Volume 2, Number 4 Fall 2009

WINGMAN

Airmen Taking Care Of Airmen

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

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Commercial Prefix (505) 846-XXXX
Wingman* is online at *http://afsafety.af.mil

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Wingman
HQ Air Force Safety Center
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Kirtland AFB, NM 87117-5670

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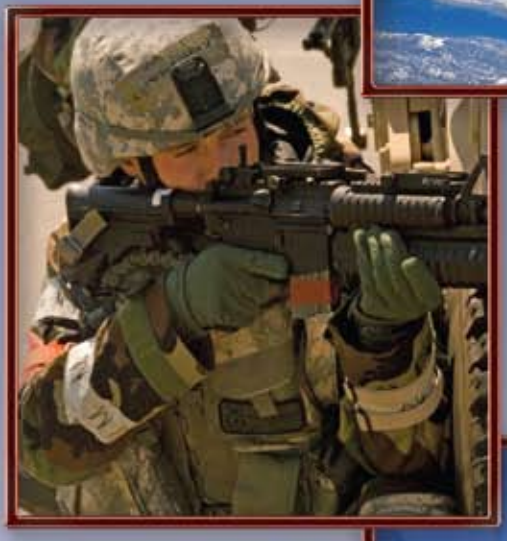

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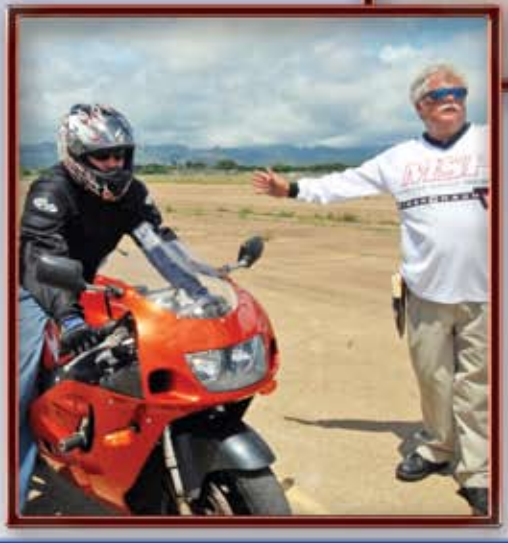

Features

Space

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Aviation

Ground

POSTAL INFORMATION—*Wingman* (ISSN 1055-7725) is published quarterly by HQ AFSC/SEM, 9700 G Avenue SE, Kirtland AFB, NM 87117-5670. Periodicals postage paid at Albuquerque, N.M., and additional mailing offices. POSTMASTER: Send address changes to *Wingman,* Attn: Executive Assistant, HQ AFSC/SEM, 9700 G Avenue SE, Kirtland AFB, NM 87117-5670.

CONTRIBUTIONS & FEEDBACK—*Wingman* welcomes reader contributions, comments and constructive criticism. The editor may revise contributed material to improve clarity, while retaining the author's intended meaning.

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Commercial telephone: (505) 846-4110
DSN 246-4110
E-Mail—*afsc.semm@kirtland.af.mil*
24-hour fax: DSN 246-0931

Front cover: Boeing photos by Carleton Bailie
Digital photo collage by Felicia M. Hall

Fall: Preparing for Change

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

The "Critical Days of Summer" have come to an end, kids are headed back to school and the days are starting to grow shorter. Welcome to fall. As the season changes, you need to be aware of the new hazards that arrive. Off duty, many folks will be preparing their houses for winter: climbing roofs to seal air conditioners, cleaning leaves out of gutters, raking the backyard and burning leaves; all of which have their own unique hazards. Whatever the home project may be, pause a moment to consider the hazards and take the time to mitigate the risks. Kids heading back to school means focusing on school zones while driving. Vehicles should also be prepared for the approaching winter. On duty, the focus will shift to night flying again. As always, we'll start slow, easing back into a new circadian rhythm and breaking out the reflective belts and vests. Whether we're working on aircraft or flying them, darkness will make it more challenging and more hazardous.

In this edition of ***Wingman***, Space Safety leads off as the "Division in the Spotlight" with a feature on their organization and how they support the Air Force mission. The Space Safety Division contributes features on how the 3rd Space Operations Squadron keeps our orbital assets safe and an article on orbital drag effects of a low-Earth orbit.

The Weapons Safety Division highlights the accomplishments of the 90th Ground Combat Training Squadron in preparing Air Force security assets for deployment and keeping our Air Force Space Command resources secure. In addition, the Weapons Section covers safety for the EOD tech, aircraft parking considerations and Dull Sword reporting.

The Aviation Safety Division focuses on the increase in the Bird/Wildlife Aircraft Strike Hazards due to seasonal migration as well as winter flying hazards. Our Flight Safety Officer course graduates also provide some "There I Was" tales in this section, sharing valuable lessons learned from personal experience.

The Ground Safety Division again highlights the importance of safe PMV 2/4 operations with articles on the proper way to learn to ride a motorcycle and a chilling tale of an individual who wore his seat belt and lived. Other articles discuss the poor situation you may find yourself in if you choose to drink and drive, the experiences of a deployed safety technician and a safety officer's experience with a traveling salesman.

Finally, we're always looking for feedback on what you think of ***Wingman*** and how we can improve it. Please take the time and go to the Air Force Safety Center Web site at *http://www.afsc.af.mil/shared/media/document/afd-090427-094.pdf*, fill out the reader feedback form and e-mail it back to us. The magazine staff and Safety Center leadership will review and consider all reader comments. Remember — Air Force Safety is no accident!

U.S. Air Force photo by Dennis Spotts

SAFETY SLOGAN CONTEST

Are you creative? What do you think of when you think of safety? Is it "Safety First" or how about "Safety Always"? We're looking for a slogan that will keep safety in the minds of Airmen.

Submit Entries to: afsc.sem@kirtland.af.mil no later than Oct. 30, 2009

Everyone's a winner when it comes to safety!

Winners will receive at least two of the following:

- Chief of Safety Coin
- Special Trophy
- Article in the next edition of the ***Wingman*** magazine
- Polo shirt or T-shirt with the Air Force Safety Center shield

Eligibility:

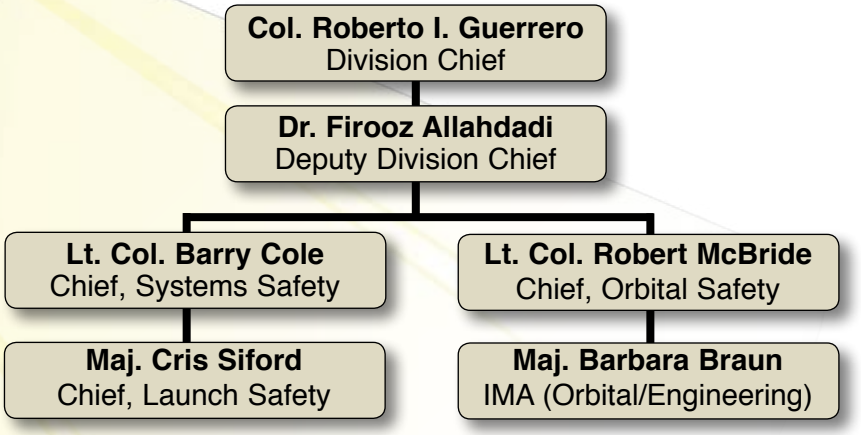
- Must be 18 years or older
- U.S. citizen

Note: All personnel assigned to the Media, Education and Force Development Division (AFSC/SEM) are ineligible to participate.

Graphic illustration by Amanda Carrillo

The Space Safety Division

ORGANIZATIONAL CHART



What Does Space Safety Have to Do With My Job?

COL. ROBERTO "BERT" GUERRERO
Chief, Space Safety Division
Air Force Safety Center
Kirtland AFB, N.M.

What does space safety have to do with my job? That's what I used to think. But look around … operational space assets play a big part in today's Air Force. Understanding space safety and what we're trying to do at the Air Force Safety Center will open your eyes to what challenges we face that could affect the entire Air Force.

The Space Safety Division is one of the newer divisions at the Safety Center. Established in 2004, we recently received the authority from the Secretary of the Air Force to help the Air Force chief of safety (our boss) develop Air Force space safety policy. We're divided into three main sections: Launch Safety, Orbital/Ground Control Safety and Space Systems Safety.

With the recent collision of the Iridium communications satellite and the Russian Cosmos weather satellite, the big sky theory of space operations is starting to evaporate. These types of incidents can affect our ability to operate. So, while we look at ways to maximize operational readiness, you should be aware of how the loss of a space-based asset could affect your job. In turn, you should be developing a Plan B to stay in the fight. From GPS capabilities to weather/intelligence satellites to communications assets, there's no doubt that a failure in any of these areas could significantly change the way you do business. The 3 SOPS article gives you an idea of what our space professionals are doing to stay in the fight and how they are actively ensuring their assets stay fully mission capable.

In the Summer 2009 edition of ***Wingman***, we highlighted the importance of reporting Class E type events — close calls and incidents that may not have been a mishap but may provide the keys to preventing an expensive space mishap. It's easy to brush these events aside. They're embarrassing at times and may seem trivial, but our AFSAS database helps us track these events for trends that may not seem obvious at first glance. Orbital debris continues to garner more interest and concern as even a tiny piece of debris can cripple a system due to the high speeds involved in the orbital arena. There have been plenty of close calls that could have helped us mitigate the threat, had we known they were there.

Solar flares and space weather effects are at a low point, but that 11-year cycle is increasing until it's expected to reach a peak in 2013. Predictive models are expecting this next cycle to be a strong one, where flares can knock out power grids and satellite services.

Predicting a satellite's location can be a challenge because space weather forecasting is as challenging as earth weather. Just as crosswinds alter the path of aircraft if uncorrected, solar winds alter the path of our satellites. Our safety folks at the Air Force Research Laboratory give an outstanding overview of how orbital objects are affected by space weather and what they're doing to make predictive models more accurate. While they're working to better predict a solar event that could affect our orbital assets, it's our hope that everyone else is not taking these assets for granted. How will you still get your job done without GPS, SATCOM or the most current intelligence imagery?

This is our forum to bring these issues to the entire Air Force so that you can be ready for the challenges ahead and for the space community to talk about lessons learned. But, we can't do it alone … help us tell the story. Your space articles, topics and lessons learned are all welcome at *afsc.ses@kirtland.af.mil*.

U.S. Air Force photo

3 SOPS Achievement in Orbital Safety

CAPT. MICHELLE SKARR
MASTER SGT. SHANNON STROMBERG
3rd Space Operations Squadron
Schriever AFB, Colo.

At Shriever AFB, Colo., the 3rd Space Operations Squadron plays a significant role in providing combat effects to the war fighter. The squadron is responsible for the command and control of two geostationary communication constellations totaling $3.9 billion in space assets. The oldest satellite constellation under their control is the Defense Satellite Communication System III, first launched in 1992. The DSCS III constellation is composed of eight operational satellites that provide worldwide satellite communications. Providing the necessary support to the war fighter and the satellite constellations cannot be accomplished without a proactive approach to orbital safety.

The newest constellation under 3 SOPS' responsibility is the Wideband Global SATCOM. The first WGS satellite (WGS-1) was launched in October 2007 and the second (WGS-2) was launched in April 2009. Each WGS satellite has approximately 10 times more communications capacity than each DSCS III satellite. These two families of satellites are crucial to the war fighter's success and must be operated safely to ensure the satellites' service life.

The demand for more communication satellites with greater capabilities continues to increase. As more vehicles are launched and share the prime real estate in space, known as the geosynchronous belt, it's imperative to establish smarter operations and greater space situational awareness. Operators must be more conscious of orbital safety measures and take proactive steps in collision avoidance. Over 700 active satellites share the geosynchronous belt. Each satellite is assigned a "parking spot" with strict three-dimensional station-keeping limits that define its operational box. There is a high risk of collision unless operators focus on precise tracking and maintain active control of these objects in the geosynchronous belt. A recent illustration of this point was the collision between the Russian

Photo illustration by Staff Sgt. Don Branum

Cosmos 2251 satellite and the Iridium Satellite LLC. This mishap resulted in hundreds of pieces of debris orbiting in space. Each piece of debris potentially threatens the health and safety of other space assets.

The 3 SOPS has taken the initiative to create smarter and safer satellite operations by pioneering and establishing new tactics, techniques and procedures for collision avoidance and orbital safety methods. In 2007, the squadron developed and implemented the "Half-box" station-keeping concept for the DSCS III constellation. At the time Half-box was created, the squadron experienced 16 close approaches that required five collision avoidance maneuvers. These close approaches, or predictions of objects within 3 km, were occurring on one particular side of the three-dimensional operational box. After extensive analysis, staff discovered if the station-keeping cycle was shortened by maneuvering the satellites before they reached the halfway point or center of their operational boxes, the conjunctions were mitigated 98 percent of the time. The Half-box concept went on to win the Space Safety Plaque for 2007 and is now used operationally with one of the DSCS III satellites. However, the 3 SOPS didn't stop there. As time went on, they were able to implement another technique called "Box-shift." This procedure negotiated a "shift" of their operational center station with co-located vehicles. The Box-shift resulted in longer station-keeping cycles and required less commanding than the Half-box concept, while maintaining flawless communications to the users. Since the Box-shift concept was implemented on five of its DSCS III satellites, conjunctions have been eliminated.

The WGS satellites were designed to incorporate advances made in orbital safety and collision avoidance. WGS uses Xenon-ion Propulsion System thrusters for station-keeping, the only MILSATCOM satellite to use this cutting-edge technology. XIPS thrusters provide very low thrust and high specific impulse-maneuvering capabilities. WGS not only maintains smaller station-keeping parameters, but has shown unprecedented accuracy in staying center station. The precision of the XIPS thrusters on the WGS satellite has substantially reduced potential satellite collisions and has ensured safe and dependable communications for the war fighter.

The 3 SOPS continues to seek smarter and safer operations for navigating the geosynchronous belt. During the planning stages for the WGS-2 launch, they tirelessly investigated more efficient and effective ways of placing WGS-2 into its final operational location. The initial relocation plan for WGS-2 was for the satellite to drift in a westerly direction about 174 degrees. Due to the higher risk of a conjunction while moving through the super-synchronous belt, the drift rate was limited to about 3.4 degrees per day. This plan required approximately 70 days of relocation time. This was not the safest or most efficient option. After further research and analysis, it was concluded more than 23 days of relocation time could be saved by drifting in an easterly direction. Although WGS-2 would have to move a greater distance of 188 degrees, the drift rate could be increased to 4.5 degrees per day. This option would avoid the super-synchronous belt, or "trash belt," without increasing instances of conjunctions.

Safety of flight remains a high priority in the space community. Whether it's learning new ways to control older, degrading satellites or building newer satellites with tighter control requirements, safety is at the forefront of the operation and design of all space vehicles.

Image courtesy of Boeing

Safety Issues of the Orbital Drag Environment

CHIN S. LIN
FRANK A. MARCOS
Air Force Research Laboratory
Hanscom AFB, Mass.

Aerodynamic drag continues to be the largest uncertainty in characterizing the low-Earth orbit environment. Accurate specification and prediction of the space environment is necessary to precisely calculate satellite drag and orbital trajectories. Safety concerns for orbital-manned missions and operational satellites are increasing as evidenced by a recent incident: On March 12, 2009, three astronauts aboard the International Space Station locked themselves inside the attached Soyuz capsule as part of their emergency escape procedures. The danger: an incoming four-inch long piece of space debris detected too late for the ISS to maneuver out of its path. Fortunately, the debris missed the ISS by three miles. However, with the increasing number of objects in space, the risks caused by space environmental effects continue to grow, making the accurate prediction of satellite drag even more critical.

