orbit. It's estimated that tens of millions of pieces of space junk are now sharing orbits with operational satellites. Imagine picking up a baseball and hurling it at a satellite in your processing facility. The damage would be extensive. Now imagine hurling the baseball at orbital speeds thousands of miles an hour. You could destroy the satellite entirely — and create more debris in the process. Plus NORAD might not be able to tell you it's coming.

Space debris mitigation is a big concern for space safety engineers. That's why all satellites launched by the Air Force must have a debris mitigation plan — a plan to ensure the satellite doesn't become the next generation of space junk. Space collision avoidance, maneuvering to avoid large pieces of debris as well as other operational satellites, is a big part of what our Airmen do every day. Every vehicle maneuver should be planned, taking collision avoidance into account.

But there's more to space safety than the obvious. The vast majority of satellites are lost not due to collisions or to space debris, but to engineering failures: unanticipated software bugs, malfunctioning electronic components, incorrect commands, misinterpreted requirements. In hindsight, it's usually easy to figure out what should have been done to prevent the loss of a multi-million-dollar mission. What's not so easy



NASA courtesy photo

is Space Safety?

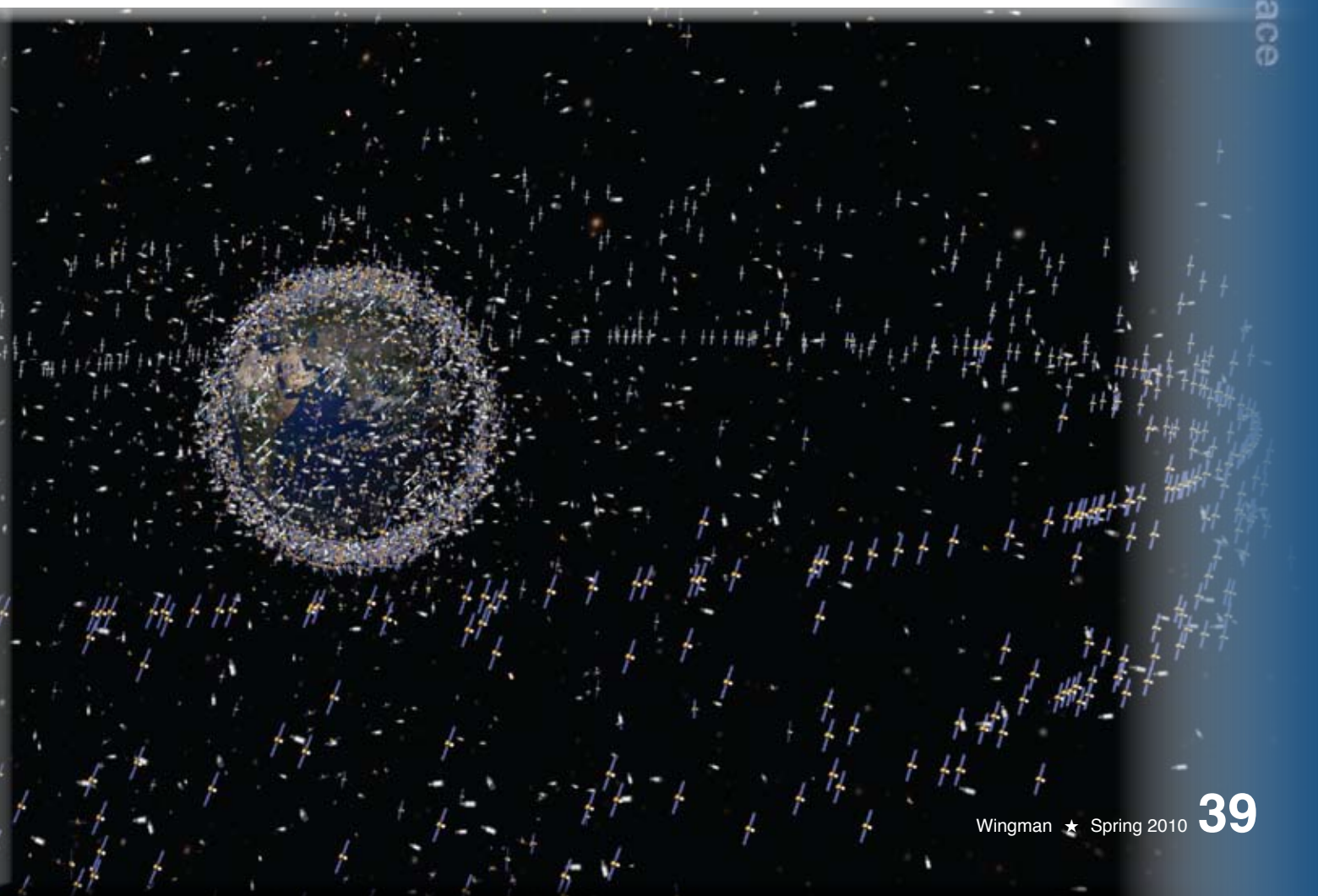
is anticipating such failures, which could reduce their impact or prevent them altogether.

