

An aerial photograph of a desert landscape, likely in the Middle East, showing a large city with a grid-like street pattern. Several military aircraft are visible in the sky. In the upper left, two F-16 fighter jets are flying. In the lower center, a large B-2 bomber is flying towards the right. The title 'The Combat EDGE' is overlaid on the top right, with 'The Combat' in a smaller font and 'EDGE' in a large, bold, metallic font. A large, dark, stylized arrow points to the right, partially overlapping the word 'EDGE'.

# The Combat EDGE

March 2000

# Deployed



# The Combat EDGE

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**March 2000**  
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## Air Combat Command's Mishap Prevention Magazine

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## AWARENESS-YOUR KEY TO DEPLOYED SAFETY

Almost all of us have been there — mobility bags packed, powers of attorney signed, aircraft bins stocked with needed supplies, flight plans filed to far away destinations. Deployments certainly aren't anything new, but we're embarking on a new way of doing business with the Air Expeditionary Force (AEF) concept. This month kicks off the full-scale deployment and employment of AEF packages. However, just because it's new doesn't mean we can't adequately predict most of the risks. We can add to previous lessons learned with increased vigilance to detect the hazards of the new environment.

Any time we move large numbers of people, aircraft and equipment thousands of miles away, we are accepting risks. However, we can mitigate many of the hazards through awareness. We can start with the early preparations at our home base. Personal stress can be somewhat eased by taking care of families — make sure finances are straight, wills are updated, and limited powers of attorney are completed where applicable. These basic steps will ease some of the tension while apart from loved ones.

Another awareness step is in the mobility process. Ensure checklists are followed. Checklists are written for a reason — because someone failed to accomplish required actions in the past that led to problems or mishaps. Think of checklists as lessons learned. Missing a checklist step such as latching and tightening a cargo strap can have catastrophic consequences — it can lead to a flight Class A mishap and possible fatalities. However, we know from past experience that good people miss important steps in a checklist for a variety of reasons: fatigue, hurried actions when running late, lack of focus due to family separation, personnel tempo, operations tempo, inexperience, and many other factors. We can all be mindful of these pitfalls.

The deployed area may pose new challenges that require attention to detail. Air traffic control could be more complex or degraded, ramp space may be congested, foreign object damage potential may be increased, and most activities are simply more difficult and time-consuming. The important point is awareness, which leads to proper risk management, which leads to you safely returning home to your loved ones.

Awareness of lessons learned and potential hazards will greatly increase your chances of a safe and successful deployment.

*Col. Greg "Vader" Alston*  
*ACC Chief of Safety*



# "Expeditionary" Does Not

*By Lt. Col. Cesar "Rico" Rodriguez  
ACC Flight Safety  
Langley AFB, Va.*



**"E**AF is a journey, and we have many more steps to take along this path as we transform the Air Force from a forward-based, Cold War force to an expeditionary force able to respond to crises around the globe." These words spoken by Secretary of the Air Force (SECAF) F. Whitten Peters are on the mark, if you are sitting in the audience with new recruits at a graduation ceremony. But what about those of us who have "been around the flag pole" a few times? If having your bags packed for 8 to 10 months out of a year is not expeditionary, then I don't know what is. But since the Air Force has set a course towards being "expeditionary," then as part of our transformation each of us should learn a few lessons from recent expeditionary deployments so we can better understand our business and apply them to our home station habits. If

you haven't figured it out, my business is Safety, and I would like to share with you my experiences as the deployed Chief of Safety with the world-famous 493rd Fighter Squadron, the Grim Reapers, during Operations NOBLE ANVIL and ALLIED FORCE.

Mishap prevention is not something that just happens. Mishap prevention programs require all players to buy into it. If they do, they will be productive, the mission will be accomplished, and everyone deployed will return home to the comfort of loved ones. The great programs transcend locations — they will work at home and at deployed locations if three simple rules are applied. First, leadership must be proactive in developing programs. Second, subordinates must show superb "followership" in executing them. And third, all involved, from the "top dog" to the youngest airmen, must demon-



# Mean Reinventing the Wheel

strate vision to correct or mend the program whenever change is required.

I am sure that many of you out there will also agree that mishap prevention and safety have no boundaries, in the sense that what you do at your home base for safety is the basis for your actions at any deployed location. Just because we are “expeditionary” does not mean that we have to think about safety in a different way. As a matter of fact, the only two things that remain constant when you are in the expeditionary mode are **SOUND TACTICS** and **SAFETY**. Don’t forget that. If anybody tells you otherwise, they had better support it with good reasons, not “just because.”

In October of 1998 the world was about to turn over when the rumor mills had our wing deploying to some place, at some time, to do some mission. “Controlled Chaos” probably best described many of our wing functional areas as they tried to predict what needed to happen in the early stages of the deployment. Personnel went from normal operations to 24-7 ops at the drop of a hat. The only difference from our recent NATO tactical evaluation practice was that nothing was different. So, in the end, how did we do? Between the two deployments we flew more than 1,500 combat sorties, we splashed four MiGs, and we had **ZERO** safety mishaps — yes **ZERO**. If you think about it, foreign country, off-base resort living, 24-hour operations for more than 120 days, and no General Order #1, the odds were against us to attain a zero mishap rate, but we did.

How did it happen? In a nutshell, the deployed leadership instituted our mishap prevention programs from home base - “do what is smart and take care of each other.” Each person that deployed understood that they were an integral combat asset and applied good “followership” to the mishap

prevention guidelines. And the deployed commander charged each subordinate to be vigilant for potential pitfalls and make recommendations as to how we could improve our deployed mishap prevent program. Very simple, if you ask me, but like most type-A personalities, I am looking for ways to do my job better, and I want to share with you a few lessons that I learned from my experiences.

First and foremost, as the wing Chief of Safety (COS) it is imperative to get to know your wing plans (XP) business. Why? Because, as the deployed safety staff, you will want to know everything and anything about potential locations and the site surveys. The Lakenheath XP officer was one of the key players in making our deployments a success. He allowed me to understand the XP business, and, in the end, I was able to help him do his job better. Many times folks think that learning another’s business is the equivalent to building an empire, but in this case the XP, a true professional and a great warrior, made a difference. As the safety guy you will need to wedge your way onto the site survey team or be on the main distribution list of any preliminary documentation. In my situation it wasn’t until I was on the C-130 ride down-range that I was handed a copy of the site survey and told to identify any first-glance safety issues. Did I mention that a team who didn’t know the specifics of what an F-15C bed-down requires wrote the site survey? As an example, the team wrote that our deployed base had an arresting barrier on the runway. What they failed to tell us in the report was that the BAK-12 was only certified to 30,000 pounds — about 50 percent of the F-15C combat weight. In short, the list of non-compatible items was endless. It was the opinion of our ADVON team that we would have been better off not

having seen what the site survey team produced. My recommendation is for safety to be proactive, get eyes on-target early, and have a general safety plan. And don't forget, if your safety staff is not deploying with you, get inputs from your Ground Safety Manager (GSM) and Weapons Safety Manager, so that when your feet hit the ramp you are ready to make your new home mishap free.

Once you get eyes on-target and feet on the ramp, be ready to apply lesson-learned number two. Quickly build a host nation network of personal contacts. This network group will pay your deployed operation great benefits for resolving not only safety issues, but making sure you get to the best restaurants in town. As part of the initial meet-and-greet I ran into one of the local air traffic control (ATC) commanders. In a side bar conversation, I found out that normal departures and recoveries, as we had done at our home base, required higher headquarters' (HHQ) approval. We didn't want to fly into town and establish ourselves as the "ugly Americans," so I engaged the ATC commander and his civilian counterparts with a draft proposal of what we needed for our arrival and departure profiles. By the time our jets hit the ramp from their local area orientation flights, and many espresso coffees, we had final HHQ approval for our local air traffic procedures. Although this was not a critical element of deploying, by simplifying our departure and recovery profiles we eliminated a small confusion factor of combat operations. The relationship with the ATC commander, and other key leaders on the base, opened doors across the base and at many local establishments.