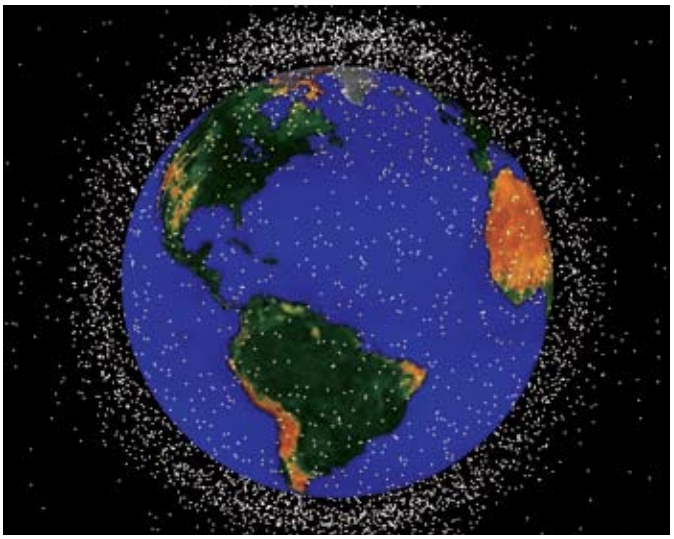


Figure 1 Image courtesy of NASA

Space debris is the dominant population of objects in space. Figure 1 shows an illustration of the Earth's satellites and debris within 2,000 km of the Earth's surface. Approximately 95 percent of LEO objects are debris. The debris, composed of defunct satellites, loose parts jettisoned during launch and collision fragments, pose serious hazards because of their high velocities. It's estimated there are more than 200,000 pieces of debris. At orbital speeds, even a small piece could inflict significant damage to the $100 billion ISS and jeopardize the safety of the crew.

Understanding the satellite drag environment is essential for space situational awareness. A key objective of SSA is to provide the Air Force with the ability to specify and forecast space weather effects in order to track all space objects efficiently. With current advances in satellite and communications technology, it has become increasingly important to be able to locate satellites and to predict their future positions accurately. Besides collision avoidance warnings, orbital drag errors impact many Air Force missions, such as maintaining the world's best catalog of all orbiting objects, estimating satellite lifetimes, on-board fuel requirements and attitude dynamics. Missions also include predicting re-entry times and locations with a high degree of accuracy and precision.

Air Force Space Command currently uses a small number of ground-based radar facilities and telescopes to track about 13,000 objects. This is just a small fraction of the total space objects. Unfortunately, 4,000 of these tracked objects orbit the Earth in regions below 700 km where aerodynamic drag complicates precise orbital trajectory prediction. The AFSPC goal is to specify satellite drag to within 5 percent over a 72-hour period to permit fuel-efficient collision avoidance maneuvers. Current AFSPC forecasts during unstable orbital drag environment conditions may be in error by as much as 50 percent. When the space environment increases orbital drag significantly, predicted positions are further away from the actual position and serious space safety issues arise (Figure 2).

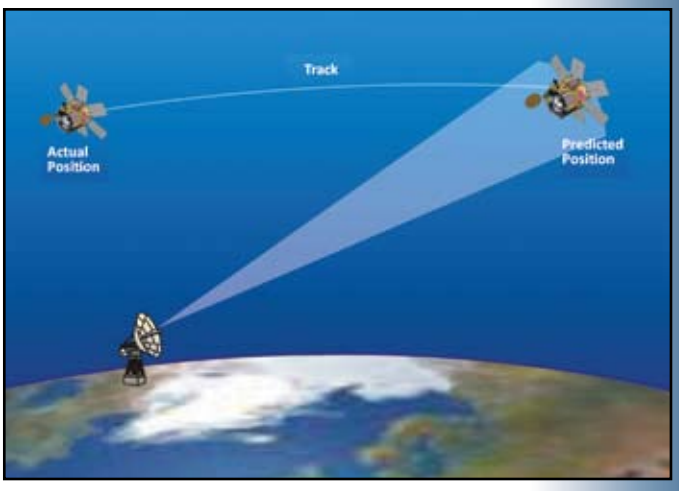


Figure 2 Image courtesy of the Air Force Research Laboratory

The drag force experienced by satellites depends directly upon the total neutral mass density of upper atmosphere, such as the thermosphere, which is part of the atmosphere above about 90 km. It also depends on the square of the satellite's velocity and specific physical properties known as the ballistic coefficient, which is area to mass ratio times a drag coefficient. The dominant uncertainty in predicting satellite trajectories in LEO is in the highly variable thermospheric neutral density. Current empirical models can adequately describe the neutral density global mean structure within 15 to 20 percent during quiet times; however, the error becomes as high as 100 percent when solar activity is high.

The neutral gas density is mainly driven by two solar influences: extreme ultraviolet radiation (solar photons) and the solar wind (corpuscular radiation). EUV heating generally predominates, accounting on average for about 80 percent of the energy input to the thermosphere, and determines the basic thermospheric structure. However, solar EUV flux varies on several time scales, exhibiting daily changes, an approximate 27-day solar rotation periodicity, and a solar cycle variation of ~11 years. At 400 km, the neutral density changes by about a factor of 10 over the solar cycle. Significant daily variations are also common, and changes of 20 to 50 percent can occur over the 27-day solar rotation period. Solar activity is currently near its minimum but is expected to reach maximum values in 2013. During solar max, orbital predictions are far less accurate, and the risk of collisions increases significantly; more objects tend to deviate from their expected paths and more re-enter. Figure 3 illustrates density variation experienced by a satellite in the last 38 years, which follows the solar flux variation in the last three solar cycles.

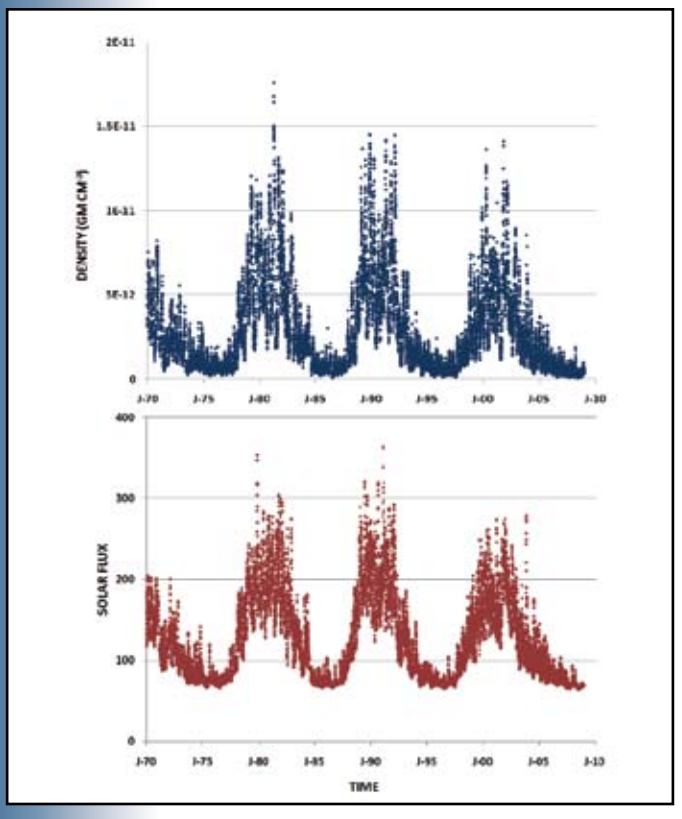


Figure 3 Images courtesy of the Air Force Research Laboratory

Solar EUV influence on the upper atmosphere is modified by space weather effects. The arrival of the solar wind, fast and dense ionized gas that interacts with the Earth's magnetic field, results in significant energy deposition in the upper atmosphere. This causes a "space storm" that heats the upper atmosphere unevenly and increases neutral mass density globally. Like hurricanes in the lower atmosphere, major space storms produce large disturbances in the upper atmosphere with wind speeds as high as 1 km/s. While solar cycle effects dominate on longer time scales, a strong space storm can typically change the neutral density at 400 km by a factor of three in just a few hours. At these times, the uncertainty in predicting daily LEO orbits can be as high as 200 km at 400 km altitudes.

The dynamics of the thermosphere are directly influenced by the relative heating due to solar EUV radiation at low latitudes and auroral processes associated with the solar wind at high latitudes. The lack of direct solar EUV and auroral heating data has been a persistent problem for modelers. Precise determination of LEOs requires an understanding of the physics of the neutral atmosphere in order to predict thermospheric densities at satellite altitudes. Neutral density variations in the thermosphere, due to diurnal, seasonal, semiannual, solar and geomagnetic disturbances, have been successfully incorporated into several empirical models.

A significant advance in modeling was achieved by demonstrating that neutral density models could be corrected in near real-time by assimilating satellite drag data obtained via ground-based tracking. The Air Force High Accuracy Satellite Drag Model optimizes the concept of "atmospheric calibration" by simultaneously tracking about 100 calibration satellites to correct the global density fields of an empirical model. The HASDM typically reduces satellite drag errors from 15 percent to about 4 percent for the calibration

satellites and 8 percent for most other satellites.

Ideally, the next generation models of upper atmospheric density forecasts will be based on the physics of solar behavior and solar terrestrial interactions. Large-scale computer simulations of thermosphere circulation could, in principle, provide global distribution of the mass density temperature and winds. These complex physical models hold promise of great progress in forecasting long-term space weather variations; however, the observational solar data sets needed to achieve the potential accuracy of these models are not presently available. Consequently, the satellite drag community continues to rely on simpler empirical models driven by proxy indicators of solar heating.

Historically, thermospheric density measurements needed for model development have been sparse. New measurements are providing a rich abundance of data as functions of altitude, latitude, local time, day of year, and solar and geomagnetic conditions. Figure 4 gives an example of neutral density measurements we are now capable of generating; in this case, based on latitude and longitude both before and during a space storm. We are currently in a "Golden Age of Satellite Drag." New programs routinely measure drag and density globally. New solar and geomagnetic indices are being developed to improve empirical and physical inputs needed to implement sophisticated assimilation techniques. These programs are directed toward dramatically reducing satellite drag errors and increasing forecast times to meet stringent, present and evolving operational requirements.

The Air Force Office of Scientific Research awarded a new three-year multidisciplinary university research initiative to a team headed by the University of Colorado. This research will develop the physics and chemistry concepts required to specify and forecast thermospheric neutral density accurately and reliably to support both empirical and physical modeling. A key research goal is a physics-based understanding and prediction capability for the spatial and temporal distribution of thermospheric energy sources. This critical basic research will lead to a near-real-time, accurate, operational capability to locate, track, identify and estimate future locations of satellites with high accuracy. With the additional underpinning of this effort, we anticipate significant future progress in satellite drag capability.

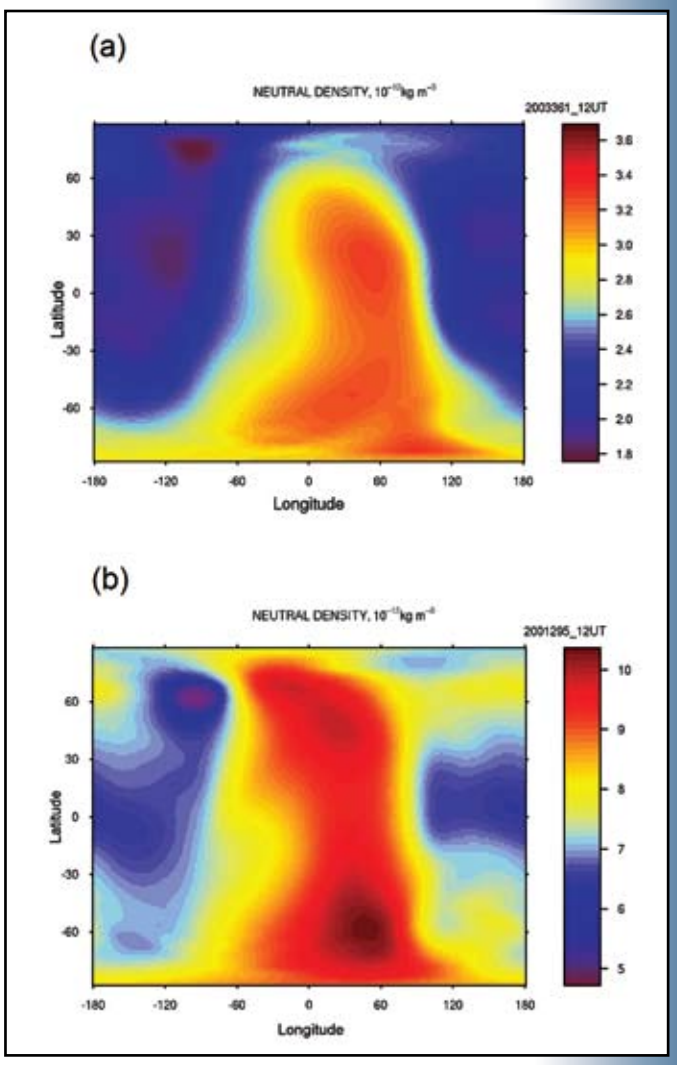


Figure 4 Images courtesy of the Air Force Research Laboratory

The Air Force Research Laboratory has recently created the Orbital Drag Environment program to incorporate the research results and transition an assimilative first-principles operational forecast model to AFSPC. An additional part of the ODE program is developing small sensors for nano-satellites to provide data to drive these next-generation models.

Uncertainties in neutral density variations have been the major error source for LEO determination. The problem is being vigorously attacked by numerous space weather studies, including data assimilation schemes, predictive solar indices and "in-situ" measurement. While there is still a lot of research needed, the tools are finally becoming available. The culmination of these efforts will be steady progress in meeting the evolving, previously unattainable, stringent requirements for operations in the satellite drag environment.

Spotlight on Security – Protecting Our Assets

MAJ. TROY CARLSON
90th Ground Combat Training Squadron
F.E. Warren AFB, Wyo.

Camp Guernsey, the state's premiere Joint Readiness Training Center, is 100 miles north of Cheyenne, Wyo. The 90th Ground Combat Training Squadron is a tenant at the camp. The squadron's mission is twofold: (1) to ensure Air Force Space Command's forces are prepared to defend U.S. Air Force personnel and resources by developing and training new tactics, techniques and procedures for nuclear and space systems security; and (2) to conduct advanced pre-deployment training for Air Force deployers.

The small cadre and staff of 26 people plan, organize and implement 13 courses ranging from a six-week Tactical Response Force Assaulter course to a five-day Antiterrorism/Force Protection Level II course for AFSPC. Mr. David Lycan, the deputy commander, says the idea for this squadron started over five years ago as a concept for providing advanced training in response to the lessons learned from Mighty Guardian tests. In the last two years the number of trained students has grown from 600 in 2007 to over 2,000 students in 2008. Training in 2009 is just as busy. The members of 90 GCTS are incredibly resourceful, talented and extremely hard-working!

The TRF is a relatively new response team in the intercontinental ballistic missile nuclear security arena. A fully trained team contains specialists who can breach facilities as well-precision engagement teams who can direct and adjust fire from infield MK-19 automatic grenade launchers. All team

U.S. Air Force photos by Tech. Sgt. Shelley Gill

members are proficient in close-quarters battle and weapons employment and are prepared for weapons storage area operations. The training is systematic and safety conscious, and includes live-fire assaults on a simulated launch facility. The squadron also conducts leadership courses for new noncommissioned officers and young officers. Students are stressed and overloaded, while learning how to think, command and lead under pressure. The training reinforces the importance of attention to detail and communication, which are critical skills for effective leaders.