That's where system safety comes in. The best time to prevent these space mishaps is in the satellite design phase. The most useful tool for the system safety engineer would be a crystal ball. Sadly, crystal balls are in short supply, at least in my shop. So the system safety engineer has the unenviable task of getting into people's faces, airing dirty laundry, documenting system hazards and relentlessly asking the question, "What if?"

Determining the ways a system can fail and then figuring out how to minimize or mitigate these failures — that's the system safety engineer's job. It's a thankless job. We grumble at system safety requirements and processes. We never see the crisis averted or the mishap prevented. The ultimate system safety success is nothing more than an absence of failures — not exactly something that looks good on a performance evaluation.

System safety engineers do have other allies in preventing space mishaps. While it's nearly impossible to foresee all potential failures, you can at least take steps to ensure your satellite will most likely survive them. Simple, robust satellite safe modes can preserve a satellite long enough for smart people on the ground to figure out and correct what went wrong. Another ally is the ability to learn from mistakes of others, one of the first items of education for any engineer. Sadly, the majority of space mishaps and lessons learned go unreported. We don't want to look stupid in public; we don't want to invite inquiry or criticism. So we deprive ourselves of one of our greatest resources, our own collective wisdom.

Oh, and remember the comment about being hit by falling space debris? Did you know that the Air Force requires all satellites that'll reenter the Earth's atmosphere to perform an expectation of casualty analysis? That's a calculation of the chances that a piece of the satellite will hit someone on the head. I'm not joking. Look it up. It's just one of the many things people don't know about space safety.



Risk Management in Space

ED BROWNE
Air Force Space Command
Peterson AFB, Colo.

Air Force Space Command is working with launch-range users to develop a process for managing the risk of collisions between launching space vehicles and cataloged orbital objects. For decades, the United States has protected itself against collisions between launches and orbiting manned objects. AFSPC is now capable of implementing a process that will expand risk management to include preventing collisions with both active satellites and orbital debris (all cataloged objects). As our ability to track, catalog and predict space object locations improve, we can take better active measures to preserve assets as well as protect the orbital environment from debris generation. We can more prudently manage launch windows to avoid collisions without violating acceptable safe separation risk standards. This is a complex issue, not only for the math involved, but also because of the uncertainty in predicting the exact location of a launch vehicle in its planned trajectory. This doesn't include the competing risk of holding launches on the pad and leaving them susceptible to terrestrial risks, such as weather and additional handling.

Everyone is interested in protecting the orbital environment and our space assets. That's easy to say, yet difficult to put into practice. AFSPC is validating a process to make risk decisions using launch collision avoidance, or LCOLA, with a high degree of confidence. The consequences of additional debris following a collision have lasting effects. As we found out in the Chinese anti-satellite test, the orbital regime for manned space and satellites, such as the Hubble, will be at greater risk for years to come. In unique instances involving national need, the risk of potential collision must be balanced against the cost of a missed launch opportunity. Managing risk can also become complicated by the legal aspects of accidentally colliding with a commercial spacecraft or the spacecraft of another nation.