Finally, let me address home station training. When we deploy, we like to think that in combat we always send our "first" team. Well that is not always true, and in our case we decided to send others, with less training, down-range and keep priority personnel back to support upcoming inspections. In all honesty, we were shocked by this thought process at first. But the lesson I learned from it was that I needed to be more vigilant to ensure that mandatory

safety training at the home station was accomplished. As you well know, wing Safety offices offer a multitude of training opportunities that cover the response spectrum for ground, weapons and flight mishaps. This training can't be bought in the civilian sector, and it carries applications from the job site to your home. As much as I hate to say it though, I never saw an instructor attendance sheet that showed 100 percent attendance. And, of course, you'll never guess who deployed to fill the duties of the deployed Ground Safety Manager — one of the NON-ATTENDEES. Had our deployed GSM attended the mandatory training at his home station, the early days of our deployments would have been less hectic and more productive (not to mention the fact that I could have flown more). In the end I can only blame myself for not having demanded that each squadron take a more proactive role in getting their people to attend our safety course.

So if you are looking for a completely different way of doing the safety business because you are now expeditionary, STOP! In today's environment, getting eyes on-target and setting up a contact list is as simple as the click of a mouse. Better yet, check out the Air Combat Command Air Expeditionary Force Lessons Learned web page (<http://aefcenter.aec.af.mil>), where you can check out files from others who have already been there. What you learn or contribute to the lessons-learned files may help someone else who is trying to improve a current mishap prevention program. This little bit of "ADVON" situational awareness (SA) might help you tweak your deployed mishap prevention education plan, but nothing will prepare your people better than developing and employing a solid day-to-day mishap prevention environment at your home station. In tactics, the old adage says that, in peacetime, TRAIN LIKE YOU ARE GOING TO FIGHT...because, when you are in combat, YOU DON'T HAVE TIME TO LEARN IT. The same applies to safety mishap prevention programs. Build them at home and they will deploy with you. Sound tactics and good safety programs are combat-tested. ■



# Combat Tanking

*Lt. Randy Rogers, USN, VAQ-134, Navy Expeditionary EA-6B Squadron.*

**I**t was the second week of Operation Allied Force. We were getting comfortable with the operation — maybe too comfortable. The mission for the day was the same as the day before, and the day before that. It involved multiple refuelings and multiple vulnerability windows to cover. The entire flight would be almost seven hours long.

We were leaving the area of responsibility (AOR) after our second vulnerability window and proceeding to the tanker. The route to the tanker was becoming very familiar and involved transiting through several altitude blocks. It was a clear day and we had no problems seeing the other aircraft. I looked down to check our fuel state, and when I looked back up I saw a flash go by the windscreen. Looking in the mirror I saw the tail end of an F-16 doing a roll. When I got my voice back and my heart started beating again, I informed the crew that everyone should be looking out for traffic because we almost had a mid-air with an F-16. ECMO3 quickly responded with, "Is that what just flashed by our canopy?"

How is it that a single-seat fighter almost hits an airplane with four crewmembers? Granted, the two crewmembers in the back cannot see anything, but what about the aircraft that is overtaking you? Or the one that is approaching from your seven to ten o'clock? A quick word from your backseater can save the entire crew. It may have to be a simple command like, "BREAK Left/Right," "CLIMB," or even "DIVE." You probably will not have time to say, "Traffic, Nine O'clock,

level." We certainly did not have time in our case.

So what did we do wrong that put us in this position? The main error that we made was that we were transiting through the striker's altitude block to get down to our tanker altitude. This transition was necessary, but we were doing it at

about 1000-2000 feet per minute. When you have to transition another aircraft's altitude block you should do it as quickly as possible and get down to the safe altitude block that you have been given. The see-and-avoid principles always apply, but when you are in high-density areas, such as a tanker track, someone should always be looking outside.

With two aircraft

approaching head-on at 400 Knots Indicated Air Speed (KIAS), you have 800 KIAS of closure. That means that it takes about one minute to cover 13 nautical miles. How far away can you see an F-16 approaching you head-on? It took me only a couple of seconds to check our gas, but if the F-16 pilot had been doing the same thing, it would have been five lifetimes.

What was ECMO1 doing? Did I tell him I was going to be inside the cockpit and to keep an eye out? No, but I should have and I do now. We all have to remember that any time you strap on your flight gear, lives are in harm's way — be it an actual combat mission or a simple ferry flight. The other thing to remember is to avoid complacency at all costs. It may take a wake-up call like this to make you realize that you are getting complacent. I hope you get that wake-up call rather than a permanent dirt nap. ■



*DoD Photo by A1C Greg L. Davis, 1st Combat Camera Squadron*



# DEPLOYMENT THREATS

*By Col. Dave Williamson, 9th Air Force Safety, Shaw AFB, S.C.*

In the year 2000, many USAF people, perhaps even the vast majority will be involved in a deployment of some type. I would like to review some recent safety mishaps and trends in the Southwest Asia (SWA) Area of Responsibility (AOR) to educate new folks, as well as to remind the "old heads," about the threats posed by a deployment.

My first piece of advice is that a deployment is like any other endeavor. If you want it to go well, you need to think, consider, and prepare beforehand. In other words, start preparing long before you get on the rotator or step to your jet for the ocean crossing.

For instance, if your unit will deploy to "BASE X," get a hold of the folks currently deployed there for an update of the safety issues and threats. Inquire about the local environment, flying, driving, recreational activities, to name just a few. What's the set up on the flight line? Are there any hazards here or in the billeting or recreation areas? What are the local driving conditions like? How about the climate? Are there any issues with the host government or allied forces?

Many questions need to be asked and answered before your unit departs, and, as your unit's "safety pro," if these issues aren't being addressed, you'd better speak up — loudly.

Another source of information is the Numbered Air Force (NAF) who has responsibility for the AOR. Here at 9th/CENTAF (Central Air Forces) we strongly encourage units to call us up when preparing to deploy to SWA. It's our job to stay on top of the safety issues in our AOR and we're anxious to share the info. As a matter of fact, if you need them, we'll send members of our staff to your base to help you prepare for your deployment.

Yet another source of info is the Web. Most locations today have Web sites that are a great source of useful and timely information. The

AEF teams at ACC have a Web site that can be another valuable resource. Once you gather all this great info, share it with your unit leadership and, at some point, whether through briefings, pamphlets, the base newspaper, or whatever, get it out to everyone deploying.

Let me now share some specifics from our AOR that might be helpful, whether you're going to the desert or some other garden spot.

In the ground safety arena our recent Class As have all involved Security Forces and driving. In Fiscal Year '99 we had two fatalities when Security Forces' troops "rolled" their Mitsubishi Pajero, were thrown from the vehicle and sustained fatal injuries. The real tragedy here was that neither of these troops was using a seat belt. There were two other occupants in the back seat of this vehicle who were belted in, and they walked away from the accident with minor injuries.

A similar mishap involved two individuals who were driving an armored Chevy Suburban (SEE PHOTO). In this mishap the driver was giving his passenger some impromptu training on the handling characteristics of this very heavy vehicle. The only problem was that the instructor lost control of the vehicle and rolled it 1 1/2 times. We luckily only ended up with a destroyed vehicle and two bruised airmen, but they could have been killed. The "instructor" in this case had received training, but had no training in instructing other airmen, and there was absolutely no need to demonstrate that particular maneuver.

Already in FY 00 we lost another Security Forces troop when she rolled her HMMWV (highly mobile multi-wheeled vehicle) while doing a routine patrol. At this time we're still not sure if she was wearing a seat belt, but we do know that she was driving too fast for the conditions.

So if you're getting your unit ready to deploy, touch base with the Security Forces



contingent and brief them on these mishaps. I'm very concerned that we have SF troops deploying to our AOR with limited or no experience driving tactical vehicles like an armored Suburban or HMMWV off-road. Also, driving off-road in the SWA AOR is decidedly different from driving the flight line or perimeter at "Home Station AFB." This applies to everyone — not just your SF troops.

In ground safety we've also seen a large number of off-duty sports and recreation mishaps. Although these are usually relatively minor injuries, they do impact an operation



when you're dealing with a limited number of individuals to man work schedules. If you lose one or two people in a shop, it has a major impact. During a deployment, far away from home, and without the pull of family and home responsibilities, folks tend to fill their days with athletic activities when they're not actually working. They may try to do too much too soon and, as a result, get hurt. Also, although the athletic facilities in our AOR are improving, they're still not as good as those we enjoy at home. Once you arrive at your deployed location, check these facilities, as well as the local jogging area, and be sure it's as safe as possible.

In Flight Safety, although we recently experienced two Class A mishaps, we haven't really seen any trends. The basics that keep your flying operation safe at the "home drome" are just as important when deployed. One warning I can give you is to make sure your units are ready for the actual deployment flight or flights. We recently saw a mishap occur when some unexpected en route weather bit the deploying flight. Just remember that it's a significant challenge just to get to the deployment base safely and be ready for combat operations.