The reason for the squadron's quick growth is due to its partnership and training opportunities with Camp Guernsey. With the camp's 66,000 acres and countless ranges, the squadron has room to grow and space to move.

One of the key courses taught is Road Warrior, where a week is spent with each ICBM wing's response forces, refining tactics, techniques and procedures. Camp Guernsey literally has the space and terrain that matches the Air Force's three ICBM wings. In seven days, reviews of fundamental skills, up to and including live fire, as well as individual and team movement are packaged into the training. The teams also spend time executing three to four convoy movements in different force-on-force challenges. In the end, each team has gained the experience of what normally would have taken six to nine years of traditional force-on-force exercises to complete. Teams are also encouraged to experiment and try new things if they find old methods not working for them.

"The days are long and hard for the cadre," said Staff Sgt. Tracy Forton, 90 GCTS cadre assigned as OPFOR. "By the end of the week, these teams really make it hard for OPFOR to have a chance. They're skilled, motivated and very aggressive."

Despite the variety of courses taught, the squadron's safety record is impeccable due to attention to detail and supervision. They are still growing and developing training areas. Previously, Camp Guernsey was a location only few had heard about. Now it's becoming the place to go to for the best nuclear security training in DOD, as well as pre-deployment training.

Feedback from 90 GCTS courses has been outstanding and is attributed to the cadre and their commitment to nuclear security and deployment preparation. The squadron was recognized as the "Best Small Security Forces Unit in the Air Force" for 2008.

Safety for the EOD Tech

CAPT. SHANE FRITH
Weapons Safety Division, Deployed
Air Force Safety Center
Kirtland AFB, N.M.

Explosive Ordnance Disposal is probably the most hazardous career field in the Air Force. Most people run from danger, not toward it. The EOD technician is definitely a different breed. We knowingly move toward hazardous and unknown explosives that are specifically designed to kill or severely injure personnel.

In Iraq, about 65 percent of the emergency calls that we receive are because an insurgent has emplaced an improvised explosive device. The other 35 percent come in the form of munitions found on the ground or munitions turned over to us. While the latter are not emplaced by the enemy, they can still take life or limb if not handled by fully trained, EOD-qualified personnel under the safest conditions.

The majority of our work in the combat zone is done outside the wire, where everything is unknown. There is no actual control of what happens there, and we don't know when the bomb maker is going to strike again. You have to be mentally and physically prepared for the worst.

In fact, we begin to learn about safety from the day we walk into our nine months of EOD school training. Once an EOD tech graduates, the training doesn't stop. We continue to train throughout our career; safety is never an afterthought!

Let me describe what we wear for a mission, starting from the ground up. Our boots are fire-resistant, water-resistant and sometimes steel-toed when the mission dictates. They are fire-resistant and steel-toed for the obvious reason, but why do they need to be water-resistant? There are two reasons I discovered in Iraq. One is to prevent bloodborne pathogens from getting onto your feet through your boots. And the other is to avoid sewage and stagnant water. It's not a pretty picture for either one, so precautions must be taken before heading out to one of these scenarios.

Pants and shirt are both fire-resistant material as well. They have to match what the security element is wearing so we don't stand out as a sniper target by wearing a different type of uniform.

The vest is made of Kevlar and has additional plates to protect the front and back from 7.62 mm armor-piercing

U.S. Air Force photos by
Senior Airman Nadine Y. Barclay

rounds and explosive fragments; they cover your major organs. The sides underneath the arms also have the same level of protective armor plates, but only a bit smaller. The last guy that was shot in the side was very thankful that he had these on!

We wear fire- and tear-resistant gloves and remove all rings, watches and jewelry so they don't get caught on anything. Up from there we have the helmet, ANSI-rated safety glasses that cover the entire eye socket, and hearing protection for the unintended blast. This extra equipment can add 60 to 100 extra pounds when carrying a full combat load.

Being physically prepared is a safety priority for the job. If the EOD tech is not constantly engaged in physical training, the safety gear will become a hindrance rather than protection. When carrying that much weight through the rocks, sand, moon dust and mountains, you need to be physically capable of carrying your gear. With your body covered from head to toe, the heat over here can be a real issue, as well. There is no better way to prepare for the extremes than to maintain a consistent physical training program.

You can be mentally prepared, in great physical shape and dressed out from head to toe, but none of these matter if you don't follow the standard operating procedures. EOD technicians do everything according to the latest safety practices. We shift our tactics, techniques and procedures according to the most recent battlefield threats when we encounter IEDs. Another important aspect to the EOD tech's safety is to perform every procedure remotely. When we tackle a problem downrange, there are three rules that must precede any operation: Remote, Remote, Remote! The further you're away from the explosive, the higher your chance of survival if it happens to arbitrarily detonate. We apply a strict adherence to our technical orders and when we cannot, we do everything from a remote location. We use robots, armored vehicles and high-quality optics to perform the work for us. There's no need for the EOD tech to take unnecessary risks or chances. Our job is dangerous enough on its own.

If you're reading this and aren't sure how you'd react if you ever found an IED in combat or even unexploded ordnance back in the states, simply pull out your Air Force Manual 10-100, *Airman's Manual*. It will guide you step-by-step on what to do. The most important consideration is to not touch anything. If you didn't put it there, don't touch it. Explosive hazards are extremely unstable and can detonate unexpectedly at any time. It's best to let the experts handle these devices.

Air Force Safety Center Welcomes New Chief of Weapons Safety

Hello from the new guy in the Air Force Safety Center's Weapons Safety Division. First, let me thank Col. Hofelich for all he's done for the weapons safety community during his tenure as SEW's division chief. His hard work enhanced the nuclear and conventional community, making it a safer place to work.

As the new division chief, I look forward to working with everyone in the weapons community to ensure that we maintain nuclear surety and safe conventional explosives working environments. The task is BIG, but we have a great team to accomplish it. Again, I look forward to working with you all and getting out and seeing your operations.

Weapons

Col. Rodney M. Mason is the Chief, Weapons Safety Division, Air Force Safety Center, Headquarters Air Force. He is responsible for AF nuclear surety, conventional weapons and directed energy weapons safety program development and implementation. As chief of weapons safety, he approves all new AF weapons, explosives storage site plans, weapons modifications, explosives hazard classifications and emergency action procedures worldwide for operational use.

He is the chairman for the AF Nuclear Weapons System Safety Group, the Non-nuclear Munitions Safety Board and the Directed Energy Safety Review Board. He is the primary AF voting member to the DoD Explosives Safety Board, setting the safety standards for all DoD. Col. Mason also manages the AF radiation safety program and partners with the Department of Energy, Army and Navy on both joint and common nuclear weapons complex security and facilities issues. He is the AF liaison for NORTHCOM on placement of defensive missile systems throughout the United States. He directs the AF weapons safety testing program. He ensures all AF nuclear and non-nuclear weapons storage and maintenance facilities meet DoD certification standards for safety and security. Finally, Col. Mason provides oversight for safety mishap investigations and recommendations to prevent reoccurrence and serves as senior EOD safety officer, providing review of all new EOD tools and procedures.

Col. Mason graduated from Cedarville University and earned his commission from Wright State University, ROTC Det 643 in June 1987; he entered the Air Force in February 1988. During his career, he has served on the flight line, in backshop and munitions areas, as well as in MAJCOM staff positions in aircraft maintenance and munitions functions. He has been a squadron and detachment commander. He has also deployed in support of Operations DESERT STORM and SOUTHERN WATCH.

U.S. Air Force photo

Blue 2

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

"Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect."
Capt. A.G. Lamplugh

Aviation

Time has a way of messing with our switches. Think about it. As I write these words, it's mid-June, 88 degrees in Albuquerque, 93 in Dallas and 100 in Houston … summer weather, even though it's still late spring. Summer approaches and the Summer 09 ***Wingman*** has just hit the shelves. I'm writing to kick off the Aviation Safety piece of the Fall 09 ***Wingman***, but our theme is "Winter Aviation Safety."

Got it? Is your melon firmly centered in the game? Good.

By the time you read this, the Earth's crust will have started to cool, the days will have become shorter 'twixt dawn and dusk, and you'll start seeing changes in how the jets fly, how you fly and when you fly. Cool days mean more thrusties, more lifties and more leaky seals. You won't face the summertime thermal stress and will probably need less water to keep that hydrated feeling. Of course, if you dress for winter egress, but still work up a sweat during the "meat of the mission," you may need to run the air conditioning in winter to keep the cockpit thermally balanced.

What about the jets? There's a love/hate relationship between the winter season and aerospace vehicles. It seems that jets love the winter cold if they're warmed up, wrung out and flown well … right up to the moment when we stop-cock the throttles and shut them down in the chocks. If we don't fly them often, jets just really throw fits — seals leak, engines take forever to start, oil pressures are high and ice on the wings need clearing. Talk about high maintenance.

But are aviators really different? We flyers need to stay warmed up, wrung out and loosened up, too. When was the last time we were "loosened up" for the sort of real-world events vital to getting our jets and butts back to home plate … or ANY plate … during winter? What survival gear did your peeps pack into the seat kit? When you launched out of Meridian, did you pack for a divert into either of the Dakotas? Does your weather cat comfortably match your currencies?

Winter is here. You've got to be ready.

Now is the time on Sprockets when we look at the stats with wonder and amazement. If your MAJCOM safety offices did their jobs in March, they passed on word that the spring flying seasons yielded the highest number of flying hours AND numbers of aviation Class A/B/C mishaps: averaging 205.3 mishaps per year from FY99 to FY08. But for the same 10-year period, the December through February months averaged 163.2 Class A/B/C mishaps, the LOWEST average of the four seasons. If winter is the "safest," then why is Blue 2 making such a fuss?

Simple. Because Capt. Lamplugh said aviation is inherently dangerous, even when the statistics say we can relax. Winter flying hazards are the most unforgiving of all four seasons. We must stay on our guard, apply solid ORM and keep an eye on the weather, BAM/AHAS and fuel gauges. There's no room for carelessness, incapacity or neglect.

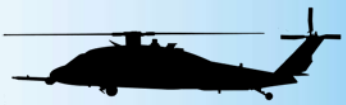
Blue 2's engaged!

U.S. Air Force photo by Dennis Spotts

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 Lt. Col. Brian Kamp of the 110th Fighter Squadron, Bridgeton, Mo., in recognition of exceptional performance during an emergency that occurred in March 2009. Lt. Col. Kamp (Bud 2) was flying an F-15C as No. 2 in a flight of two. During a 3,000-foot defensive basic fighter maneuver setup, Bud 2 observed the master caution light, hydraulic caution light and PCl B hydraulic light illuminated. He immediately began a climb and proceeded to return to base. A few minutes later, while flying at 300-knots- indicated airspeed in straight and level flight, Bud 2 experienced an abrupt and uncommanded flight path change. After regaining control of the jet with full left and full aft stick, Bud 2 observed the left and right hydraulic caution lights, the Utility B hydraulic light, and the PC1 B hydraulic light illuminated. At this time, Bud 2 proceeded to a point over the Mississippi River to get away from populated areas and performed an aircraft controllability check. Bud 2 determined the aircraft was not controllable below 210-knots-indicated airspeed. The decision was made to attempt a high-speed approach and no-flap landing due to the effects of the multiple hydraulic failures. The aircraft crossed the runway threshold at the minimum controllable airspeed, and he was able to successfully land the aircraft in a three-point attitude on the 10,000-foot runway. Lt. Col. Kamp's exceptional airmanship and sound judgment resulted in saving a critical combat asset. The outstanding leadership and safety awareness displayed by Lt. Col. Kamp reflect great credit upon himself, the Air National Guard, and the United States Air Force.

The Aviation Well Done Award is presented to the crew of Pedro 81, 33rd Rescue Squadron, Kadena Air Base, Japan, in recognition of exceptional performance during an emergency while on a combat search and rescue mission during Operation ENDURING FREEDOM. On Aug. 27, 2008, the crew of Pedro 81 launched from Bagram Air Base on an urgent medical evacuation mission to a forward operating base. Under high risk and low illumination, the crew bravely navigated treacherous mountainous terrain, picking up a patient while avoiding enemy ground fire. During the return flight to Bagram Air Base, Pedro 81 experienced an engine chip caution light which signaled a possible engine failure. In spite of the hastened situation, the crew calmly analyzed and computed the exact single-engine airspeed for current aircraft load and conditions. The direct and quick actions taken by the crew minimized the impact of the emergency situation and the patient in their care. The crew of Pedro 81 demonstrated outstanding crew resource management in a high-stress situation with increasing workload. In addition, their actions and sound aviation skills resulted in eliminating any possible human errors. The crew accomplished their mission with a safe recovery at Bagram Air Base and saved the life of their patient. The outstanding leadership and safety awareness displayed by the crew of Pedro 81 reflect great credit upon themselves, Pacific Air Forces Command, and the United States Air Force.



Maintenance Spoken Here!

CHIEF MASTER SGT. SANDY STACY
Aviation Safety Division
Aircraft Maintenance Safety Manager
Air Force Safety Center
Kirtland AFB, N.M.

Don't be the One

Aviation

As part of my daily job, I sort through and evaluate aircraft mishaps to determine which ones were caused by maintainers. Historically, we have caused an average of three Class A, eight Class B and 38 Class C aviation mishaps each year. In the last three years, we've cost the Air Force almost $127 million! As I go through these reports, I wonder why, with all of our training, tech data and instructions, we're still causing mishaps that damage aircraft and hurt or kill people.

The number one reason for maintenance-caused mishaps is failure to follow tech data. Is anyone surprised by this? You should be. Following tech data is pounded into our heads from day one in tech school. There isn't a single task we do that isn't written down somewhere, either in a tech order or a local instruction.

In the last few years, we've done things that by themselves don't seem too bad. For instance, one mishap occurred because while preparing to do a tow job, the maintainers forgot to disengage the torque links before moving the aircraft. You might think, "No big deal, the aircraft just won't turn." No, it will turn, but not before the nose gear is severely damaged. Towing aircraft is one of the most common tasks we perform; the TOs are written well, and there's even a mandatory briefing before beginning the tow. Yet, we damaged more than one aircraft this way. Why?

Historically, the second cause of mishaps is failing to torque parts correctly. This includes engine parts, fuel system components, hydraulic lines and the assorted nuts and bolts. "What's the big deal?" you ask yourself. After all, you've all torqued enough parts that you know how it "feels" when the part is torqued correctly.

Once upon a time, we had a captive missile attached to a launcher and, during flight, the pilot suddenly saw the launcher/missile come up and smack the leading edge of the aircraft. What happened? The launcher bolts came loose. OK, this was just a mistake; it only happened once, right? Nope, we did this twice last year. How could this happen? Torque wrenches are available at every support section. TOs are written with the exact range the components should be torqued to. Why don't we torque things correctly?

So, we don't follow tech data and we don't use torque wrenches. What else do we do that causes mishaps? Believe it or not, we often install the wrong part or software, or just forget to put a part in at all.

How does this happen? You have to install all parts or the aircraft won't pass the ops check, right? Maybe not. How about not putting in a cotter pin? At first it doesn't matter, but after a few sorties, the nut that was supposed to stay installed works its way loose, and the landing gear now fails to extend. Or how about installing the wrong version of software in the anti-skid system? The aircraft will pass the ground test, but when the aircraft is landing, the brakes fail to work correctly. Both of these things have happened several times, causing serious damage to aircraft, and could easily have caused us to lose either the pilots or people on the ground.

How else do we cause mishaps? We also damage parts putting them in, we don't account for all of our tools, we illegally modify equipment, and we do poor forms documentation and shift turnovers. Sometimes supervision lets us down by not providing us the proper tools and not ensuring TOs are updated.