Debris-generating collisions are a real, quantifiable threat to space operations. We can no longer afford to operate under discretionary, nonspecific or informal processes. In most launch scenarios, there is incomplete LCOLA review and risk management. We're fortunate that collisions haven't occurred in those instances. AFSPC is equipped to regulate and protect space assets and the space environment with a more consistent, complete, validated and independent process.

Everyone is interested in protecting the orbital environment and our space assets. That's easy to say, yet difficult to put into practice

In 2006, collision risk with all objects, to include debris, became manageable with the stand up of the Joint Space Operations Center's accredited capability. While JSpOC assessments are not yet real-time, they're state-of-the-art and accurate to the point where avoidance actions are effective and defendable. It's important to mention that performing LCOLA against all objects is responsive to existing national policy and Department of Defense Directive 3100.10, *Space Policy*. The Air Force is best equipped and most capable end-to-end to manage LCOLA risk for launches from its ranges.

The Air Force Safety Center will soon be releasing Air Force Instruction 91-217, *Space Safety and Mishap Prevention Program*. This instruction will provide guidance to Air Force organizations for implementing LCOLA, using either probability of collision or miss-distance criteria. Greater fidelity launch trajectory data (covariance) buys you greater launch opportunity. Probability of collision is the preferred method of LCOLA decision making, given quality launch trajectory and orbital object covariance data.

As a fallback to probability of collision, miss distance is a viable alternative method to managing collision

Spacecraft LCOLA

risk and is the practice today against manned objects. Miss-distance criteria have been used historically to protect manned objects. A 25-km screening distance, applied against unmanned objects, originated using a best engineering assessment approach — experts identifying rational criteria and decision thresholds. The 25-km criterion is a justifiable distance to begin screening against as it captures a predominance of launch and orbital uncertainty. This criterion for active spacecraft is not as conservative as the manned 50 km x 50 km x 200 km "keep out" box. In most applications and in the majority of circumstances, these criteria will not prevent a launch.

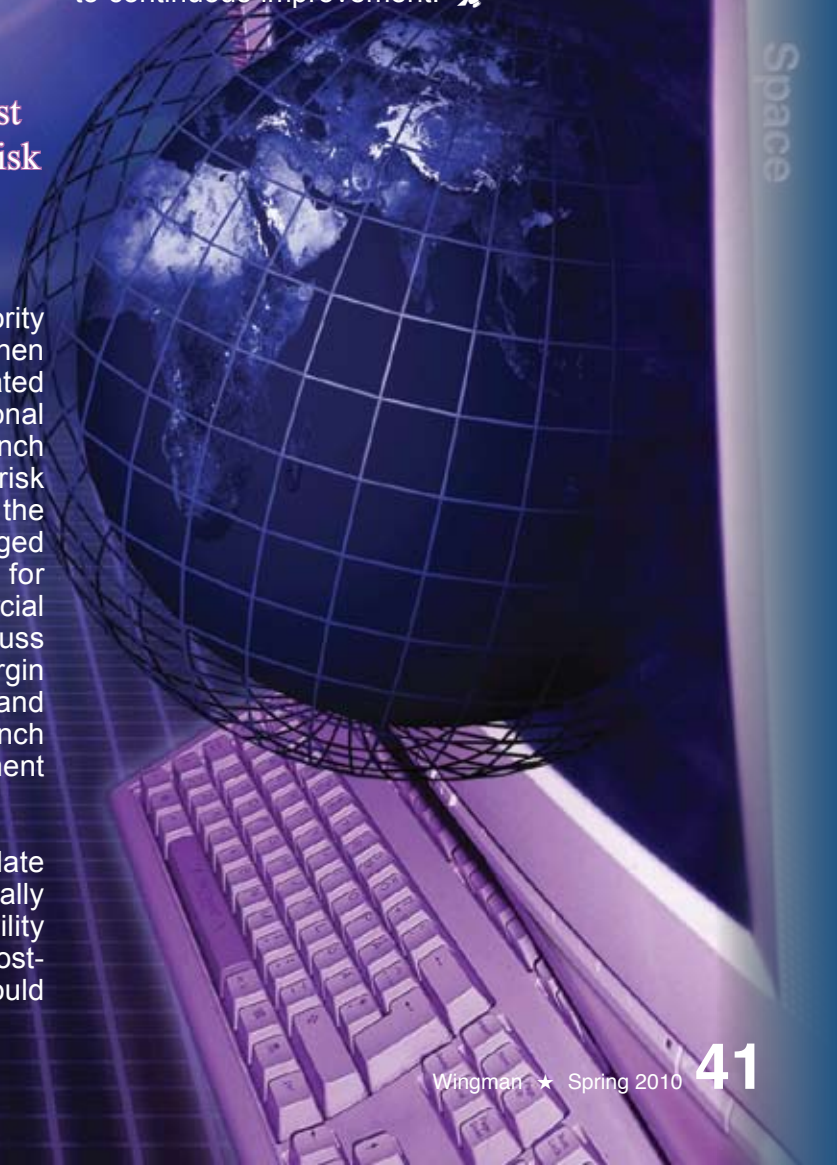
The Air Force is best equipped and most capable end-to-end to manage LCOLA risk for launches from its ranges.