Also, be ready for tight ramp operations. I know that at least at Al Jaber, the parking ramp is very cramped, your maintenance will have to operate in tight spaces, and your pilots/aircrews will have to be very cautious operating out of these overseas locations. The quality of the FOD (foreign object damage) control, taxiways, and airfield lighting are usually not up to our typical USAF standards, so be prepared.

In the weapons field we have some very unique situations. We have joint Weapons Storage Areas (WSAs) with our host nations. Also, at some locations, the WSA is located a good distance from the airfield and transportation of munitions is on unimproved and/or dirt roads that can turn real messy when it rains.

These are just some of the challenges you'll be facing when you deploy as your wing's safety professional. You need to prepare — you, your commanders/supervisors and your deploying force — before you actually arrive in-country. Don't hesitate to ask questions before you go, and remember, you've got help available from the Number Air Force and/or Major Command back in the States. Good luck! ■



# The Deployed

*By Tech. Sgt. William Curtis  
347th Wing Weapons Safety  
Moody AFB, Ga.*

**Y**our base has been tasked for an Air Expeditionary Force! What was your first thought? I will tell you this much — safety was probably the last concern that leapt to mind, even though it is the most important one.

I want to share some of my experiences as a deployed Weapons Safety Manager (WSM) and to give you a brief overview of problem areas I encountered, including a serious ground safety issue. Safety cannot be stressed enough, whether it is flight, ground or weapons safety. Many people seem to have one thought on their minds when they are in a combat zone, and that is “now we can break the rules.” Unfortunately, that means safety gets put by the wayside.

Ground Safety personnel practically pull their hair out trying to get folks to adhere to safety rules. Let’s take a look at the most common infraction of ground safety - not using seat belts. Since November 1998 there have been four Security Forces troops killed in vehicle accidents because they were not wearing their seat belts. Most people think they can get away with it, even though it is mandatory.

When I was deployed, if you were caught not wearing your seat belt you had to write a memorandum to the wing or group commander explaining why you weren’t following Air Force instructions and DOD regulations. In some instances the individual’s commander gave a letter of admonishment or letter of reprimand and extra duty. If you haven’t experienced driving overseas, whether it is in the Middle East or some other exotic location, then you may not realize that they do not drive the way we do in the United States. In foreign



*DoD Photo by Tech. Sgt. James Mossman, 1st Combat Camera Squadron*

countries, slang terms like “suicide highway” or “dead sheep highway” are common, and true. The seat belt will be your best friend in an accident.

In the case of Weapons Safety, the rules can be even more stringent. In most cases, you will be dealing with live ordnance operations using MK-82 general-purpose bombs, AIM-120 or AIM-9 air-to-air missiles, and several other types of munitions. This is a critical time



# Mentality



when a person's mind must be keenly focused. "Attention to detail" is paramount during explosive operations. These munitions aren't BDU-33 practice bombs that we use for peacetime training. They are the real things in a combat zone, and can kill friendly forces just as easily as the enemy can.

One thing I have noticed during my tenure as a Weapons Safety Manager (WSM) is that both flight line munitions and munitions

storage personnel seem to get in a state of complacency or monotony. Those thoughts of, "I have done this a million times — nothing can go wrong," or "my crew knows what they are doing," come up again and again. If you are going to the Middle East, you have to deal with the problems of limited space and understand just what kind of hazards are present. If you work with any type of munitions, be aware of these hazards and get in touch with the deployed WSM for further guidance. The WSM will be knowledgeable of the munitions-related hazards at the deployed location and will have prepared site plans and a risk assessment of the operation.

There may be times where aircraft will have to be parked close together because of limited parking space. There may be locations where munitions storage space is limited and you must exceed the maximum amount allowed for that space. These are situations where Operational Risk Management should be utilized to the utmost. People need to be aware of all the hazards that are present in order to avoid accidents. If your troops are well informed and are constantly reminded of these hazards, then they can keep their minds focused on the operational tasks at hand.

While deployed, I consistently informed my troops of the hazards they faced. It was amazing just how many people were not aware of all the hazards at their deployed location. As commanders and supervisors, we must constantly remind our people about the hazards inherent to explosive operations. In the mishaps I have witnessed and investigated, individual error played a large role in all of them. Often, the primary cause of the mishap was "lack of attention to detail."

Troops are initially trained on the proper way of doing a job, but in deployed locations, shortcuts are often taken and complacency can take over. Your thought process must be "anything can happen any place, any time." Be on your toes at all times. While working in a deployed location, your mind must be continuously focused to eliminate all outside distractions. Awareness is paramount to the safe performance of deployed duties, and in ensuring your safe return to your loved ones at home. ■



# Flight Line Weapons S

By Maj. Tom "Vegas" Dietz and  
Tech. Sgt. Jeff "Meat" Lohf (May 1996)  
4404 Wing (Provisional) Safety  
Dhahran AB, Saudi Arabia

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**Editor's Note:** This article was originally published in *The Combat Edge* in May of 1996. The article printed below has been slightly modified since its initial printing due to the timeliness of certain subject matter. The staff chose to reprint this article, however, because it still contains information that is just as pertinent in today's Air Force as it was at the time it was written.

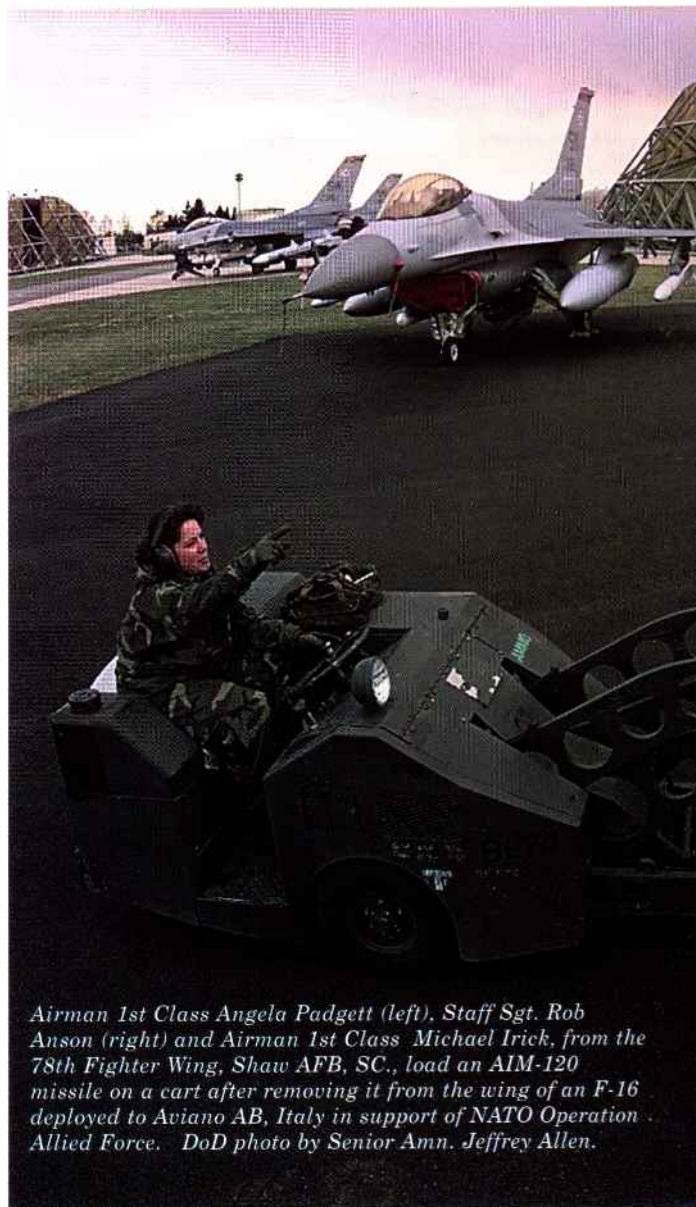
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Our squadrons deploy more often, and to more austere locations, than we have in recent memory. Almost always, we find ourselves working out of facilities and airfields that are below our standards back home. Often this includes an aircraft parking ramp that is smaller than required by Air Force instructions and Department of Defense (DoD) standards. There is a temptation at this point to ignore the instructions, chalk it up to contingency operations, and "accept the risk."

Think about it though. Is this really what you want to do? Will it be easy to explain to a widowed spouse that her husband was killed by an avoidable accident? Rather than throwing in the towel on safety when space is less than required, a common-sense approach and a little planning and knowledge can result in a "conscious minimum risk plan" vice an "accepted risk plan." All it really takes is three basic things: a basic understanding of the "quantity distance" (QD) concept; a little bit of preplanning and creativity; and an understanding of common pitfalls.