Top: U.S. Air Force photo
Right: U.S. Air Force photo by Senior Airman Larry E. Reid, Jr.

Some of you might say that all of the previous examples are violations of tech data or other instructions and you'd be right. When possible, however, I try to break down the information to more specific causes in order to figure out how to prevent the same thing from reoccurring.

Why do we not follow tech data, torque things correctly or put in the correct part? Are we too busy? I don't believe that. How much time does it take to sign out a torque wrench? You're already in support getting a toolbox and TOs, so why not get the torque wrench? Oh, you're saying you're out on the job site and just figured out you need the wrench? Nope, I'm not buying it. While you were standing at the support counter, you could have read the required items page in the tech data.

How about putting in the wrong part? There's an illustrated parts breakdown for everything we change on aircraft, from the smallest cotter key to the big stuff, like wings. How then do we manage to put in the wrong part? The last time you had to put in a new cotter key, did you just look at the shadow board and pick something that "looked like" the one you needed? You're already in support/supply getting the part; why didn't you take the few minutes and confirm the part number you needed by looking in the TO? It makes a difference. Maybe the one on the shadow board is just a bit smaller or made out of the wrong material. It may work initially, but how about after 20 or 30 sorties?

Why do we keep causing mishaps? If the TOs are correct, if we have the correct parts available, if we have the tools and if we've been taught the right way to do the job, then why don't we do our jobs right? My guess is because we "think" we're too busy to walk back to support or it takes too long to go by the book. Or we think the pro super is pushing to get the jet in the air and won't take "I need to go get the right tool for the job" as an answer.

Don't let anyone "force" you to do the job wrong. Don't be the one trying to explain why the jet crashed and the pilot died. Don't be the one.

Birds Don't Fly at Night

CAPT. ZACH JOHNSON
421st Fighter Squadron
Hill AFB, Utah

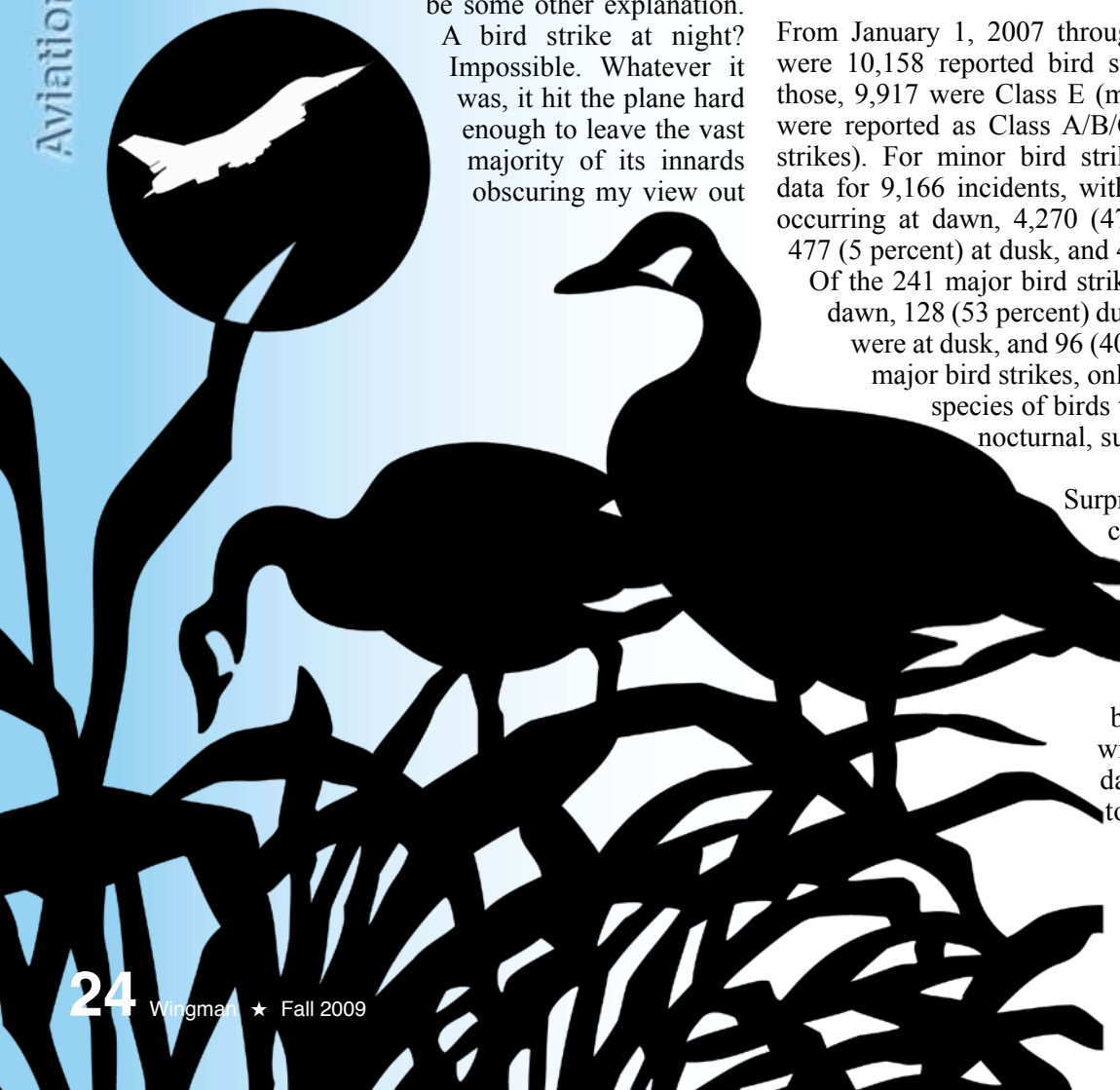
There we were, 6,000 feet MSL over the White Tank Mountains west of Phoenix, Ariz., on one of my first night sorties in the F-16. It was a beautiful, late, summer night with unrestricted visibility and not a cloud in the sky. The ride had gone according to the brief, minus the usual new-guy mistakes. After an hour and a half of flying, we were ready to put this night sortie under our belt and head home. Back in the radar pattern and setting up for an approach, I was beginning to relax and unwind when suddenly my night was shattered by a deafening noise.

It was as if someone had taken a Louisville Slugger to the front canopy of my jet. A bird? No way. Birds don't fly at night; pilot training had at least taught me that much. And according to the "standard" motherhood portion of the brief I received just a few hours before, there had to be some other explanation. A bird strike at night? Impossible. Whatever it was, it hit the plane hard enough to leave the vast majority of its innards obscuring my view out the front of the canopy. After the initial expletives of amazement and shock, my IP decided it was time for him to fly as I couldn't see out the front; he quickly took the controls. We pointed toward Luke AFB, Ariz., called the SOF, and landed uneventfully. Upon further inspection back in the chocks, it was indeed a bird with the misfortune of flying in the same piece of sky as me that evening. Since that night, I've been what some would call "bird hunting" in my F-16 on two other occasions; both times well after dark.

From the start of UPT, I can remember instructors telling me that birds don't fly at night. Throughout my pilot training and RTU years, I had heard in at least 75 percent of my night briefs that birds would not be an issue at night. With that in mind, I set out to do some research and lay to rest the incredible pilot myth of the lack of bird strikes after dark. For the sake of a manageable amount of data, I used bird strikes occurring for two consecutive years as a representative sample.

From January 1, 2007 through January 1, 2009, there were 10,158 reported bird strikes Air Force-wide. Of those, 9,917 were Class E (minor bird strikes) and 241 were reported as Class A/B/C bird strikes (major bird strikes). For minor bird strikes, we have time-of-day data for 9,166 incidents, with 197 (2 percent) of them occurring at dawn, 4,270 (47 percent) during the day, 477 (5 percent) at dusk, and 4,222 (46 percent) at night. Of the 241 major bird strikes, 2 (<1 percent) were at dawn, 128 (53 percent) during the day, 15 (6 percent) were at dusk, and 96 (40 percent) at night. Of these major bird strikes, only a handful were related to species of birds that we would expect to be nocturnal, such as owls or nighthawks.

Surprisingly, the most common culprits causing enough damage to fall into the major categories were common ducks and geese. It's important to understand that any bird, if startled or disturbed, will take flight at any time, day or night. In addition to this, major migratory

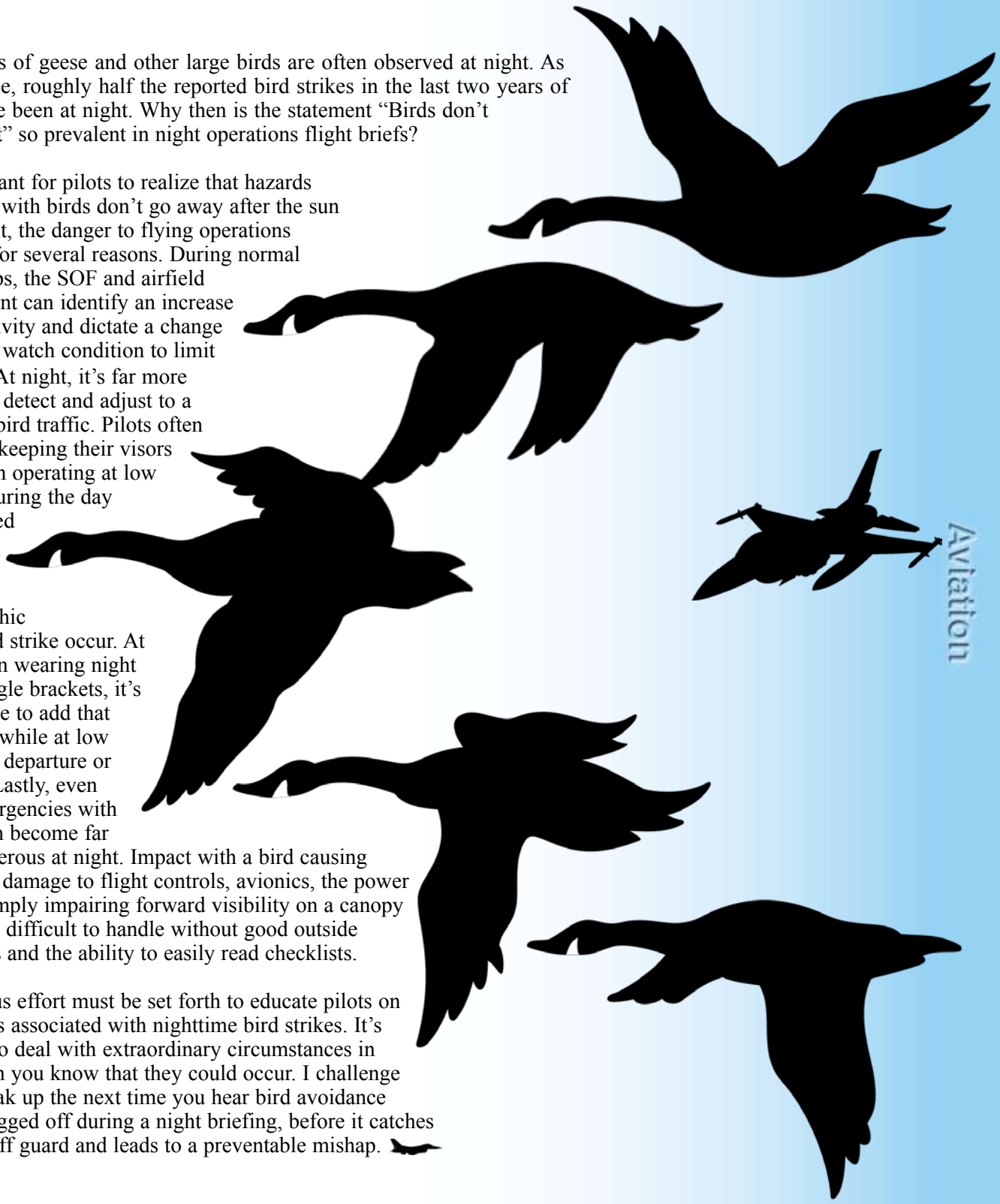


— Or Do They?

movements of geese and other large birds are often observed at night. As you can see, roughly half the reported bird strikes in the last two years of flying have been at night. Why then is the statement "Birds don't fly at night" so prevalent in night operations flight briefs?

It's important for pilots to realize that hazards associated with birds don't go away after the sun sets. In fact, the danger to flying operations increases for several reasons. During normal daytime ops, the SOF and airfield management can identify an increase in bird activity and dictate a change in the bird watch condition to limit exposure. At night, it's far more difficult to detect and adjust to a change in bird traffic. Pilots often talk about keeping their visors down when operating at low altitudes during the day for an added layer of protection should a catastrophic frontal bird strike occur. At night, when wearing night vision goggle brackets, it's not possible to add that protection while at low altitude on departure or recovery. Lastly, even minor emergencies with aircraft can become far more dangerous at night. Impact with a bird causing significant damage to flight controls, avionics, the power plant or simply impairing forward visibility on a canopy is far more difficult to handle without good outside visual cues and the ability to easily read checklists.

A conscious effort must be set forth to educate pilots on the dangers associated with nighttime bird strikes. It's far easier to deal with extraordinary circumstances in flight when you know that they could occur. I challenge you to speak up the next time you hear bird avoidance being shrugged off during a night briefing, before it catches someone off guard and leads to a preventable mishap.



Digital illustrations by Dennis Spotts

Should I Land or Go Around?

MAJ. GRAHAM KEPFER
962nd Airborne Air Control Squadron
Elmendorf AFB, Alaska

We were on a routine training mission near Fairbanks, Alaska, in early March 2009. While orbiting at normal mission altitudes and airspeeds for the E-3 during an operational readiness exercise, our SOF contacted us and said we were going to be weather recalled. Apparently heavy snow and low ceilings was the updated weather report, and it pertained to every divert airfield in Alaska, except for Eielson AFB in Fairbanks. Eielson was not supposed to be good from the morning weather brief, even though it was decent at the time.

We were recalled about five minutes after the first call from the SOF and were off station a few minutes later, returning home to Elmendorf AFB, Alaska. When we contacted approach, they informed us that Runway 6 had a runway condition reading of 10 (minimum landing RCR for the E-3 is 10). They handed us off to Elmendorf tower, who also told us that the runway had an RCR of 10. Everyone knew what the weather conditions were; therefore, they were all being extremely helpful in passing weather information to us.

The co-pilot flew the ILS very nicely and we had cues at 300 feet AGL (weather was about 300/1, and it was snowing heavily). I glanced at the runway, and it looked a little white; not fully covered in snow, but a light layer. Being the first winter for me in Alaska and not experiencing these types of conditions before, we elected to full stop, trusting the RCR that we were given. We wasted no time getting the plane on the ground and touched down within the first 1,000 feet of the runway. The co-pilot transferred the controls over to me in the left seat, and when I hit the brakes, there weren't any. I looked up at the anti-skid brake indicators and they were cycling like crazy. The engineer did a great job of informing me what speed we were at and what distance we had left. I distinctly remember hearing him say, "You have 3,000 feet left, still doing 60 knots." For a moment, I didn't think we were going to make it, but we finally came to rest with about 1,200 feet left on the 10,000-foot runway. The engineer ran the numbers for what he believed the RCR should have been with the weather conditions during landing, and came up with six. That was under our minimum taxi RCR of seven.

There are many lessons to learn from this incident.