If necessitated by national need, proper authority may waive the miss distance down to 2.5 km. When historically applied, the 2.5-km criteria demonstrated a low frequency of window closures. The additional screening against all objects provides the launch decision authority situational awareness and risk management options. AFSPC can now examine the risks associated with collision risks with cataloged debris. (Note: The waivers discussed are for government launches; the rules for commercial launches will be a matter for the licensee to discuss with the FAA.) Miss distance employs a margin of conservatism above probability of collision and therefore has greater potential to influence launch opportunity (introduces more window management as it identifies brief window closures).

Applying a unified LCOLA process is already late to need. Delaying implementation of a centrally managed LCOLA process for better capability is not necessary. AFSPC is committed to post-launch analysis to improve the process and should encourage independent analysis to evaluate and offer recommendations.

Applying a unified LCOLA process is already late to need.

The forthcoming AFI 91-217, with an AFSPC supplement, will set the stage for a consistent, complete, centralized and independent LCOLA process that is responsive to existing national and DOD policy, ready for implementation and subject to continuous improvement.



Digital illustration by Dennis Spotts

Explosives Safety in

MASTER SGT. LES HAGA
U.S. Air Forces Central
Shaw AFB, S.C.

In today's Air Force, weapons safety managers have many challenges to overcome. The most challenging is promoting explosives safety that involves joint services or multinations at deployed locations. Most deployment locations for WSMs are in the U.S. Air Forces Central area of responsibility; these are joint service and quite often at multinational locations. This can be a daunting task for even seasoned WSMs. However, most WSMs have only recently completed the Weapons Safety Management course at Lackland AFB, Texas, and the Assessment System for Hazard Surveys Explosives Site Planning course. With this in mind, there are certain preparations inexperienced WSMs can make before deployment to ready themselves for the challenges ahead.

There may not be a standardized deployment checklist to follow, but contacting the WSM you'll be replacing is a great start. Typically, WSMs will find that two of the biggest challenges they'll face will be the Air Force AORs on the base and constant construction in or near explosives clear zones. At a deployed location with joint or coalition partners, WSM responsibilities and span of control are determined one of two ways: who has senior airfield authority or who has base operational support-integrator responsibilities.

In basic terms, the SAA empowers the Air Force wings/groups with responsibility for all airfield operations, including planning for combat aircraft parking areas and hot cargo parking areas. If the Air Force has SAA, the wing/group WSMs will have the responsibility of completing explosives site plans for all combat and hot cargo aircraft parking areas on the airfield. At home station this is normally a simple task; it can be somewhat complicated in the joint environment.