## QUANTITY DISTANCE

The concept of QD is simple. The rules that go with it are not, but that's why units have weapons experts! Concept understanding is what the average individual, and especially



Airman 1st Class Angela Padgett (left), Staff Sgt. Rob Anson (right) and Airman 1st Class Michael Irick, from the 78th Fighter Wing, Shaw AFB, SC., load an AIM-120 missile on a cart after removing it from the wing of an F-16 deployed to Aviano AB, Italy in support of NATO Operation Allied Force. DoD photo by Senior Amn. Jeffrey Allen.

commanders, need to know. Simply stated, the expected damage from an explosion is a function of the quantity of explosive material and the separation distance. To apply this concept to your parking ramp, you need to ensure you know some basic information.

First, know the weapon safety characteristics of your standard munition loads. This includes their net explosive weight, frag pat-



# safety Away From Home



terns, built-in safety features, and susceptibility to propagation. Your weapons experts should already know this information. All you have to do is ask.

Next, learn how much spacing you need between your fully loaded aircraft to prevent explosive propagation of an adjacent aircraft's munitions. This is commonly called "inter-magazine distance," or K11. You should keep

your aircraft this distance apart if at all possible.

If it is impossible to keep them that far apart, then "grouping" is an option. Grouping means parking your aircraft in groups of two or more. Less spacing is used between individual aircraft and greater spacing is used between groups with this approach. In this case, you are conceding the loss of a group of aircraft should a serious incident occur, but you mitigate the possibility of losing your whole fleet. A total loss may be the case if all aircraft are evenly spaced versus grouped, given less than the required parking space.

Next, find out how far away your aircraft need to be from your operating facilities and other aircraft to prevent major damage. This is referred to as "intraline distance," or K18. Incidentally, this is also the distance you are looking for between groups discussed in the previous paragraph. Keeping your loaded aircraft K18 distance from your related facilities, like maintenance hangars and operations buildings, prevents one accident from shutting down your whole operation - a likely scenario if your maintenance facility blows up.

Finally, know how far your ramp needs to be from non-related facilities, commonly called the "clear zone" or "inhabited building distance." This includes anything from the communications squadron to an elementary school. Realize that individuals in these facilities are largely unaware of the risks associated with your explosive operations and, therefore, cannot be counted on to have the level of awareness of people who are directly involved. Hence, the greater distance.

## **PREDEPLOYMENT PLANNING AND CREATIVITY**

All of the information discussed thus far can be calculated with no knowledge of your deployment location. I recommend commanders have their experts calculate the required distances and compile this information on a



“cheat sheet.” You may also ask them to determine the parking ramp area required to load all of your assigned aircraft with your most likely standard configuration list (SCL). This will put you in a position to make your preliminary requirements known as soon as you are assigned a deployment location.

At this point you are ready to be assigned a deployment location and tasking. If your desired ramp space is not available, all is not lost. You may not need to load live munitions on all of your aircraft simultaneously. Sortie rate, average sortie duration, operating window, integrated combat turn plan, phase flow, and myriad other practical requirements may actually reduce the number of “hot spots,” and thus ramp space, you actually need. For example, if you are conducting 24-hour-a-day operations you will not have all of your aircraft on the ground, loaded live, at any one time. Therefore, you don’t need a “hot spot” for every aircraft. The possibilities are too numerous to discuss in one article, but the bottom line is think about your operation and be creative to meet your needs.

Despite all of your imagination, it may not be possible to safely separate your aircraft and facilities. Believe it or not, it is still not yet time for the towel. The “compensatory options” plan is still available. This entails developing procedures to reduce risk. For example, evacuating certain facilities during high risk or disconnecting umbilical or fire leads until the last practical moment. Once again, creative thinking can greatly enhance safety.

To gain some practical experience, you may want to pick a possible deployment location and tasking to develop a plan based on existing facilities. A practice Phase I exercise may be a good time to accomplish this.

### **COMMON PITFALLS**

Before I close, let me shed some light on some of the pitfalls that may bite you in a deployed operation. First, if you’re replacing an existing unit, don’t assume that their parking plan is right for your unit. They may have different aircraft, munitions loads, tasking, or just may not have put enough thought into it. Once you arrive, it’s your people and equipment that are at risk - be accountable!

Second, don’t wait until you arrive to develop your plan. Once you park your aircraft, any adjustments must fight the “resistance to change.” An order from the commander is obviously enough to make change happen, but it will add to the already demanding workload associated with a deployment and beddown. Instability is fatiguing and negatively affects morale. Do it right the first time.

Third, despite having said “do it right the first time,” if it’s broken, by all means fix it. Contrary to common beliefs, we have had serious weapons accidents in the recent past. I’m personally aware of two missile firings on the ground since 1990. It can happen and the results can be catastrophic. It’s worth the effort to adjust your plan, despite the extra work.

Fourth, coordinate your plan with other explosive operations. For example, if your F-15E aircraft loaded with forward-firing ordnance are pointed at the F-16 CJ aircraft that provide the suppression of enemy air defenses (SEAD) capability necessary to get you to the target, you probably don’t have the smartest plan. Also, don’t forget to coordinate with other services and coalition partners. For example, you don’t want your facilities or aircraft right next to a Patriot site.

Finally, don’t assume that someone else is going to develop your weapons safety plan. Ideally, there is a wing safety office with a highly trained, highly motivated weapons safety expert in place. There’s a good chance, however, that he is unfamiliar with your aircraft, operational requirements, or munitions, or so busy that he doesn’t get a chance to scrub your plan before you begin execution. It’s ultimately the commander’s responsibility to ensure his operation is as safe as practical.

As an individual working on the flight line, and especially as a commander, know the basics of your weapons safety when parking aircraft. Plan ahead to know your unit requirements. Put some time and creativity into developing your deployment parking plans. And recognize that it is your responsibility to make the ramp as safe as practical, contingency or not. ■







# Three for the

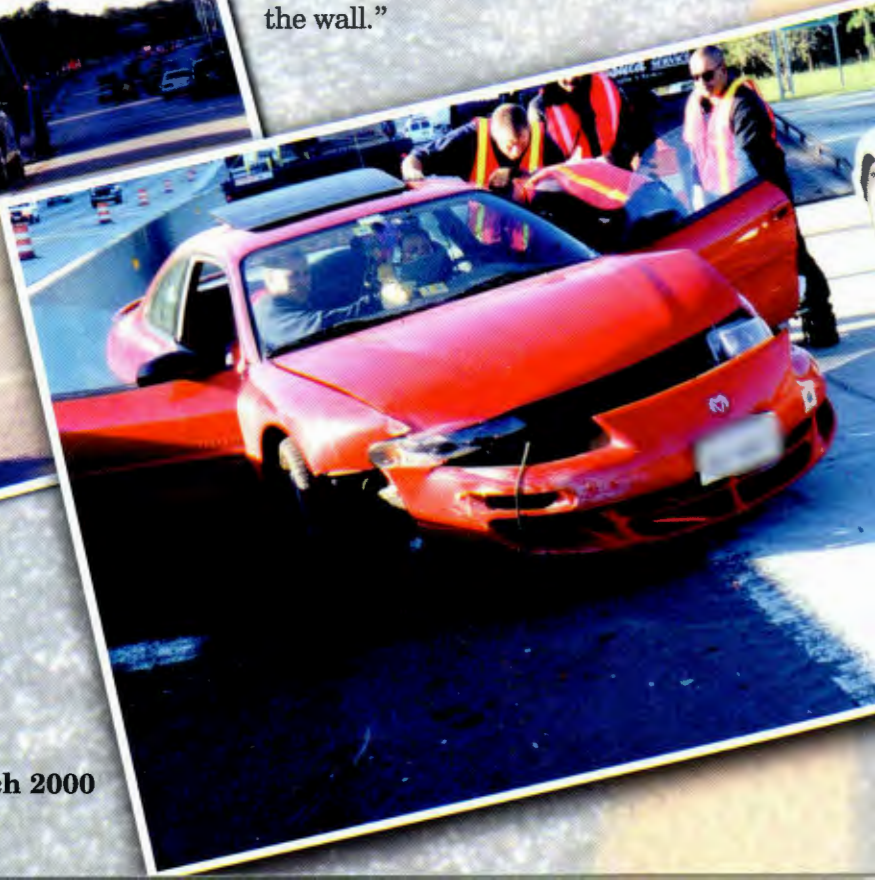
*By Trooper Raymond C. Ferrara, Virginia State Police*

**T**here you are, in your high-speed road rocket spinning out of control with traffic coming at you from all directions. I'm not a bad driver; I can handle my vehicle in any environment — what went wrong, what did I do?