U.S. Air Force photo by Senior Airman Garrett Hothan

One: never totally trust the reported RCR. I would say that it would be better to combine what the reported RCR is and what you feel instinctively together; it's a gray area at times. Two: if you're unsure of the landing conditions, go around and have them clear the snow from the runway again, as long as you have enough holding fuel to do so and are able to divert. This is another gray area, because if the ceiling and runway would have gotten worse, in addition to Eielson, then where would we have gone? It turned out that Eielson would have been good for a divert, and the snow and ceilings at Elmendorf started to lift about 30 minutes after we landed. Three: weather can change rapidly, despite what initial forecasts say.

Although the decision to land or go around rested in a gray area, if I were to do this all over again, I probably would have gone around to hold, had them clear the runway, then shoot another approach. As aircraft commanders, we have to make decisions, and we may not always know the right answer. Learning from other people can surely help.

U.S. Air Force photo by Kevin Roberston
U.S. Air Force photo by Staff Sgt. Wayne Clark
Digital collage by Dennis Spotts

It's Not Over ...

MAJ. GINA SABRIC
507th Air Defense Aggressor Squadron
Nellis AFB, Nev.

Like every good story begins: "So, there I was." I had recently finished the Luke IPUG, and it was my first RTU IP ride in the backseat of the F-16D. The syllabus ride was Tactical Intercepts-2, 1 v 1 intercepts. My student was the standard, average B-course lieutenant and was about halfway through the program. Just like every other day at Luke AFB, Ariz., it was severe clear VFR and weather wasn't a factor. The tactical part of the ride was uneventful. The intercepts included the typical B-course mistakes, but nothing significant. On the RTB, the syllabus called for a RATR TCN, none of which was new to the student. We were in the lead aircraft and everything was going smoothly. Luke has two parallel runways and we were landing on Runway 03L. I had cross-checked the instruments and the TCN was going fine. We were slightly left of course, but nothing significant. I looked out to the right of the aircraft to visually confirm things were going well and saw the parallel runway to the right. Well, I should have looked further to the right because I would have seen two runways instead of one!

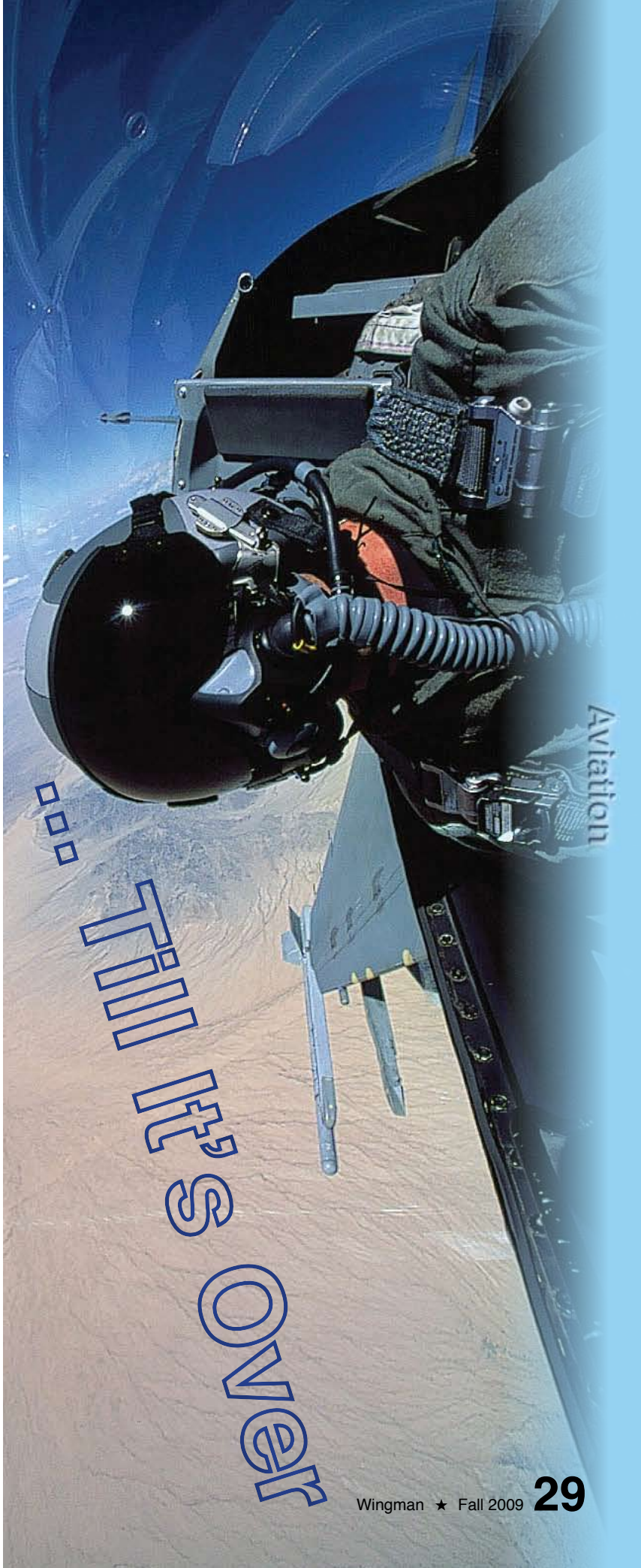
The next sequence of events happened in what seemed like a split second. At about the exact same time, the student and I realized he, in fact, was not lined up with Runway 03L. He attempted to correct the aircraft to the runway and land. I then took the aircraft, pushed up the power to MIL and initiated the go-around. I also told the student to go to AB, since the F-16 RCP cannot initiate AB from the back seat. Nothing was said between my student and me during this time. On downwind, once things were settled and our hearts started beating again, I asked the student one question: "Dude, what were you looking at?" The response I got was short and concise: "Ma'am, I don't know." I rolled the aircraft to try to decipher what happened and what he was looking at and saw the access road beneath us. Luke has a narrow dirt parallel access road to the west side of the runways, but it's not something that is normally, if ever, confused with the runways … until today.

The taxi back, engine shutdown and walk into life support was silent. On the way into the debrief, I

U.S. Air Force photos by Staff Sgt. Jeffery Allen

informed the ops officer that he had hooked the ride. Not until after the debrief did the severity really sink in for both of us. The student had convinced himself that the access road was Runway 03L, and instead of trusting his instruments, he trusted his visual perception. That, however, wasn't the biggest learning point for my student. The learning point for him was in the response to the mistake. He had tried to "save" the landing, instead of initiating a go-around. We were in the landing configuration when he tried to correct the landing. He abruptly pulled back on the stick and sharply to the right — both the opposite maneuvers necessary to fix the situation. We bottomed out well below maneuverable airspeed and at 60 feet AGL! I can say with confidence that if I had not taken the aircraft, he probably would have stalled the aircraft and consequences would have been deadly. There was no possible way to save this landing. While there were many learning points for the student leading up to this, including fixation, visual perceptions and cross-checks, the biggest learning point was the decision to go around. If you can't make a landing safely, for whatever reason, the answer is to simply go around. There's absolutely no stigma attached to this. It's better to go around and try again versus trying to save an unsafe landing and making the situation worse. This lesson, I have no doubt, will stick with him forever.

He wasn't the only one that had learned something that day. As for me, this sortie was eye-opening. I had been a CAF IP and now a RTU IP, so I had some experience. That day I learned that you can never let your guard down, no matter how much time you have or how much experience you have. As we get more time in the airplane, the administrative portions of the flight are sometimes overlooked and the attention is lacking, unlike the tactical portions of the flight. That day, I confirmed this theory and once again confirmed that it's really not over until engine shutdown. While you may think things are routine and ordinary, you never know what can go wrong in a split second. There are always new mistakes waiting to be made and old ones waiting to repeat themselves, whether you are a 69-hour wingman or a 2,000-hour instructor.



In the Schmeeze

CAPT. ERIC "HEED" THERIAULT
357th Fighter Squadron
Davis Monthan AFB, Ariz.

So there I was … in the schmeeze. Actually, it was a standard Korean night — 2½ miles vis this way and 2½ miles vis that way. I was leading a two-ship, nighttime, close air support training mission in an eight-mile patch of sky just south of the demilitarized zone. As always, our training was magnified with marginal weather, minimum illumination, comm jamming from our Korean counterparts and virtually no airspace to execute our air-to-ground game plan. After 50 minutes of target talk-ons, coordinating attacks, rolling in and reacting to threats, I was happy to return to base without any deconfliction breakdowns and zero hazardous air traffic reports filed against my flight — always solid goals when flying along the DMZ at night.

Weather during RTB was rapidly decreasing at home plate, so at 25 miles out, I broke us up into separate flights to shoot our own ILSs to a full stop. The ILS approach was uneventful. About two miles out on glide slope and on course, I picked up the runway and prepared for landing. This brings me to the point of this article — the sortie isn't over until you're in the chocks with engines shut down. As aviators, we know this; yet, how many of us have received a downgrade, hooked a ride or had a "close one" during the benign RTB?

I'm about 2 miles out and visual with the runway, just having finished a pretty challenging sortie and feeling, well, nothing actually. I wasn't dozing off, thinking about home or anything like that. But I wasn't really thinking "what if," either. Then it hit me … or rather, they hit me.

At approximately one mile out and 300 feet, I saw a couple quick flashes and felt several thuds. It took me a second, but I figured I just hit a flock of birds, and it was time to get away from the ground. I executed the "Boldface for Engine Failure While Configured to Land" procedure, which is essentially go max, close your speed brakes and get your flaps up to maneuver. During these steps, I kept one eye on the engines and the other on the runway. I was convinced that at any second the engines would start rolling back, and I was going to have to get out and walk. Fortunately, that didn't happen.

After executing my boldface, I was about one-half mile out, engines working fine and in a safe position to land, so that's what I did. Somewhere on short-final, I declared an emergency. After landing,

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

I taxied clear and shut down. I turned the jet over to maintenance where 12 separate bird strikes were found. So I'm proof: birds do fly at night. Since my AIM-9 skewered Daffy Duck, it was easy to determine what I hit. Fortunately for me, the A-10's "mighty" T-34 engines shredded up the other ducks without a hiccup.

Photo courtesy of the U.S. Air Force BASH Team

The lesson I re-learned from this experience is to stay in the game all the way through engine shutdown. While I wasn't thinking of other things outside of flying the jet, I definitely wasn't maintaining the same level of focus as I was 30 minutes earlier when I was rolling in and dropping bombs.

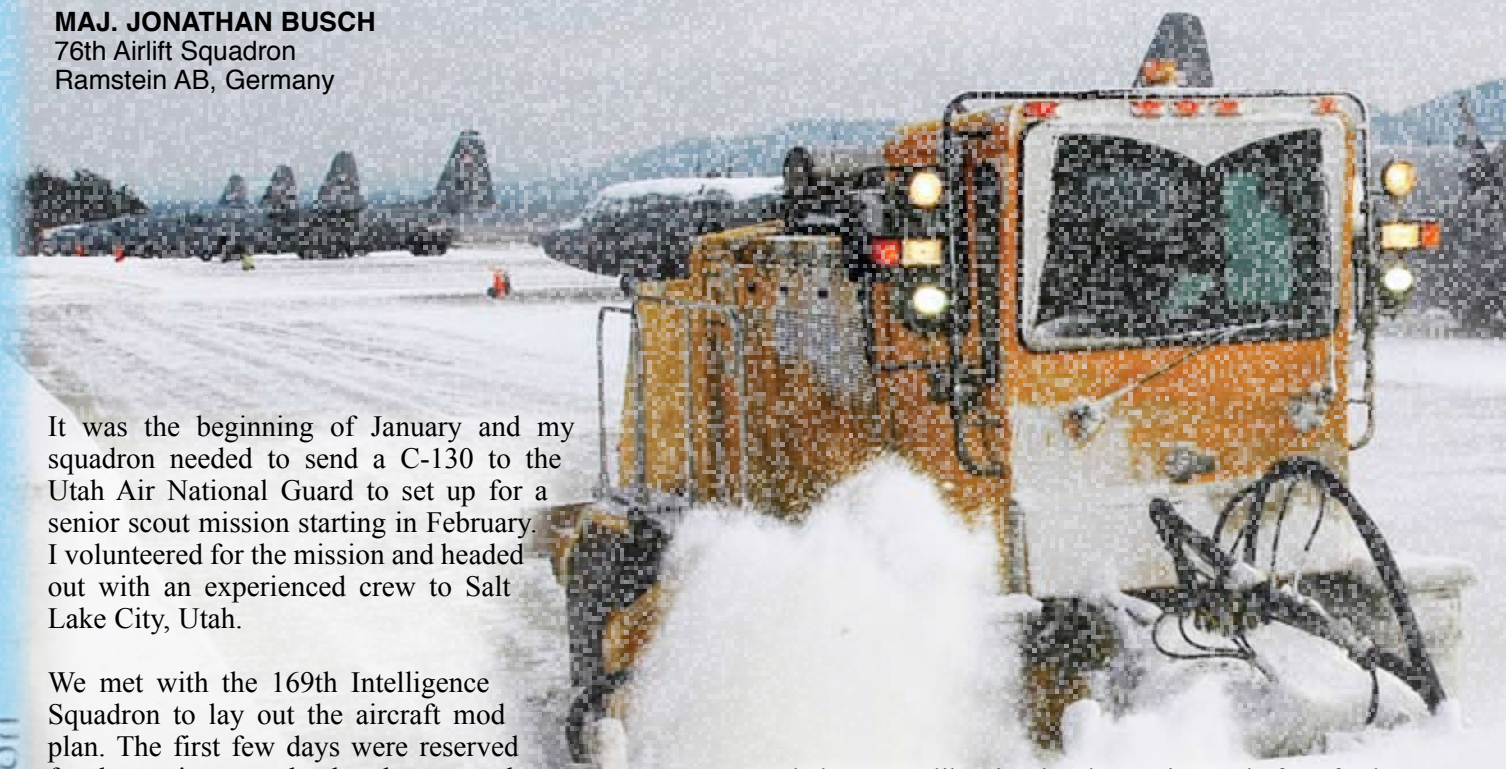
Bottom line: I was lucky. Complacency didn't bite me this time, but that doesn't mean next time it won't. I'm lucky the bird strikes weren't worse, lucky I was in a safe position to land and lucky the A-10 was built so tough.

Like unrecognized spatial D, complacency can sneak up on you. And like spatial D, complacency can kill you. Regardless if you're into your 8th hour crossing the pond or if you're reacting to a troops-in-contact, always consider, "What next?" **Boldface and CAPS** are there to save you when you're in a crunch, but if it takes six to nine seconds for you to react, then what? Don't let complacency sneak up on you. Stay diligent and, as always, check six. Our profession requires nothing less.

U.S. Air Force photo by Senior Airman JoAnn S. Makinano

Reading Between

MAJ. JONATHAN BUSCH
76th Airlift Squadron
Ramstein AB, Germany



It was the beginning of January and my squadron needed to send a C-130 to the Utah Air National Guard to set up for a senior scout mission starting in February. I volunteered for the mission and headed out with an experienced crew to Salt Lake City, Utah.

We met with the 169th Intelligence Squadron to lay out the aircraft mod plan. The first few days were reserved for the engineers to load and connect the equipment in the back of the aircraft. This took a day or two longer than expected as they had some difficulty with some power issues blowing out some navigational and communications equipment. This required a maintenance recovery team to fly out and fix the broken equipment.

It's not unusual for a C-130 to have maintenance problems, but the frequency and type of issues were unusual. The engineers felt that it was an aircraft issue, while I thought it might be something with the interface to the new equipment. We were behind schedule but could still meet the February deadline. We continued to meet with the engineers and back-end operators to make sure that the aircraft and equipment were ready for flight testing.

The MRT replaced the broken equipment and parts, while the ANG engineers reconnected the new equipment. This somehow fixed all the weird electrical problems previously experienced. We could finally get airborne and calibrate the equipment.