Most WSMs are used to dealing with fighters and bombers, but how about a U.S. Army Combat Aviation Brigade with Apache or Kiowa helicopters parked next to F-15E Strike Eagles? If the explosives site plan for Air Force aircraft poses a risk or hazard to Army assets, the commander responsible for the Army assets will need to accept that risk. This is one of the issues that can complicate the joint environment. Deployed WSMs will use Air Force Manual 91-201, *Explosives Safety Standards*, to complete explosives site plans and will also need to explain the risk in terms the other services will understand. If this is the case, the use of Department of Defense Directive 6055.9-STD, *DOD Ammunition and Explosives Safety Standards*, will be required. This is the parent regulation for all U.S. service explosives safety regulations.

While the SAA has responsibility for the airfield, BOS-I encompasses responsibility for the entire installation. This will potentially require processing explosives site plans for munitions storage areas operated by other services. Using DOD 6055.9-STD and becoming educated in explosives safety criteria not commonly used by the Air Force will be necessary. Some examples include: basic load ammunition holding areas, ready ammunition storage areas and forward arming/refueling points. Additionally, with increased responsibility for explosives siting and program management, WSMs will be required to not only brief and explain violations and waivers to wing/group commanders, but also to the responsible commanders of the other services. These responsibilities will definitely increase WSMs' workload, but so does the ever-changing environment and new construction that seems to continually encroach on explosives clear zones.

The one constant in the AOR is new construction. WSMs can be assured that if new concrete is poured, someone no doubt will try to park some sort of explosives-loaded conveyance on it! If new concrete is not the issue, then that small plot of land that hasn't been used and is inside an explosives clear zone will probably be on someone's plan for a new facility. WSMs have a couple of ways to manage new construction issues, the most important being involvement in base planning and facilities utilization board meetings.

A good relationship with civil engineering is absolutely imperative and will ensure WSMs can stay abreast of all planned projects. Emphasis is placed on "all planned projects" because at most bases in the AOR, there are very few places not encompassed within an existing explosives clear zone. It'll be up to WSMs to decide if planned new construction is related to the explosives or not. The other new construction issue is risk mitigation and being able to provide options to wing/group leadership.

Let's consider an example that involves installing an Armco revetment barrier. Although this doesn't reduce the distance for unrelated structures to explosives, it does

U.S. Air Force photo by Staff Sgt. Angelita Lawrence

the Joint Environment

mitigate the hazard of low-angle, high-speed fragments. Many times WSMs will need to "think outside of the box" to come up with alternatives to mitigate risks that are acceptable to leadership. Alternatives should be second nature for WSMs in the AOR. As an advisor to wing/group leadership, WSMs must be able to present multiple alternatives when discussing planned construction.

The mission won't stop for new construction. Instead of saying, "No, this can't be done," the deployed WSM needs to learn how to say, "Yes, this can be done, but with these options for risk mitigation." In the deployed joint environment, it won't just be Air Force construction; new construction by all services will also challenge the WSM. Once again, this is why it's so important that WSMs are involved in the many base planning and facilities utilization boards. New construction involves construction workers doing the work. They must be provided the proper protection from explosives as prescribed in DOD 6055.9-STD and AFMAN 91-201. Many times in the AOR, construction workers cannot be provided with the proper protection. WSMs must be prepared to present alternatives, such as re-warehousing munitions, parking explosives-loaded aircraft in different locations or risk mitigation. New construction is manageable, but requires some diligent work by WSMs to safely and effectively meet the mission.

With proper preparation, deployments to the AOR can be the best learning experience WSMs ever receive. Contact the WSM you'll be replacing or the WSMs at USAFCENT. Learn whether the base you're going to has SAA or BOS-I. Most importantly, be prepared to "think outside of the box" and attack issues with alternatives for risk mitigation. The weapons safety experience you'll gain in the AOR will not only benefit you at your home station, but will benefit the Air Force throughout the rest of your career.

Mold Your Airmen for Success!