These might be some typical questions going through your head as you come to a crashing halt against a concrete barrier wall, another vehicle, or find yourself in an inverted flat spin from which there is no hope of recovery. Driving is becoming more dangerous as the aggressiveness of the motoring public continues. Just who is that over-zealous, rapid-lane-changing, high-speed maniac behind the wheel? It just might be you!

The following three accidents described here might have been avoided. Serious injury occurred in all of them.

In the first accident, a driver was en route to work on a busy Saturday afternoon. The driver left home about 20 minutes before needing to be at work. Only problem here though was that work was 40 minutes away and, as usual, traffic was at a near standstill. So here's the scene: a rapid entry to the interstate followed by a high-speed lane change immediately to the left (fast) lane, then contact with the concrete barrier wall. Heavy traffic and a blind spot added up to undesirable impact with concrete. "Honest Trooper! I didn't see the truck before I attempted to change lanes and I had nowhere to go except into the wall."





# Road



The second accident involved a military dependent driving her friend home after a night out. In this accident there was no alcohol involved. This driver was preparing to enter the tunnel when she apparently fell asleep, drifted right and struck the concrete tunnel wall. This caused the vehicle to roll. The vehicle ended up on two wheels, hit the opposite side of the tunnel entrance, and then overturned. The vehicle then slid upside down about 50 feet before stopping. We found the driver upside down, in her seat belt, still on the cellular phone. Hmmm. Maybe she didn't fall asleep. That cellular phone can be quite a distraction while driving. The old adage for pilots used to be, "aviate, navigate, communicate." Well that doesn't work with cars! Stay off of the cellular phone while driving. And on a side note, this driver did not have automobile insurance. Oops! Who is going to pay for the 1994 vehicle that is still being financed?





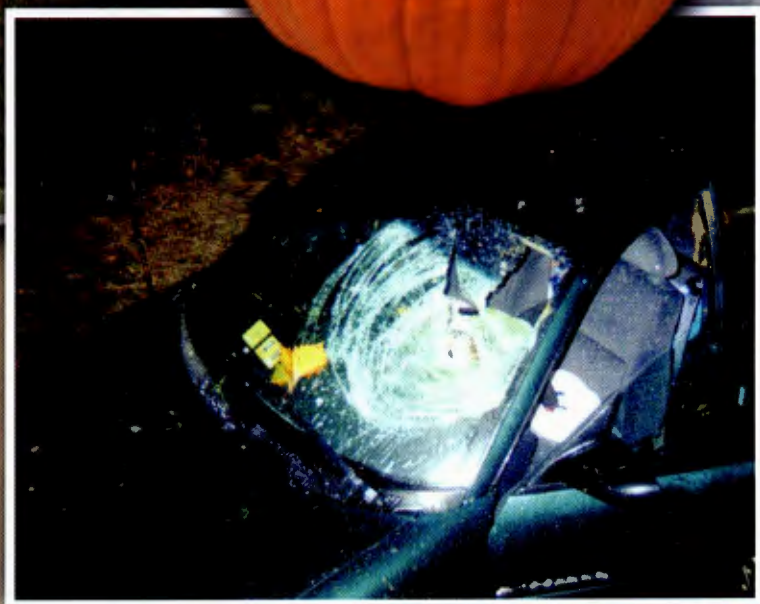
The next accident was unavoidable, although the cause surely was. This driver was on her way home from work when some inconsiderate individual threw a pumpkin from an overpass onto the highway, striking the driver's side of the windshield. I was in my cruiser right behind her. The driver was knocked unconscious and lost control of the vehicle, and it ran off the road into a 20-foot ravine. This was just more proof that you never know what is going to occur on the roadways you travel every day. There IS a

reason to keep that seat belt fastened at all times. (By the way, if any of you local Tidewater readers have any information about the pumpkin-tossing culprit, please contact the Virginia State Police at 1-800-582-8350.)

Driving is an undivided-attention task. You must focus on operating your vehicle and clear your mind of all other issues except making it to your destination safely. Drive like I'm in the car behind you! Drive safely. ■



*Trooper Raymond C. Ferrara works the Hampton/Newport News Virginia interstate area for the Virginia Department of State Police. He is a retired United States Marine Corps officer who completed his military career as an aviation safety analyst at the Naval Safety Center Norfolk, Virginia. Trooper Ferrara flew H-46, H-1N helicopters and T-39 Sabreliners while on active duty. He is a graduate of the Aviation Safety Officer's Course, Monterey, California.*





# Monthly Awards



## PILOT SAFETY AWARD OF DISTINCTION

Major John Saghera  
94th Fighter Squadron, 1st Fighter Wing  
Langley AFB, Va.

While deployed in support of Operation SOUTHERN WATCH at Prince Sultan Air Base (PSAB), Saudi Arabia, Maj. Saghera was flying the number one position in an 8-ship defensive counter air formation of F-15C Eagles. Shortly after initial takeoff in full afterburner, Maj. Saghera experienced a catastrophic engine failure and subsequent fire. Maj. Saghera, just passing 500 feet, heard and felt a loud bang emanate from the number two engine. This failure, combined with extremely high outside air temperature and a heavy combat configured aircraft, made it imperative that he react quickly and correctly as there was an extremely small margin for error. Maj. Saghera immediately initiated a climb and began assessing the situation. He attempted to stabilize the engine in idle, but was unsuccessful. His number two engine revolutions per minute were rapidly decaying to a sub-idle indication and his wingman reported seeing smoke and flames at the rear of the aircraft. As a result, Maj. Saghera elected to shut down the malfunctioning engine in an attempt to extinguish the flames and minimize further damage to the aircraft. He also began proceeding to the fuel dump area and coordinated for his emergency return to base. During this period, Maj. Saghera's wingman initiated a rejoin and performed a battle damage check. He reported the flames were extinguished and the exterior of the aircraft appeared normal. With fuel dumping complete, PSAB approach began vectoring Maj. Saghera for his approach and landing to runway 35. As Maj. Saghera began the approach, he discovered, due to the high aircraft weight and intense heat, he required full military power to maintain an appropriate glide path and afterburner to level off or climb. Maj. Saghera flew a flawless single-engine approach under very demanding and unforgiving conditions. Initial post-flight examination revealed the engine was seized and the fourth and fifth stage turbine blades were completely destroyed. The exact cause of the failure is still under investigation. Maj. Saghera's superior airmanship and situational awareness prevented the potential loss of a multi-million dollar combat Air Force asset and possible loss of life.





## CREW CHIEF SAFETY AWARD OF DISTINCTION

Senior Airman John Costa III  
58th Fighter Squadron, 33rd Fighter Wing  
Eglin AFB, Fla.

During a post-flight inspection of an F-15C, Amn. Costa discovered a nut wedged between the cabin pressure regulator and the aft bulkhead. He immediately informed the production superintendent. The discovery initiated a formal investigation and a thorough inspection of the cockpit. The investigation revealed that the nut was a replacement item on the ACES II ejection seat. The seat had been installed two days earlier before Amn. Costa performed the first inspection prior to flight. This nut is replaced any time the ejection seat is removed for inspection or repair. If gone undetected, the nut could have been the root of numerous hazards — from restricting flight and throttle controls to losing cabin pressure — all which could have had catastrophic effects, both for the aircraft and crew member. Amn. Costa's exceptional attention to detail, high standards, and dedication to the United States Air Force helped avoid the potential loss of a multimillion-dollar aircraft and the possible loss of life.



## FLIGHTLINE SAFETY AWARD OF DISTINCTION

Staff Sgt. Michael E. Lang,  
Airman 1st Class Jessica M. Caraker  
1st Operational Support Squadron,  
1st Fighter Wing  
Langley AFB, Va.



On 2 Nov 99 at approximately 1100L, a vehicle approached Runway 8 from the north side during heavy wing flying. The vehicle operator contacted the ground controller and requested to cross the runway. He was told by the ground control trainee to hold short of the runway (do not cross) because two F-15s were on the runway cleared for takeoff. The vehicle stated "proceeding across." The ground control trainee and monitor heard this and observed the vehicle begin to pull forward to cross the runway. The ground control trainee simultaneously notified the local controller and attempted to stop the vehicle from crossing the runway. The local controller immediately canceled the F-15's takeoff clearance on the emergency override frequencies and the ground controller again advised the vehicle to hold short of the runway. The keen situational awareness displayed by both the ground and local controllers prevented a potential mishap from ever materializing.