Calibration was done at a range north of the airport. We would go up for several hours and the back-end operators would run their test. We had to return to base early during the first two sorties because the equipment needed some calibration by the engineers before further testing could be completed.

The mission pressed right up to the deadline, with no room for further significant delays. Two sorties were still scheduled, but the engineers took extended ground time to make sure everything was ready. This left us with time for one last test flight, which the back-end operators felt was enough. We would fly the test sortie, land, gas and fly back to Texas. As a crew, we were leaning forward to get this last test flight completed.

We had an early show and were greeted with some exceptionally cold weather that had moved in during the night. The weather forecast called for a rain-snow mix to move into the area later in the day but wasn't expected to play a factor for the test flight. At step time, there were few clouds around 3,000 feet, with greater than 10 miles vis, and not supposed to drop below a 1,500-foot ceiling with six miles vis. By takeoff, the sun was shining through the clouds, and the slight trace of frost had melted off the aircraft. Since landing weather required an alternate, we decided to use Hill AFB, Utah, which was a short flight north of the field and would allow us the greatest loiter time at the range.

On climb-out, we quickly passed through the thin cloud layer and had a beautiful sunny day in the Rocky Mountains. The operations check went smoothly, though

the Transmissions

U.S. Air Force photo by Airman 1st Class Kenny Holston

we required a few more sweeps through the sky before we were cleared to return to Salt Lake City. This put us right above our minimum fuel level to get back and then to our alternate, if needed.

On the descent into Salt Lake City, the co-pilot pulled up current ATIS to get weather to brief his approach. The ATIS was what we expected, an overcast ceiling of about 2,000 feet and around six miles vis. We were flying the standard STAR arrival for Runway 34 and were sixth or so in sequence. ATC was busy as everyone seemed to be arriving at once.

Though traffic was a little busy and some weather had moved in, everything was pointing toward a typical IFR letdown and approach. The aircrew was ahead of the jet with takeoff and landing data calculated and briefings complete. For my first off-station AC mission, things seemed to be going well.

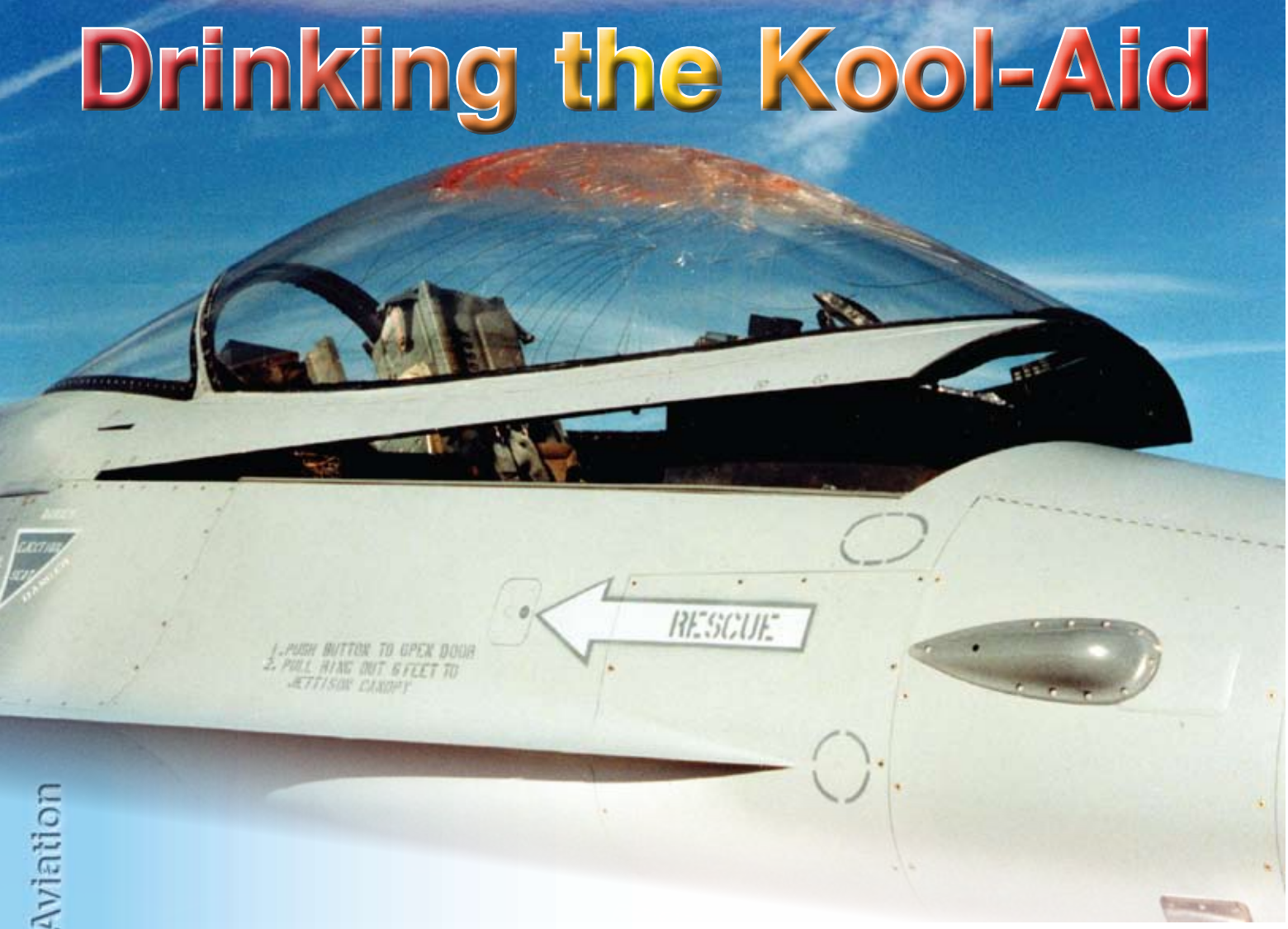
That was when the unexpected happened. ATC passed us off to approach control, who was querying each aircraft for their landing minimums. It took me a second to realize what was happening, but it was the first clue that weather was not as good as ATIS had called. I had expected that we would have the highest minimums, but there was another aircraft in the pattern with a minimum of 300 feet and three-quarter-mile vis.

I knew this was going to be an approach down to minimums and that the reduced visibility was due to snow. As a new AC, I wasn't comfortable letting the co-pilot fly the ILS, although I was sure he'd do a fine job. The good news was that we had time for the engineer to recalculate TOLD for runway contamination; time for the nav to look at fuel range and possible diverts if we went missed approach; time for the co-pilot to recheck the TOLD and fuel status; and time for me to explain to the crew the situation with the deteriorating weather, with emphasis on a missed approach and landing on a runway with possible snow. By this time, we were at the final approach fix and flying the bars. One hundred feet above and still just blowing snow and clouds. At about 201 feet and just before calling go-around, we saw one of the rabbit lights just to the right of our ground track and then another pass under our nose. The runway environment was in sight, and we continued to land. The runway was covered in about four inches of snow, but we rolled out to the high speed and taxied clear. This was my first time taxiing with so much snow on the taxiway and learned firsthand that it was better to use differential power for steering as opposed to too much nose wheel input. Through good CRM and time management, we got the aircraft back to parking and ready to be refueled.

I learned a few things that day. First, it isn't always what ATC says that can help keep you ahead of the aircraft, but what they don't say. Asking for landing minimums is not normal and a good indication that weather is getting worse. Second, a qualified and experienced crew helps keep things from snowballing when the unexpected arises and you're pressed for time. But even with inexperienced crew members, know their task saturation limit, and if you need to create more time, you can make time by slowing down or requesting extended vectors. Finally, know your own limits and what you're comfortable with. For noncombat missions like these, it isn't worth it to push the boundaries or let deadlines make you feel you have to get the mission done at all cost. Leave yourself some planning room for unexpected events.

An unexpected snowstorm met us that day in Salt Lake City. Though we had not planned for it, we were able to adapt and get the mission done. The storm passed quickly, and with a little de-icing fluid, we were soon on our way back to Texas with the senior scout crew.

Drinking the Kool-Aid



Aviation

CAPT. JOSH CALDON
80th Flying Training Wing
Sheppard AFB, Texas

I'll admit I am a little more attuned to birds since I was "voluntold" to become the Bird/Wildlife Aircraft Strike Hazard program manager for my unit. Hitting birds as the BASH guy is not exactly going to look good on my OPR. So, as my buddies kid me, "I drank the Kool-Aid." However, logging all the bird strikes for our units and seeing all the engines being sent to the depot because of bird strikes heightened my awareness of the bird threat. Thanks to a few geese and an airbus full of passengers, the threat that birds pose to aircraft is also getting national attention. Most bird strikes are harmless and only necessitate a precautionary landing; however, U.S. Airways pilot "Sully" Sullenberger and his crew showed us that this threat can necessitate more drastic action.

Since getting my wings about seven years ago, I've hit my fair share of birds. I wouldn't say I blew off the threat, but I didn't do more than the prescribed ground training and mission planning to avoid the threat, either. I spent more time learning how to avoid an SA-2 than I did on how to avoid a flock of geese. I now realize the chances of an SA-2 taking out one of my engines is miniscule compared to the chances of a bird taking out one of my engines.

Like any good combat aviator knows, good intelligence is an important key to avoiding the threat. The U.S. Air Force invested a lot of money and time to provide you with intelligence to mitigate the threat of bird strikes. I will now give you a rundown of the assets available to you to avoid the "SA-goose."

One of the most important intelligence assets is the U.S. Department of Agriculture biologist or a civilian contractor hired to handle the bird threat at the home 'drome. These entities actively monitor the airfield environment and come up with a comprehensive plan to make the airfield less attractive to birds and the birds less attractive to your aircraft. They provide a wealth of knowledge and continuity for a unit's BASH program, which usually loses its manager to PCA every two years. They're the intelligence experts for the feathered threat to your aircraft, and they're good at what they do. My biologist quickly dispelled my belief that birds don't fly at night, when it's windy or in bad weather.

If your unit is without a USDA biologist, then your assigned BASH program manager will mitigate the avian threat on the airfield and educate the crews on the threat. Keep in mind that your BASH manager's primary job may be to fly or fix airplanes, not predict the migration pattern of the barn swallow and Canada goose. What can you do to make up for this? You're going to need to spend some time getting acquainted with the threat.

There are many good resources online that discuss and predict bird hazards to aircraft. A great source for mission planning is www.usahas.com. The avian hazard avoidance system uses predictive models, weather patterns and Doppler radar to track and predict bird volume in an area. The Web site can be tailored to individual unit needs to give them a one-stop look at where the bird threat is greatest, allowing the unit's aircraft to fly around the threat ring. It also covers most CONUS airfields that military aircraft frequent and is due to incorporate a PACAF component soon.

Did you know ...

... the Air Force Safety Center provides more than 72 pages of BASH information and data?

The Area Planning 1A document is another source that should be referenced when heading off-station. This piece of flight information planning discusses when Phase I and Phase II bird operations occur at your prescribed base of landing. It also lets you know what types of birds are prevalent and where they tend to be in relation to the airfield.

Finally, the Air Force Safety Center's Web site, *www.afsafety.af.mil*, has a wealth of knowledge. It contains statistics on the number of bird strikes and the dollar amount damage to USAF aircraft. It also provides links to Bird Strike USA/Canada and the USDA, which supplies a more thorough look at the bird threat and what's being done to mitigate it.

Using these resources can help you determine the risk level of your flight path and change that flight path if necessary. At the minimum, these resources let you know where you should be especially cognizant of the bird threat along your flight path. The SOF should also clue you in with the bird watch condition that you get at the step desk or Base Ops.

Now that the intelligence on the threat has been gathered, it's up to you, the aircrew, to "see and avoid" the threat. This involves a good visual scanning habit pattern based on visual lookout and less reliance on HUD, radar or instruments when in VMC and arriving, departing or beating up the traffic pattern. Good visual scanning habits also apply when flying in the low-level environment. The threat is more prevalent than ever and it won't spike the radar warning receiver, so it's up to you to "drink the Kool-Aid" to preserve yourself and your aircraft.

Photos courtesy of the U.S. Air Force BASH Team
BASH patch illustration by Dan Harman

There I Was — Deploying Safety

SENIOR MASTER SGT. TERRY L. TODD
Ground Safety Division
Air Force Safety Center
Kirtland AFB, N.M.

This is not just another "There I was" story. Instead, it's 12-year collection of my deployment experiences as a member of the safety career field and how preparations made my deployments more tolerable.

My first deployment as a safety technician was in June 1998, in support of Operation JOINT FORGE, at Taszar Air Base, Hungary. More than 900 Air Force personnel were assigned to our organization, and I was the only safety technician deployed to the Balkans region. I was responsible for two bases in Bosnia-Herzegovina, one in Croatia and another in France. As deployments go, this was a good experience. I got off the plane to a hot and humid summer day. The safety tech I was replacing was waiting for me. The first words out of his mouth were, "Welcome; I leave in three days."

He dropped me off at my quarters and the race against time was on. He wanted out of Hungary, and I was eager to get started. As luck would have it, he left on time, and it didn't take long for me to find out that there wasn't a lot going on. I patiently waited to spring into action and finally got my chance.

The 16th Air Expeditionary Wing Ground Safety Division tasked me to go to Tuzla AB, Bosnia-Herzegovina to conduct an inspection and train their new safety representative. I jumped on the opportunity to go into a "hot zone." A few days later, I was on a plane to Tuzla. Before landing, the pilot announced that we would be conducting an "engine running offload," something I hadn't done since I left the security forces career field.

As we came in over the mountain and made a rapid decent to the runway, I felt my stomach drop as if I were on a roller coaster. We landed and immediately exited the plane with weapons slung over our shoulders. Each night at Tuzla, all night long, loud explosions could be heard around the base. I wasn't sure if it was our guys or theirs, but the explosions were enough to cause us to carry our weapons everywhere we went, including the latrine at 3:30 a.m. The remainder of my tour was uneventful, but very fulfilling for a first-time safety deployer.

My next deployment was almost three years later in support of Operation ENDURING FREEDOM. I was in the second rotation to arrive at Manas AB, Republic of Kyrgyzstan. This deployment provided a lot of challenges. Safety appeared to be an afterthought. I did my best. I stopped a few near-fatal mishaps and corrected some minor deficiencies that could have possibly prevented future mishaps. The TDY was a precursor to what was to come for my next deployment.

In August 2006, I received another deployment notification. By then I was feeling pretty good about my experiences as a deployed safety warrior. What could this upcoming deployment throw at me that I haven't already experienced? After all, I was now a seasoned veteran.

At the beginning of 2007, I deployed to Bagram Air Field in Afghanistan to once again support Operation ENDURING FREEDOM. After a long flight that took me from Venice, Italy, to Manas AB, we finally arrived in the AOR. Before landing, the aircraft commander announced we were entering a combat zone. It was

a cold, January morning when I stepped off the C-17 aircraft that brought me to Bagram. As I looked at the snow accumulations from previous storms, the first words out of my mouth were, "What have I gotten myself into?"

Things went well for the first month, until Feb. 27, 2007, when a suicide bomber attacked the entrance to the main gate. It was the same day Vice President Dick Cheney was paying a visit to Bagram. Twenty-three people were killed and 20 wounded at a place I considered to be secure. It was definitely a wake-up call! I quickly realized how things could change at a moment's notice. My vigilance and alert meter were now fully engaged.