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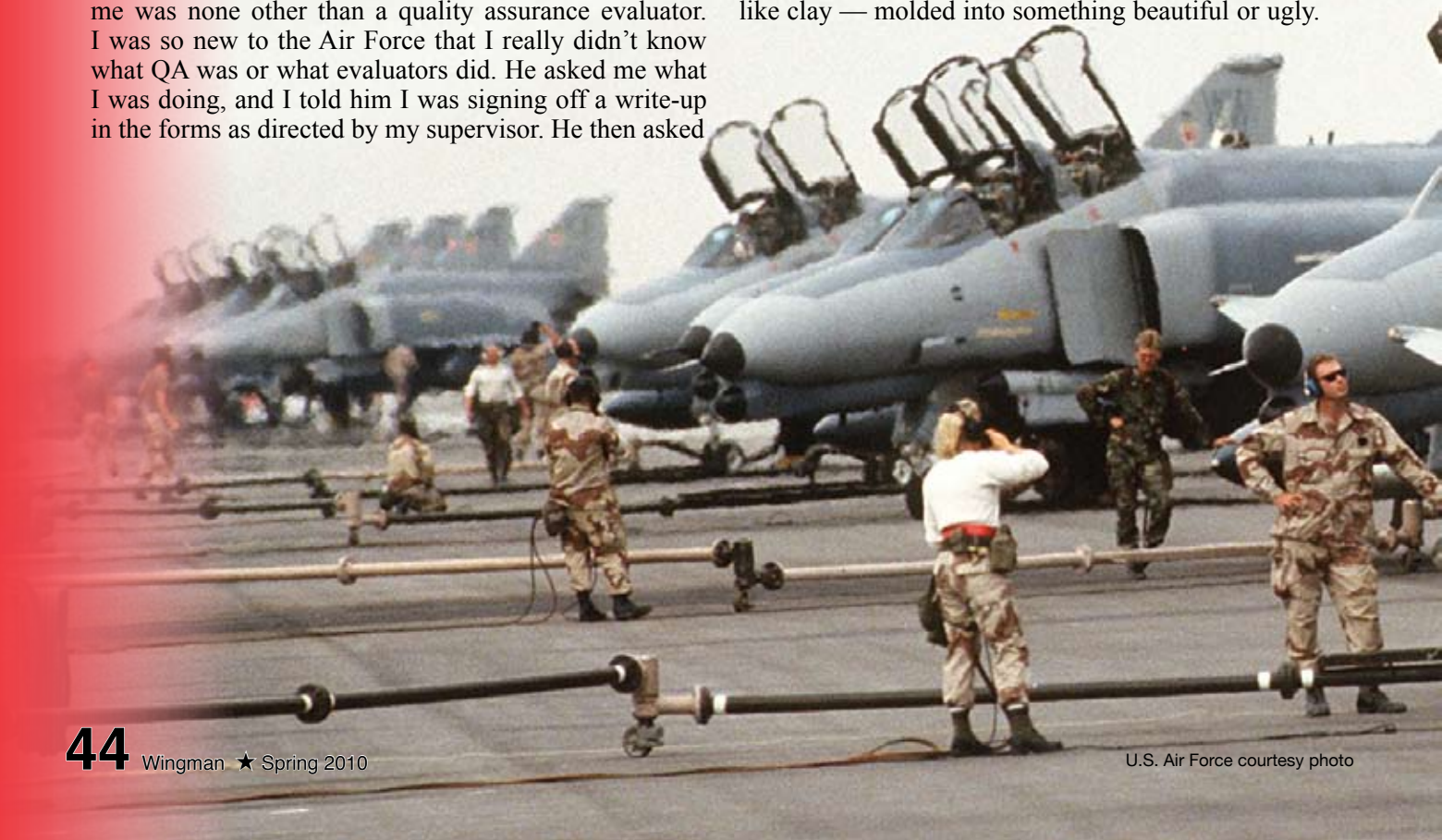
I was a brand new Airman at George AFB, Calif., working on the F-4G Phantom II Wild Weasel. My staff sergeant supervisor said, "Rich, I want you to go and sign off a write-up in the forms for Aircraft 69561." Like any good Airman, I proceeded to do what I was told, although I hadn't accomplished the task. I walked up to the aircraft, pulled the forms from their binder and signed off the write-up exactly as my supervisor directed. I paid zero attention to the technical sergeant standing by the fire bottle watching my every move.