## WEAPONS SAFETY AWARD OF DISTINCTION

Staff Sgt. La Shawn E. Eggleston  
83rd Fighter Weapons Squadron  
Tyndall AFB, Fla.

Sgt. Eggleston is the primary munitions supply point custodian for the 83d Fighter Weapons Squadron, 83d Munitions Flight. While performing a lot number segregation inspection of 2400 BBU-35/B impulse cartridges in accordance with Technical Order 11A-1-1 (Ammunition Restricted and Suspended), she discovered a suspended lot number from issue and use. She immediately halted cartridge issue to three deployed units participating in the Weapon System Evaluation Program (WSEP), and alerted the 325th Fighter Wing Munitions Inspection Section of her findings. Her keen attention to detail and strict adherence to technical guidance prevented WSEP mission degradations for missile live-fire evaluations and saved over \$1 million in test costs. In addition, Sgt. Eggleston's heads-up attention proved invaluable in the investigation and identification of these suspended munitions and prompted immediate turn-in of over 4,600 defective impulse carts. This critical discovery is a direct reflection of Sgt. Eggleston's outstanding dedication to safety, technical knowledge, and her continuous support of more than 30 units deployed annually to WSEP.

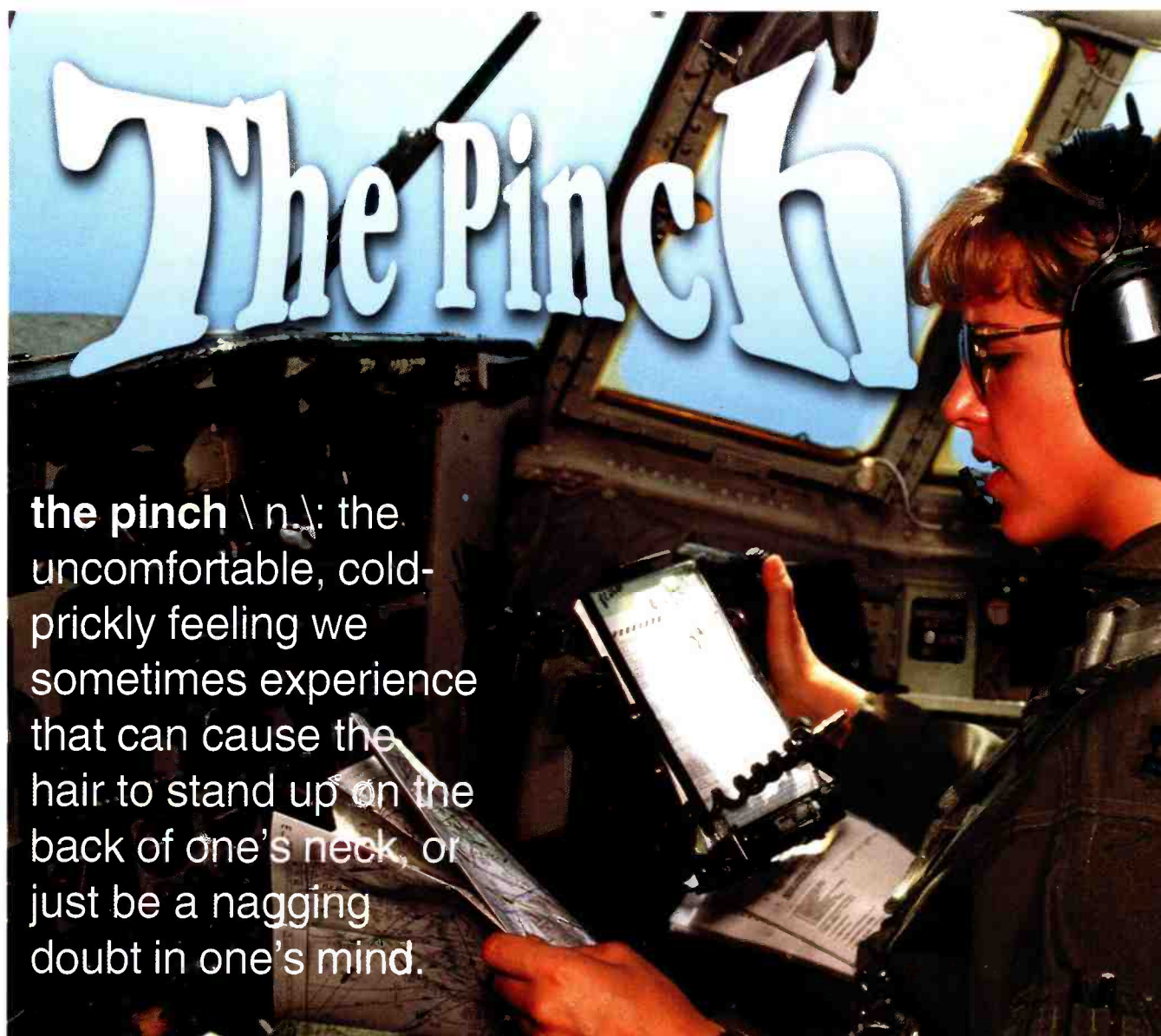


## GROUND SAFETY AWARD OF DISTINCTION

Senior Airman Joseph M. Dropik  
28th Bomb Wing  
Ellsworth AFB, S.D.

As the 28th Munitions Squadron hazardous waste monitor, Amn. Dropik normally puts his skills to the test managing waste leaving his shop. One morning, 10 gallons of paint that were picked up from the self-help store caught his eye. Upon review, Amn. Dropik discovered an AF Form 3952 "Chemical Hazardous Material Request and Authorization" was not on file that would have answered his still unanswered questions. Instead of dropping the issue on what would seem to be a few cans of utility paint, he pressed the issue and personally completed the required paperwork and headed for the environmental office. Upon review and a little research on the product, environmental specialists labeled the product a suspected carcinogen and a definite health hazard. Amn. Dropik immediately reacted to the information by contacting his section and directing them not to use the paint. Realizing the broader scope of the situation, he contacted the self-help store still distributing the paint and initiated a recall. As a direct result of his outstanding ability to quickly assess a hazardous situation and take immediate, wide-ranging action, over 200 gallons of a potential cancer-causing material was recalled from base organizations and remaining stock was pulled from the self-help store. Amn. Dropik's actions provided a stellar example for all to emulate. His genuine concern for not only the safety of his co-workers, but understanding the risk to the general base population deserves an "attaboy" and a huge thank you!





**the pinch** \ n . \ : the uncomfortable, cold-prickly feeling we sometimes experience that can cause the hair to stand up on the back of one's neck, or just be a nagging doubt in one's mind.

*By Capt. Scott Ryan  
42nd Airborne Command and Control Squadron  
Davis-Monthan AFB, Ariz.*

**C**rew Resource Management (CRM) classes teach us some of the clues we can use to detect problems, and tools we can use to fix them. When you experience "the pinch," the best thing to do is to step back and review what's happening. Never hesitate to open a discussion with your crew to find out if anyone else has the same feeling. On one memorable flight, I experienced multiple pinches, yet didn't take the time to analyze the situation.

We were flying a daytime navigation trainer in the EC-130E Hercules out of Davis-Monthan AFB, Arizona. We had just turned back for home when the Navigator (Nav) and Flight Engineer (FE) did their hourly fuel reading. "Geez," the Nav said, "we only burned 1,200 pounds of fuel that hour. We're *makin'* gas." The normal burn rate for a "Herc" is about 4,000 pounds per hour. This was the first pinch, and caused





*Capt. Robin Wiegand, co-pilot of an EC-130E from the 42nd Airborne Command and Control Squadron, Davis-Monthan AFB, Ariz. DoD photo by Senior Amn. Tana Hamilton*

me to look up at the fuel panel along with my FE.

"It sure has taken a long time for 800 pounds to burn out of the externals," commented the FE. Pinch #2. As we were checking out the fuel panel, both external tanks' "tank empty" lights came on steady at precisely the same time. Normally, the lights flicker for a few minutes before they illuminate steadily. Pinch #3.

Although later tests were inconclusive, we believe we were experiencing an unknown and insidious fuel transfer malfunction, pumping all the fuel from the left main tank into the external tanks. We were burning out of the external tanks at the time. Once the left main tank was reduced to 2,100

pounds, the transfer pump stopped working, so the externals indicated empty. To add to this problem, the left main tank gauge was inoperative, so we had no idea from looking at the panel that something was awry.