On March 28, 2007, there I was … again. I had been in my quarters watching TV when the alarm went off. I could hear the muffled PA sounding alarm condition "Black" and the words, "Bagram Air Field is under direct enemy attack." I grabbed my weapon, helmet and flack vest and headed for cover. Someone had fired a rocket or missile at the base. We weren't sure if it was just one or more, but I was happy nothing was hit and no one was hurt. Since this was not an everyday occurrence, it was easy to see how someone could become complacent, even in a time of war. Whatever the case, the realization that others wanted to cause us harm was brought to the forefront rather quickly.

Just when I thought things couldn't get any worse, Mother Nature threw us a curve ball. On Apr. 3, 2007, a 6.2 magnitude earthquake hit a remote mountainous area of northeastern Afghanistan, shaking buildings in the capital, across the border in Pakistan and into India. We definitely felt the quake at Bagram. The safety office was located in the base control tower. My co-workers and I were having a discussion about base maps, when all of a sudden the walls appeared to start moving. The floor felt like a roller coaster. As we stood there dumbfounded, it took a few seconds for us to realize we

were experiencing an earthquake. The earthquake was over as quickly as it started. We surveyed the area and all was in order. Again, we were lucky.

As safety professionals, we are charged with ensuring personnel are provided a safe and healthful work environment, no matter the location. In order to do that, you have to prepare yourself, both mentally and physically. While deployed, you'll experience things you would never dream of happening at your home station. If you don't properly prepare yourself before deploying, you won't be in the right frame of mind when the commander needs you to make the vital decisions that ultimately affect the personnel assigned to your wing.

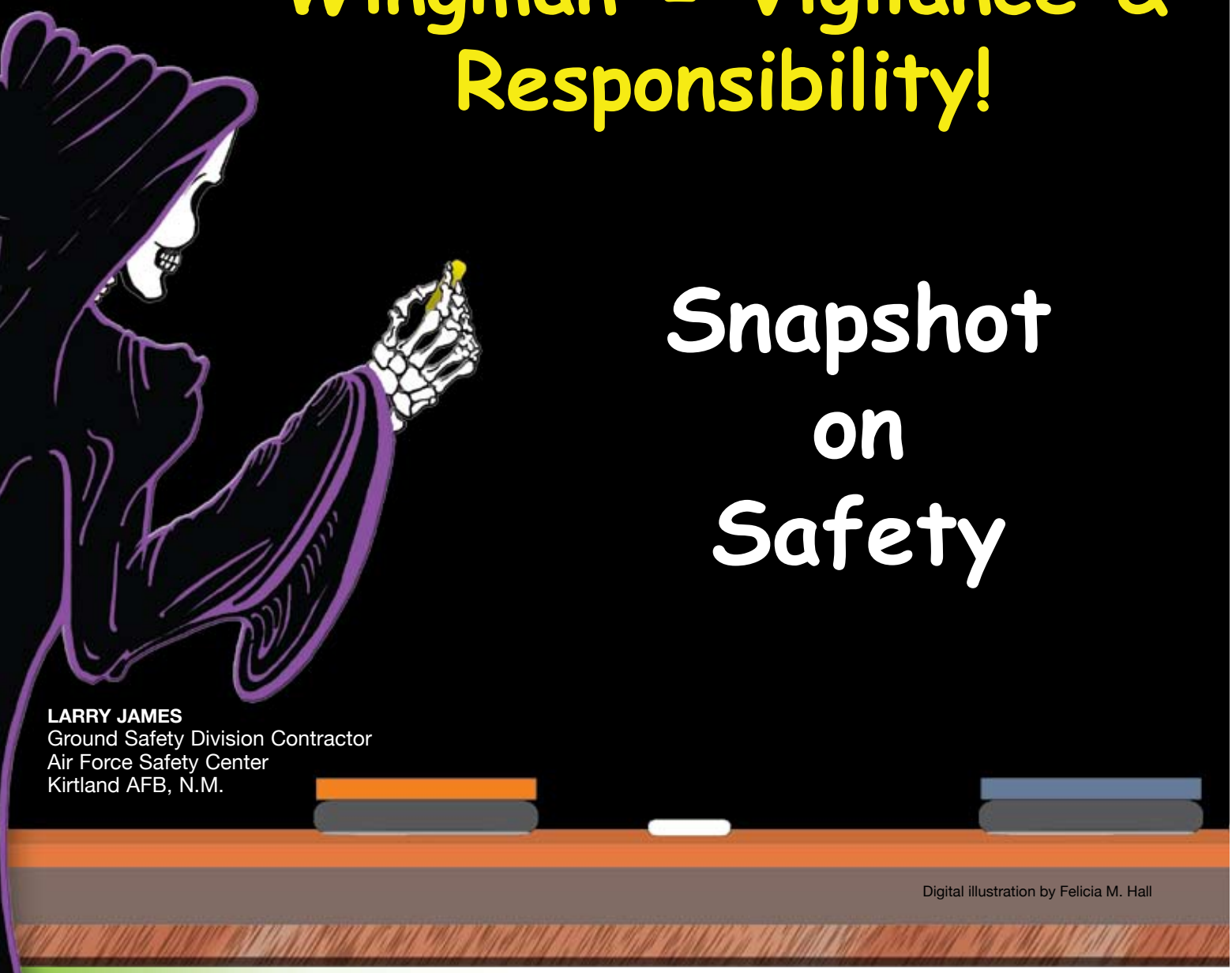
These are a few of my deployment highlights. How did I make it without losing my mind? Simple — I prepared before I departed. Before every deployment, I took a pragmatic approach. First, I got all my personal affairs in order. I made sure my wife knew where everything was to run the household in my absence. Second, I did a lot of research. I gathered as much information as I could about the location where I was deploying. The internet is a great tool for research. Airmen who have deployed before you are another valuable source of information. Listen to what they have to say and learn from their experiences. There's no such thing as being over prepared, but there is such a thing as peace of mind.

U.S. Air Force photos by Senior Master Sgt. Terry Todd

Wingman = Vigilance & Responsibility!

Snapshot on Safety

LARRY JAMES
Ground Safety Division Contractor
Air Force Safety Center
Kirtland AFB, N.M.



Digital illustration by Felicia M. Hall

Looking for a Hunting Site; Found Disaster

On a clear, September morning, an Airman (A1) was scouting a mountainous area for a good hunting site for the upcoming deer season. A1 was an experienced outdoorsman and hunter and was familiar with the area. A1 carried a rifle along, just in case of an encounter with a large predator. Before the outing, A1 altered the rifle to allow for more rapid fire. Unknown to A1, the alteration allowed the rifle to fire with the safety on, even if dropped from only a few inches. While surveying the area from a rocky knoll, the shoulder strap slipped off of A1's shoulder and the butt struck the ground, causing the rifle to discharge. The bullet struck A1 in the head causing massive trauma and death. Alcohol and fatigue were not factors in this mishap.

Lessons Learned

Although A1 was an experienced hunter, the act of altering the rifle beyond manufacturer recommendations increased the risk for mishaps. Hunting is a high-risk activity in the best conditions. Remote location, rough terrain, weather, indigenous animals, proximity of other hunters and weapons safety should be considered during the risk management phase of planning. With so much risk inherent to the activity, don't increase the danger by altering your weapon to an unsafe condition. There will always be another buck — there will never be another you.

Staples and Stitches

Operator 1's (O1) brother wanted to sell a sport bike. Passenger 1 (P1) wanted to buy a sport bike. Sounds like a perfect arrangement. On a warm, September evening, O1 brought the motorcycle to P1's residence. O1 and P1 decided to go for a ride to show how well the bike performed. Neither O1 nor P1 wore a helmet. P1 was wearing shorts, a T-shirt and sneakers. As O1 accelerated through an S-curve, P1 fell off the back of the bike, striking his head on the pavement and sliding several feet. The lacerations to P1's head, scalp, face, arms and legs were closed with several staples and stitches. Alcohol and fatigue were not factors in this mishap.

Lessons Learned

While operating or being a passenger on a motorcycle, it's imperative that all of the proper personal protective equipment be utilized. P1's injuries could have been much worse. The same fall that caused the lacerations could just as easily have caused a brain injury or death. When on a motorcycle, always wear a Department of Transportation-approved helmet, long pants, a long-sleeve shirt, a skid-resistant jacket or vest, and over-the-ankle shoes or boots. Use personal risk management when riding. Enjoy the experience, avoid the scars and arrive at your destination alive.

Death Waits at the "T"

On a cool, autumn evening, Operator 1 (O1) was riding a motorcycle through the country while returning from a weekend rally. O1 was travelling at a high rate of speed and crested the hill to find a "T" intersection immediately ahead. O1 was unable to stop and travelled through the intersection, striking a road sign. The injuries were fatal. Alcohol and fatigue were factors in this mishap.

Lessons Learned

O1 was not wearing a helmet and had a blood alcohol content greater than twice the legal limit. Driving under the influence of alcohol is never acceptable, but operating a motorcycle under the influence is suicidal. If impairment causes you to lose control on a motorcycle, you don't have anything around you to protect you from impact; alcohol impairs your senses and reflexes. Even though you can be seriously hurt or killed in a four-wheeled vehicle, the likelihood of severe injury is considerably higher on a motorcycle. PRM must be used on- and off-duty. If there's a chance that you'll be drinking, plan for a designated driver or make other arrangements. Make the Grim Reaper wait a long time to meet up with you.

Happy Holiday

Operator 1 (O1) planned to take a 10-hour trip home for Thanksgiving and decided to take Passengers 1 (P1) and 2 (P2) along. A day before the trip, O1 stayed awake after working the nightshift to prepare for the trip and then worked the nightshift again. O1 picked up P1 and P2 mid-afternoon on the day before Thanksgiving. They all rotated the driving duties during the trip, but because of the excitement of going home, O1 didn't rest on the trip. After spending Thanksgiving Day at O1's home, they all decided to get some rest and head out early to return to base; O1 and P2 had nightshift duty on Friday evening. After about four hours of sleep, the group headed back to base, rotating driving duties. About halfway back to the base, P2 suggested pulling over for a couple hours rest. Instead, O1 started driving, while P1 and P2 slept. Some point later, O1 nodded off; the vehicle crossed the centerline and impacted a tractor trailer traveling in the opposite direction. O1 was killed, while P1 and P2 received minor injuries. Extreme fatigue was a factor in this mishap; alcohol was not a factor.

Lessons Learned

In the 56 hours before the mishap, O1 had less than five hours of sleep; most in 30-minute increments. Although O1, P1 and P2 rotated driving duties, they didn't use their "off time" to get adequate rest. When we're young, we feel we can do anything. However, a 20-hour round-trip drive to spend a few hours with family is not worth the risk. PRM and using the "wingman concept" could have highlighted the need for more rest before and during the trip, possibly preventing this mishap. Having duty so soon after the holiday should also have eliminated the trip as an option. Don't push yourself while off-duty to force in more events than you can reasonably complete. Get your rest, take your time and ensure future holidays are happy for you and your family.

Feeling the Heat

STAFF SGT. WILLIAM ROE
419th Fighter Wing
Hill AFB, Utah

Not long ago, I received an invitation to a presentation sponsored by a civilian company conducting seminars and sales for residential smoke and heat detectors. The individuals from "Company-X" were a traveling bunch, trying to persuade prospective clients that they're "at extreme risk," statistically speaking.

We met in a fine restaurant conference room, where all the guests were pampered with a free first-class meal and smiling faces. The room had fluffy carpets, fine tablecloths and heavy window drapes.

About halfway through our meal, a salesman politely interrupted and began to pitch his presentation by lecture, a "Little-Johnny" drama, and using PowerPoint. There were plenty of visual aids, such as fire extinguishers, and naturally, several smoke and heat detectors. The presentation got a bit more interesting when I first felt "the heat."

The man performed live fire demonstrations to convince his audience that fires can start quite easily. I was convinced; I could feel the heat from the flames nearly 10 feet away. I couldn't help but wonder, "What's this man thinking?" We were completely surrounded by highly combustible materials in the room. What truly made me nervous was seeing the elderly couples in the front of the room looking back at the presenter. The entire front half of the room was cut off from any exit. The nearest exit was in the back of the room! What would happen if the flames got out of hand? How would we all get out?

After a few demonstrations, the speaker gave us a short break. I knew I had to speak up. I tactfully explained to the man that I was uncomfortable with him performing the flaming presentations because of our environment, even with the fire extinguishers on the table. He said, "Oh, those are just for display; they're empty." I was thankful when he told me that the evening's demonstrations were over.

To all my fellow Airmen — I realize that this scenario was in a civilian setting, but the underlying moral can be applied to any situation you may find yourself in. We hear all the time about operational risk management. Translation: We need to take a moment and think about what we're doing. The salesman's actions put people at tremendous risk. I'm sure he and his company meant well, but they failed in the risk management department.

We all have inherent responsibilities; our actions can affect others, either directly or indirectly. Think before you act and always apply risk management principles to everything you do.

Digital collage by Dennis Spotts

Learning to Ride

JACKIE VAUGHAN
Family Member of FSO Student

I learned to ride motorcycles two ways — the hard way and the right way. I can tell you that the right way is far better.

I was a motorcycle hater. No one loathed bikes like I did. Then my husband bought his brother's little Yamaha 200cc two-stroke. My husband had never ridden, and the evil thing tossed him off the back once when his brother gave him a ride.

My husband's first effort wasn't pretty. Remember, I hated motorcycles and was opposed to his having it. He got about four blocks from his brother's house with me following in the car. He kept dumping the clutch and stalling the engine. In frustration, he revved the engine and popped the clutch. The torquey, little beast promptly popped a wheelie across the empty intersection and up into the yard across the street where it fell over. My husband jumped up, knowing that if the bike hadn't killed him, I was probably going to and the bike with him. He yelled that he wasn't hurt, but the bike was damaged. I went racing back to his brother's house, yelling that it was Larry's fault his brother was almost killed. Larry came running, expecting to find scattered parts of human and machine. Instead, there was a broken lever and a bent gear shift. The bike went back to Larry's and my husband went home.

A friend kindly took Robert out on his Suzuki 380 and taught him the fundamentals. That same afternoon, Robert managed to make it home unscathed.

In the following few months, the malevolent machine, named Critter, popped a weld in the header, almost deafening my husband. It fouled its plugs and tossed him into the road, smashing its new windshield after hitting a patch of ice.

Critter soon had a big brother, a magnificent 1978 Yamaha XS 11, macho maroon in color. It was a big four-stroke, and I was instantly in love. Robert had never carried a passenger, but we were too dumb to realize how much experience was needed for two people to ride together on a motorcycle.

I inherited Critter. Robert moved the bike into the street in front of our house and I got on. At least I knew to wear a helmet and long pants. He walked beside me as I made tiny progress. Then he ran beside me. At least we weren't dumb enough to have him on the back of the bike as some people

U.S. Navy photo by Mass Communication Spc. 1st Class James E. Foehl

do. I got brave, took off and left him. When I got to the end of the block, I confused the brake and the clutch and rode into the intersection. A car was coming and the driver slammed on her brakes. She had no front bumper, and the motorcycle's huge "crash bars" got caught on the car's bumper mount, pulling me and the bike against the car. She said some things I richly deserved and I profusely apologized. We gave her $20 for the broken bumper mount, and I walked the bike back home, limping from the huge bump and technicolor bruise that immediately formed. It was not a favorable start to riding.

I managed to get a little better in the following days and thought I was flying when I hit 20 mph. My husband finally coaxed me to venture out of the neighborhood onto a back road. He said it would be a lot easier and more fun.

There was only one small problem. There was a slight slope onto the main road. I couldn't coordinate brake, clutch and throttle to get started. I sat there for an hour and a half. Traffic was backed up to the rear of the subdivision and horns were honking angrily. Some whipped around me. I covered the tank with tears of frustration.