I learned quickly that the NCO who had been watching me was none other than a quality assurance evaluator. I was so new to the Air Force that I really didn't know what QA was or what evaluators did. He asked me what I was doing, and I told him I was signing off a write-up in the forms as directed by my supervisor. He then asked me if I had accomplished the task referred to in the write-up, to which I replied that I hadn't and reiterated I was doing what I was told to do. He then called my supervisor over to the aircraft and asked him if he had indeed sent me to sign off the aircraft forms. My supervisor told the evaluator that he had directed me to sign off the forms and what to write. He also confessed that the task had not been completed. The term that comes to mind: "pencil-whipped."

To say that my supervisor was in some serious trouble would be an understatement. Fortunately, I was just a 3-level following orders; unfortunately, I learned a valuable lesson the wrong way. This happens to many of us; with proper leadership, it shouldn't.

New Airmen can be molded and become the type of leaders that their supervisors make them. The Airmen are like clay — molded into something beautiful or ugly.



U.S. Air Force courtesy photo

The Air Force mission is critical to the preservation of the United States and the freedoms Americans enjoy and expect. However, that mission is only as good as the people who are entrusted to perform it. Our Airmen are completely dependent on their supervisors to lead and guide them. Airmen follow orders, right or wrong, because that's what they're taught to do; they aren't knowledgeable enough to know when the order being given is wrong. At my first duty assignment, when I signed off those forms without actually accomplishing the task, I did so because I didn't know better. I trusted my supervisor who failed to provide me proper instruction, direction and protection. Fortunately, the QA evaluator was there to see what was going on.

I've learned to ensure that orders I'm given are lawful, and if I'm not sure, I'll ask someone! I've also learned that complying with written guidance in tech orders and Air Force instructions are paramount to not only the success of my career, but to the success of the mission. Airmen are absolutely invaluable to the Air Force. To solidify the cornerstone to mission success, they must be correctly molded in all aspects of the Air Force. This includes performing the job according to written guidance and sound orders. This leads to my second point.

Supervisors play a priceless role in the Air Force's day-to-day operations. The Air Force is a very complex and fluid organization that relies on all levels of leadership to successfully accomplish its mission. First-line supervisors play a key role in that success and have a direct impact on the Airmen who work for them. Supervisors who follow the rules, who lead by example and expect their subordinates to do the same, are the type of leaders the Air Force needs. If an aircraft maintainer performs a task without following technical data and damages an engine, renders a radar system inoperable or causes a bomb to not release, the aircraft's ability to project power is left ineffective. That aircraft might be a B-2 meant to take out a high-value target, an A-10 providing close air support to combat troops on the ground or an AWACS providing an overall aerial view of the war. When equipment is damaged and requires repair or replacement, money that was set aside to buy new equipment may now have to be used to repair damaged equipment.

Supervisors who don't follow the rules think it's OK to take shortcuts. They teach their Airmen to do the same, which can jeopardize our mission and get someone injured, or worse, killed. Supervisors, take your responsibility seriously! Teach those working for you to do the job right. Hold them accountable and mold them for success. Our nation's defense depends on it.

Standardizing Nuclear Surety Training

LT. COL. BRAD BUXTON
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Air Force Safety Center
Kirtland AFB, N.M.

Airmen working with nuclear weapons must complete nuclear surety training. According to Air Force Instruction 91-101, *Air Force Nuclear Weapons Surety Program*, individuals must pass a closed-book test with a minimum score of 80 percent before working with nuclear weapons, nuclear weapons systems or certified critical components, before performing nuclear-related duties or controlling entry into "no-lone" zones. Completion of initial and refresher training must be documented. The training includes mandatory topics that teach and explain nuclear surety policy, e.g., the importance of, and need for, a U.S. nuclear capability.

The Air Force chief of safety forms and implements policy, such as AFI 91-101, that defines the Air Force Nuclear Weapons Surety Program and ensures our nuclear weapons systems are safe, secure and reliable.