En route home to Davis-Monthan, we were scheduled to drop in at Albuquerque for some instrument approaches and landings. I flew the first approach in gusty crosswinds and didn't notice anything wrong with the aircraft. When I gave control to my co-pilot (CP), he immediately commented that the right wing felt heavy. This was the fourth pinch in less than an hour, but did I step back and consider what could be going

wrong? No. My response was, "Put in some aileron trim — that's why we have it!" After the CP and the rest of the crew convinced me that there was indeed some kind of imbalance, we broke off the approach and started home.

During the climb out, I was able to feel the heavy right wing, but we still couldn't figure out what had happened to all the fuel. At this point the right main tank was nearly full, at 5,000 pounds, while the left tank was rapidly approaching zero fuel. Passing 14,000 feet, the left main tank ran out of fuel and the #1 engine coughed. We immediately shut it down before it flamed out. Although we wanted to continue home, we didn't know the status of our fuel, so we elected to turn around and land at Albuquerque. Now we had over two tons of extra weight in the outboard right wing causing a fairly severe imbalance.

During the landing rollout, the right wing settled uncomfortably close to the ground. When we pulled in to park, the marshallers were pointing at and commenting about our plane. We didn't know why until we got out and realized how ridiculous it looked with the right wing so low. The bottom tip of the outboard prop is usually 6-feet, 5-inches off the ground, but today the prop only had about four feet of ground clearance. Luckily, we safely recovered our aircraft without any damage.

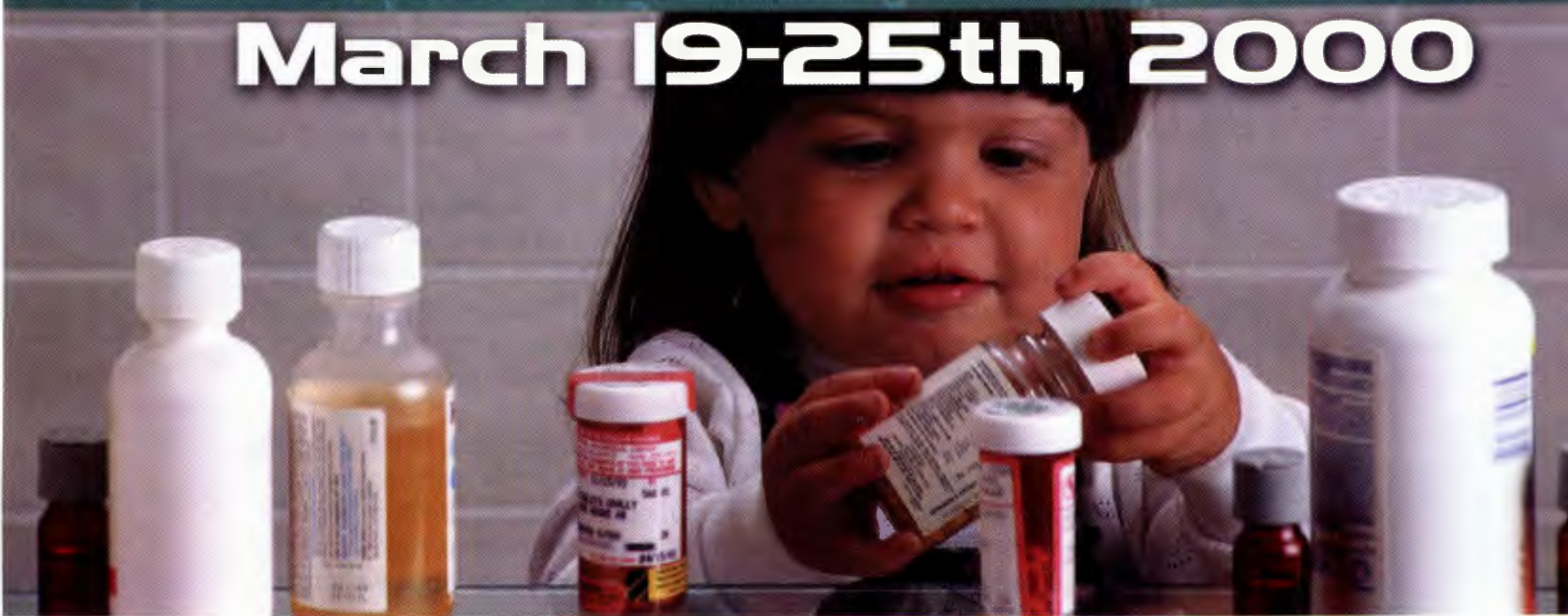
This story may have turned out differently if the engine had flamed out during a critical phase of flight. I had four separate non-standard incidents occur in one hour. Each one should have raised the hair on the back of my neck. Our CRM classes teach us to recognize these pinches and react to them, but I ignored all four. Despite all of the obvious clues, it wasn't until my CP and Nav spoke up that I realized we had a problem.

If you ever get this "cold prickly" feeling, or sense that something isn't right, first step back from the situation and look at it from a different angle. Next, be open with your crew — they are part of your team. Together, you may realize that "the pinch" is doing its job — alerting you to an unsafe situation. ■



# National Poison Prevention Week

## March 19-25th, 2000



*Courtesy of the U.S. Consumer Product Safety Commission (CPSC)*

### **What is National Poison Prevention Week?**

Public Law 87-319 authorizes the President to annually designate the third week in March as National Poison Prevention Week. This act of Congress was signed into law on September 16, 1961, by President Kennedy, after which the Poison Prevention Week Council was organized to coordinate this annual event. Congress intended this event as a means for local communities to raise awareness of the dangers of unintentional poisonings and to take such preventive measures as the dangers warrant.

### **National Poison Prevention Week's Theme**

The basic theme is "*Children Act Fast... So Do Poisons!*" This means that parents must always be watchful when household chemicals or drugs are being used. Many

incidents happen when adults are using a product but are distracted (for example, by the telephone or the doorbell) for a few moments. Children act fast, and adults must make sure that household chemicals and medicines are stored away from children at all times.

### **If your child eats or drinks a substance that might be a poison, where can you find information on treatment?**

If you think someone has been poisoned, call your Poison Control Center immediately. Its phone number can be found on the inside cover of the yellow or white pages of the telephone directory. Keep the number on your phone. There are currently some 100 Poison Control Centers in the United States that maintain information for the doctor or the public on recommended treatment for the ingestion of household products and



medicines. They are familiar with the toxicity (how poisonous it is) of most substances found in the home or know how to find this information.

**If you find your youngster playing with a bottle of medicine or some household product, how can you tell if he or she has swallowed some and what should you do?**

Reactions vary, depending on the product. Sometimes the child may vomit; or he or she may appear to be drowsy or sluggish. Some of the substance may remain around the child's mouth and teeth. There may be burns around the lips or mouth from corrosive items; or you may be able to smell the product on the child's breath. Some products cause no immediate symptoms. If a household chemical has been ingested, follow the first aid instructions on the label and then get medical advice — even if you suspect, but don't know for sure, that your child has ingested a potentially hazardous product. Call your Poison Control Center, emergency department, or doctor. Keep these telephone numbers on your phone.

**First aid measures you can take when an ingestion takes place**

Remain calm. Not all medicines and household chemicals are poisonous, and not all exposures necessarily result in poisoning. For medicines, call the Poison Control Center or doctor immediately. For household chemical products, follow first aid instructions on the label, then call the Poison Control Center or doctor. If unable to contact them, call your local emergency number (911 in most areas) or the operator. Keep emergency numbers listed near the phone before an emergency arises. When you contact the Poison Control Center or other emergency personnel, be prepared to give the facts (described below) to the expert on the other end of the phone. Have the label ready when you call the expert. The label provides information concerning the product's contents and advice on what immediate first aid to perform. This will be useful when giving first aid and when you call the Poison Control Center. Tell the expert:

- The victim's age
- The victim's weight
- Existing health conditions or problems
- The substance involved and how it contacted the child. For example, was it swallowed, inhaled, absorbed through skin contact, or splashed into the eyes?
- Any first aid which may have been given
- If the person has vomited
- Your location, and how long it will take you to get to the hospital

If medicine has been swallowed, do not give anything by mouth until advised by the Poison Control Center. If chemicals or household products have been swallowed, follow the first aid instructions on the label. Then call for professional advice. Always keep a one-ounce bottle of ipecac syrup on hand for each child or grandchild under age five in the home, but use this only on the advice of the Poison Control Center, emergency department, or doctor.