The gods of motorcycling must have taken pity on me, because I finally got out onto the road. Wheee! I was roaring along at about 30 mph when a car passed me. It scared me to death. I finally got the hang of it, and we made jaunts of about 150 miles with the friend who taught Robert the basics of motorcycle riding.

We had an accident on the XS 11 because of inexperience and lack of knowledge — some cosmetic damage to the bike and a broken wrist for me. We were very lucky that time. We both got back to riding.

Critter continued its evil ways, throwing its chain and flattening a tire. Then, in 1980, Yamaha created the Maxim, and I was in love again! I got one of the first in the city. I put a color-matched full fairing on it and went out to play with the big boys. It made my heart smile.

The third day after I bought it, I was making a right turn when the truck in front of me stopped abruptly. I was already leaned to the right and the ground sloped away, so down I went. No damage to me, but there was a tiny scratch on my tank and one on the brake lever. I was crying and swearing at the same time.

Sometime in 1981, Robert and I really learned to ride. We took a Motorcycle Safety Foundation class. I'd like to tell you what we learned, but it's far too much to put here. We realized a lot of what we were doing was wrong and a lot we just plain didn't know. What we learned that weekend saved my life on the way home that night. A car pulled out of a crossover that was in front of a beer joint. Without what I'd learned, I would have hit him. As it was, I simply made a safe stop and let him go on his way.

Later that year, we met up with one of our instructors who invited us to be helpers at the MSF

U.S.Air Force photos by Dennis Spotts

classes. We did, and in 1982, became fully certified MSF instructors. Every time we taught a class our skills improved.

About 15 years ago, the class was completely changed from a task-oriented training approach to a technique-based one. Everything students learned translated directly to any bike they rode.

What we learned that weekend saved my life on the way home ...

Now we had a lot of the tools that had been missing: how to stop quickly on a curve, avoid going off a curve, set up for curves, how to corner correctly, turn from a stop and the amazing technique of visual control. Visual control wows even experienced riders.

The motorcycle goes where you look. Robert and I have won awards for our teaching, but the real reason we teach is that we're making safe riders and saving lives, besides making riding buddies.

I still feel the magic of seeing someone who's never sat on a motorcycle go from tiptoeing up to the bike, as if it's going to bite, to mounting the bike with confidence. They know they're in control and able to do a lot more than just start the engine, operate the clutch and gear shift, and apply the brakes. They know how to avoid obstacles, anticipate hazards, stop quickly, turn sharply and avoid the problems most proven to cause accidents. They are riders and good ones.

I had one 16-year-old student who came into the class saying her 250 cc scooter was way too much for her to ride. When the class was over, she dragged her parents over to my bike, mounted it and brought it off its side stand. She told her parents she didn't want that scooter — she wanted a real bike like mine. The joy was that I knew she could handle it.

What's the best way to learn to ride? Take an MSF rider course. Studies have shown that 92 percent of accident-involved riders are either self-taught or taught by friends. Your friends are a garden of misinformation. Your instructors are a wealth of real knowledge. Who do you want to learn from?

Safety Shorts

Ground

Managing Your Driving Time

Sometimes it seems as though the world around us is moving at a mile per second. It doesn't mean we have to keep that pace, especially when it comes to driving. Speeding, reckless driving and vehicular mishaps are often the result of rushing and improper time management. The next time you take to the road, consider the following tips:

- Allow plenty of time to reach your destination; add an extra 10-15 minutes to your anticipated drive time to allow for unexpected delays.
- Plan your driving time with the worst-case scenario in mind — catching every red light, running into heavy traffic, getting caught behind an extremely slow driver.
- If you're running late, call ahead and let the party you're meeting know you're running a few minutes behind.
- Set your watch or clock 10-20 minutes ahead of the actual time; it works for some people — it may work for you!

Sources: www.safety.com and National Highway Traffic Safety Administration (NHTSA)

Lightning Can Kill in a Flash

Lightning is an underrated weather phenomenon that is so common that people tend to ignore its presence. An estimated 25 million cloud-to-ground lightning strikes occur each year in the United States. The following information can boost your awareness and possibly prevent you from becoming a victim of a lightning strike.

Lightning is the second-leading weather killer in the United States. Only flooding kills more people. More than 400 people are struck by lightning each year in the U.S.; about 80 of those struck are killed. In addition, lightning strikes cause an estimated $5 billion in damage each year.

It's unsafe to be outside during a thunderstorm. The "30-30 Rule" offers the best lightning safety guidance. When you see lightning, count the number of seconds until you hear thunder. If it's 30 seconds or less, the thunderstorm is close enough to be dangerous. Seek shelter immediately. Wait 30 minutes or more after the last clap of thunder before returning outside. Even if you can't see the lightning, the sound of thunder serves as a good backup rule.

The best protection against lightning is to shelter in a house or substantially constructed building. Stay away from telephones, electrical appliances and plumbing, as they all serve as excellent conductors of electricity. Also, don't watch lightning from windows and doorways. These areas provide a direct path for lightning to enter a shelter. Inner rooms are generally the safer locations to wait out the storm.

Source: National Oceanic and Atmospheric Administration

Autumn is the time of year when we prepare our homes for winter. Here are a few helpful tips to consider when cleaning rain gutters and setting up space heaters:

Ladder Safety

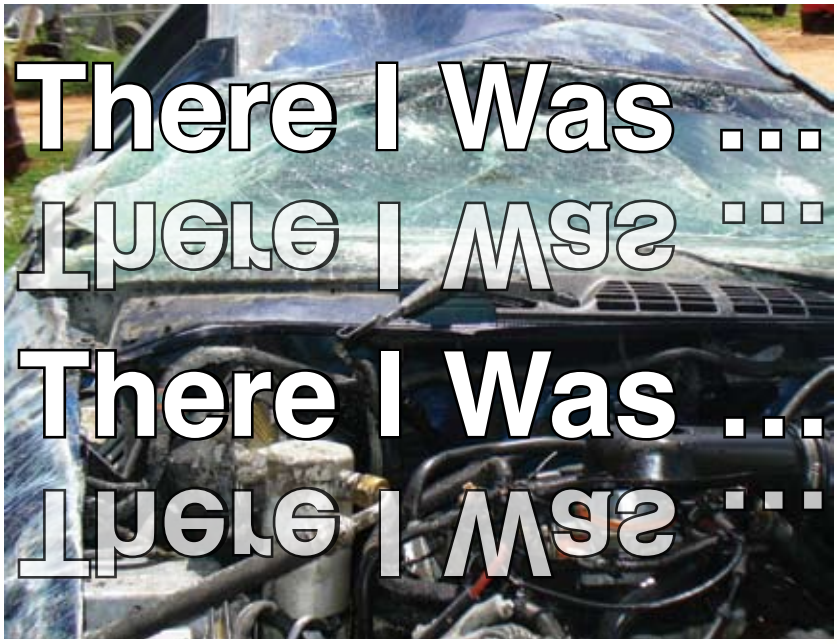
- When cleaning your gutters, ensure you use the appropriate ladder for the job.
- Inspect your ladder before each use.
- Place the feet of the ladder one foot from the wall for every four feet of the ladder's length.
- Do not overreach on a ladder or reach too far to one side.
- The top rung is off-limits.
- Metal ladder + electricity = death!

Space Heater Safety

- Keep flammable materials at least three feet away from space heaters.
- Supervise small children when using space heaters.
- If using an extension cord with a space heater, use a cord that is rated to the correct wattage.
- Operate space heaters according to manufacturers' guidelines.

Source: Underwriters Laboratories

Digital illustration by Felicia M. Hall



MASTER SGT. STEVE A. PETRO
53rd Wing
Eglin AFB, Fla.

I can only say, "Thank God I was wearing my seat belt."

We've all heard the wear-your-seat-belt declarations, but in that one instance when you needed it, and you remembered to put it on, you were glad you did.

It was May 17, 2006. I had to be at Eglin AFB, Fla., early to practice for the upcoming 53rd Wing Change of Command ceremony. Instead of sitting down to breakfast, I made myself a waffle and some ice tea and got into my truck to head to work.

Coming from Crestview, Fla., I had a 30-minute drive to work on Highway 85. The posted speed limit for most of the highway is 65 mph; however, the average actual traffic speed tends to be closer to 75-80 mph. The road was not in the best condition, either. There were major turnoffs that didn't have a turn lane, and there appeared to be a large gap between the road surface and the grass on the edges. During my travels to Eglin, I had either seen or been caught in backed-up traffic due to accidents on this highway.

I never imagined that I would be in an accident causing such a delay in the morning commute for so many people.

Shortly after turning south onto Highway 85, I looked over to my passenger seat and grabbed the waffle I had brought for breakfast. It was no more than 20 seconds, or so I thought, when all of a sudden I was headed off the side of the road toward a mile-marker sign. I then committed the cardinal sin of driving — I jerked the wheel to the left to get back on the road.

I was traveling 65 mph when I started to skid. Suddenly, I was going across the flow of traffic. To make matters worse, I repeated my mistake by jerking the wheel to the right to try to stop the skid.

The skidding stopped, but only after my driver's side rear tire caught a pothole on the left side of the road. The next thing I knew, I heard a crunch and fell into my door as the truck started the first of two-and-a-half rolls. As the truck was rolling over, I let go of the steering wheel and held on to the seat belt to brace myself for the ride of my life.

I never really understood how seat belts worked until I was in the middle of this rolling motion. As the truck was rolling over, it felt as if the seat belt was retracting to hold me in my seat. I hit my left ribs on the door handle in the initial roll. After that, the seat belt held me in place as it was designed to do.

When the vehicle stopped, I was upside down, and

U.S. Air Force photos by Master Sgt. Steve A. Petro

the truck was facing north in the middle of the southbound lane.

Thankfully everyone behind me had enough time to stop. As soon as the truck stopped rolling, I performed a quick self-check and realized I was OK and could move all of my limbs. I heard a hissing sound and thought I'd better get out of the truck before it possibly blew up. I released the seat belt and fell down out of the seat. I noticed the driver's side window was crushed to the point that I would not fit through it. I had to crawl to the back of the cab and get out through the driver's side rear window.

After I made it out, I was shocked that I had made it out alive. There were pieces of my truck scattered all along the highway. The traffic was stopped about 150 yards back from my truck and there were debris all the way back to that point. It wasn't until I saw pictures of the vehicle that I realized how wearing my seat belt and traveling at the speed limit had saved my life.

Had I not put on my seat belt and complied with the speed limit, I could have been thrown about the cab, if not out of the truck, and received more injuries than a couple broken ribs and a scraped finger. The passenger side of the cab was crushed down to the seat backs, and all of the windows were blown out.

To this day, I never put my car into drive until all passengers in the vehicle are buckled up. This accident was an eye-opener for me and my family. We're just thankful the safety equipment installed in my truck worked as it was designed.

When the vehicle stopped, I was upside down ...

U.S. Air Force photos by Master Sgt. Steve A. Petro

It Could Happen to You!

VINCENT C. DOTSON
Ground Safety Division
Air Force Safety Center
Kirtland AFB, N.M.

It was like a dream. I peered again at my rearview mirror to see if what I was seeing was real. The fog seemed to illuminate the rotating police lights which were summoning my vehicle to stop.

No! Not me, I thought, as my mind raced for answers. What did I do? Was I going too fast? Didn't I stop for that stop sign?

I pulled over and stopped my vehicle on the right side of the road. Now what's taking so long? Where's the Security Forces member?

A sudden thump and a big, bright light from a metallic flashlight startled my thoughts. The officer identified himself and said, "Your vehicle was left of center, Sir. May I see your identification and driver's license?"

I fumbled through my wallet, attempting to locate the items. I thought about the party I had just attended. Joe was a good host; he wanted me to stay the night, but I was the tough guy. Besides, all I had was a couple of drinks.

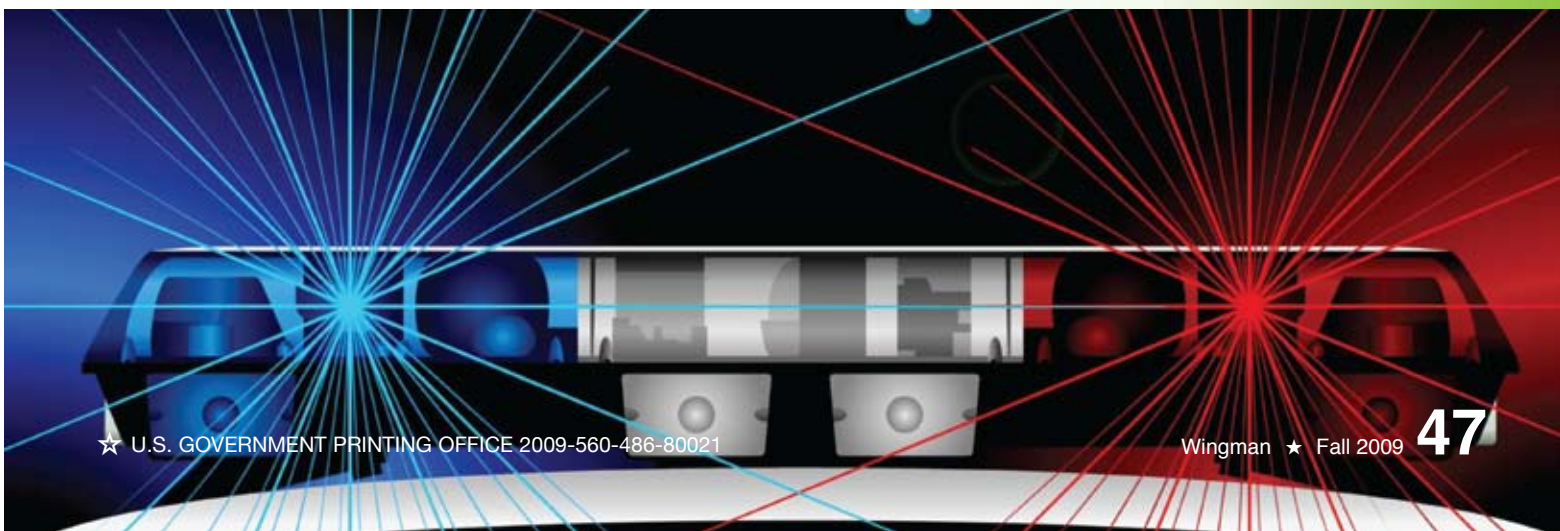
"Please step out of the vehicle," broke my thought pattern.

Can he smell the alcohol on my breath? Does he know? I asked to light a cigarette to mask the odor. Maybe I could hide it.

As I stepped out of the vehicle, I held my composure, or so I thought. Next came the sobriety test to determine my ability to drive. Impaired? I've driven many times before, maybe in worse shape than this. As I completed the tests, even I knew I shouldn't have driven. My reflection became reality as the officer applied the handcuffs and placed me in the rear of his car.

I began to contemplate my actions. What about my career, my family and my future? The pending results greatly outweighed the small reason I had to drive. The impending punishment would undoubtedly cost well into the thousands of dollars, as well as my family's respect. Was it worth it?

This is a fictional account; the statistics of drinking and driving are not. You could be among those statistics — dead or alive. The next time you want to drive when you drink alcohol — don't. Take along a designated driver, call a taxi or call a friend. Don't drink and drive!



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Listen up, Blue!

Think Wingspan

WINGMAN	**Have one!**
SPEED	**Control it!**
PPE	**Wear it!**
ALCOHOL	**Drink responsibly!**
NIGHT	**Be vigilant; have a wingman!**

... Reach out to all Airmen & save lives!