Airmen are the key ingredient to a successful surety program and must receive good training. When Maj. Gen. Fred Roggero became the Air Force chief of safety, he ordered a review of nuclear surety training across the force. The Air Force Safety Center requested and reviewed training material from every nuclear major command. Some managed the material at the headquarters level while others delegated the responsibility for controlling the courses down to the unit level.

The findings from the review indicated required topics were not always being adequately covered, and the need to standardize training of mandatory topics existed. A total of 31 sets of training material were reviewed, including lesson plans with lecture notes, slides and multiple tests. Of those 31 sets, 16 percent did not address one or more of the mandatory topics. Other sets did not satisfactorily cover all the mandatory topics. Nearly all of the training didn't have test questions that related to one or more of the required topics. The conclusion was clear: the mandatory topics were being neglected.

The findings of the review were examined by the Air Force Nuclear Surety Training Task Force co-led by AFSC and AETC/A10. The task force considered the training and education necessary for various roles in the Air Force nuclear enterprise and made recommendations to meet those requirements. The task force recommended the Air Force develop standard Air Force nuclear surety training material, to include lesson plans, slides and tests. AFSC completed this task, and the material will soon be released to MAJCOMs.

MAJCOMs may approve supplements to the material to address their unique circumstances but will be asked to provide copies to the AFSC Weapons Safety Division. MAJCOMs will continue to use their current lessons until a final date is set to start using the new standard material.

To secure our freedom and deter aggression, Airmen must understand their role in the Air Force Nuclear Weapons Surety Program. Train well!

Safety Security Reliability






Generation M

Take a Breather

JAMES RYAN JARRELL
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I heard he'd been drinking and fell asleep in the water. Thinking of what he must have gone through upsets me.

Imagine this. While still asleep under the water, apnea slowly creeps upon him. He holds his breath and tries to access air, resulting in panic. He hits the breaking point. He gives an initial gasp and the larynx spasms take over. His body suffers from decreased levels of oxygen in the bloodstream, and it then becomes acidotic (abnormal increase in the acidity of body fluids). He swallows, then vomits and releases large amounts of air from his body. It ends with him losing consciousness.

What I just described was a very real, yet fake scenario of the wet-drowning process. Not many know that death by drowning is the third largest cause of accidental deaths within the United States. Throughout the country, we see an average of 3,500 drowning deaths per year, or 10 a day. Two-thirds of those deaths tend to occur during the Critical Days of Summer. As we enter those months of warm weather, we must look at the hazards that we face.

Conventionally, I would never think of drowning as a major concern. I'm young, in shape and an experienced swimmer — makes me believe I'm not at risk.

But we must assess the variables that can confront us when we're performing water activities.

It's important to know our swimming ability and that of the people around us. If you can't swim, you should only be learning in a controlled environment. Knowing the surroundings and the safety precautions to take in that environment are very important. Use risk management to survey the situation and identify apparent safety hazards, such as boats, water creatures or alcohol consumption.

When it comes to drowning mishaps, statistics have shown that 18- to 25-year-olds are a close second to 14-year-olds and younger. A strong correlation for my age group has immerged between drinking alcoholic beverages and participating in water activities. Fatigue and alcohol can have devastating results. The easy solution for this problem would be not to drink, but I know even in saying that, there's a pretty good chance you still will. At all times you should designate sober swimmers to watch over your group. It might not be the most fun for the "designated swimmers," but could very well save lives.

Those who take the risk of drinking while swimming should see the consequences of their actions. Let's say fatigue does get the best of you, and you start to drown. If you lose oxygen to the brain for 30 seconds, irreparable damage can be done — damage that could put you in a constant vegetative state for the rest of your life. Be responsible for yourself and save your loved ones from the burden that could be brought upon them by your poor choices.

Sources: World Health Organization and MedicineNet.com

☆ U.S. GOVERNMENT PRINTING OFFICE 2010-660-459-80024

Based on 10-year averages, the Air Force flies 18 percent more hours in the spring than in winter with a corresponding rise in aviation mishap rates of 26 percent. Use a "back-to-basics" approach to help mitigate and fly safe!

Aviation's Spring Spike

U.S. Navy photo by Petty Officer John P. Curtis