**Why are so many poisonings related to children under five years of age?**

Children under the age of five are in stages of growth and development in which they are constantly exploring and investigating the world around them. This is the way they learn. It is a normal characteristic and should not be discouraged. Unfortunately, what children see and reach for they usually put in their mouths. It is this behavior to which parents must be alerted. As the youngsters' mobility, ingenuity, and capabilities increase, they can reach medicines and household chemicals wherever stored. For instance, when children are crawling, they can find such products as drain cleaners stored under the kitchen sink and on the floor. As soon as they are able to stand, they can reach such products as furniture polish on low-lying tables, as well as medications in purses on beds. When they start to climb, they can reach medicine on countertops or open the medicine cabinet and get to the medicine. These products should be locked up out of the child's reach whenever possible — even when safety packaging is used. Adults should never leave a medicine or household chemical product unattended while in use; children act fast and can get hold of a product



and swallow it during the short time while the adult is answering the telephone or doorbell. Advise the caregiver to take the child (or product) with them to answer the phone.

### **Do we need child-resistant packaging?**

Although labeling requirements and educational programs have had some effect in reducing the number of childhood ingestions, significant numbers of children are still being poisoned by ingesting household products that can be hazardous. Some examples of these items are medicines (sometimes brought into the child's home by grandparents or other visitors), cleaning products, and solvents. Child-resistant packaging, if used properly, provides an additional barrier to help prevent ingestions.

### **More information on preventing poisonings is available**

See the "List of Materials - 2000" for available resources and their sources of supply. The list can be obtained from Secretary, Poison Prevention Week Council, PO Box 1543, Washington, DC 20013.

*The U.S. Consumer Product Safety Commission protects the public from any unreasonable risks of injury or death from 15,000 types of consumer products under the agency's jurisdiction. To report a dangerous product or a product-related injury and for information on CPSC's fax-on-demand service, call CPSC's hotline at (800) 638-2772 or CPSC's teletypewriter at (800) 638-8270. Consumers can obtain recall information from CPSC's web site at <http://www.cpsc.gov>. Consumers can report product hazards to [info@cpsc.gov](mailto:info@cpsc.gov).*



### **Good housekeeping rules to prevent poisonings**

- (1) Keep all household chemical products and medicines (especially iron pills and food supplements containing iron) out of sight of youngsters and, preferably, locked up when not in use. Medicines and household chemicals on kitchen counters or bathroom surfaces are very accessible to young children.
- (2) When these products are in use, never let young children out of your sight — even if you must take them along when answering the telephone or the doorbell.
- (3) Store all medicines separately from household products, and store all household chemical products away from food.
- (4) Keep items in their original containers.
- (5) Leave the original labels on all products, and read the label before using.
- (6) Do not put decorative lamps and candles that contain lamp oil where children can reach them. Lamp oil ingestions by children can result in pneumonia and death.
- (7) Always leave the light on when giving or taking medicines.
- (8) Avoid taking medicines in front of children, since youngsters tend to imitate grown-ups.
- (9) Refer to medicine as "medicine" — not "candy."
- (10) Clean out the medicine cabinet periodically, and safely dispose of unneeded medicines when the illness for which they were prescribed is over. Pour contents down drain or toilet, and rinse container before discarding.
- (11) Finally, use child-resistant packaging properly by closing the container securely after use. ■







# Ground Safety Stats

## ACC Losses for FY 00

(1 Oct 99 - 31 Dec 99)

*Practice the principles of Risk Management both on and off duty.*

### Ground Mishap Fatalities

<b>8 AF</b>	
<b>9 AF</b>	
<b>12 AF</b>	
<b>DRU</b>	

### Number of Ground Mishaps/Dollar Losses

	<b>Class A</b>	<b>Class B</b>	<b>Class C</b>
<b>8 AF</b>	1/\$185,700	0/0	26/\$80,799
<b>9 AF</b>	2/\$250,000	0/0	42/\$196,344
<b>12 AF</b>	3/\$1,369,640	0/0	34/\$115,395
<b>DRU</b>	2/\$250,000	0/0	6/\$21,297
<b>FY 00 Totals</b>	8/\$2,055,340	0/0	108/\$414,365
<b>FY 99 Totals</b> (same period)	4/\$657,240	1/\$894,548	138/\$1,155,149

Class A - Fatality; Permanent Total Disability; Property Damage \$1,000,000 or more  
 Class B - Permanent Partial Disability; Property Damage between \$200,000 and \$1,000,000  
 Class C - Lost Workday; Property Damage between \$10,000 and \$200,000



# The Fatigue Factor

By Staff Sgt. Michael L. Walter  
552d Air Control Wing Safety Office  
Tinker AFB, Okla.

**F**atigue due to sleep deprivation is a common health problem in today's society. In fact, a person's lifestyle and occupation may be seriously affected by this dangerous affliction. Doctors weary of treating patients after working long shifts often describe chronic fatigue as the worst part of their job. After extensive uninterrupted driving, truck drivers get into fatal wrecks because they have had insufficient sleep in the last 36 hours. What they don't realize is that working long hours without sufficient sleep hampers their ability to make quick and accurate decisions. On average, sleep-related accidents cost the government an

Staff Sgt. David Clark of the 604th Air Support Operations Squadron, Osan Air Base, catches some sleep when and where he can during the 1999 Tiger Challenge Exercise. DoD photo by Tech. Sgt. Lance Cheung, 51st Communications Squadron



estimated \$46 billion each year. Similarly, soldiers, sailors and airmen in wartime situations often say that after long nights without sleep they are not even able to carry out the most basic orders, or understand the simplest directives. These are just a few actual examples of the results of sleep deprivation.

Studies performed on the effects of sleep deprivation identified some astonishing results:

- \* increased distractibility
- \* poor reaction time
- \* sluggishness
- \* forgetfulness
- \* slow reasoning skills
- \* inadequate performance
- \* hunger
- \* high sensitivity to pain
- \* itchiness of the eyes
- \* double vision

The degree of these multiple effects depend on the physiology of the individual, but the overall effect is detrimental. Cases of sleep deprivation have even led to insanity and death. Alarming, over the course of the past century, Americans have reduced their average nightly sleep time by more than 20 percent!

It is no mere coincidence then that the majority of single-vehicle driving accidents usually occur near dawn. Biologically, our internal clocks are programmed to operate on a cycle, or rhythm, of about 24 hours (circa), or a day (dia) — hence the term “circadian rhythm.” In the past, circadian rhythms forced primitive man to retreat to the safety of caves by virtually shutting down their operating systems and putting them to sleep at night. Modern studies show that after 50 hours without sleep, the effects of sleep deprivation increase significantly and often result in severe hallucinations and paranoia.

For most people on daytime schedules, the effects of circadian rhythms work well; they're usually safely home in bed during the evening hours. But for people who travel across time zones or work the night shift, it can be another story. When people start the night shift after having kept a daytime schedule for several days, their circadian rhythms are out of sync with their new schedule. It may take several days or even weeks for their bodies to adjust to the new schedule.

Working at night means going against the body's natural tendencies. For most people, it's difficult to concentrate and maintain alertness



between midnight and 7 a.m., let alone sleep during the daylight hours. It usually takes several days to get accustomed to a shift change because circadian rhythms can only shift an hour or two per day when a person changes his or her sleep schedule. After three or four night shifts, a person still won't be completely adjusted to night work. However, circadian rhythms should adjust if the work/rest cycle remains constant, so it's somewhat easier to stay alert throughout the night.

How many times have you found yourself staring at a computer monitor, lulled by the quiet hum of the machine, barely able to keep your head from dropping onto the keyboard? An unintended episode of inattentiveness associated with events such as a blank stare, frequent head snapping, and prolonged eye closure is known as microsleep. Microsleep episodes are the result of sleep deprivation (or a boring boss), usually intrude in the midst of ongoing wakeful activity, and typically last between two and thirty seconds. Microsleeps are more likely to occur at certain times of day (e.g., pre-dawn hours, mid-afternoon), and early detection of them may prevent many serious accidents.

Microsleep is common among sleep-deprived people involved in monotonous situations such as staff meetings, briefings, etc. Most air traffic controllers, office workers, and motor vehicle operators experience these episodes at some point, often without being aware of the event. The insidious nature of these episodes creates a potentially dangerous situation. The tragic consequences of fatigue-induced microsleeps can be quite serious when you are monitoring a critical operation or are at the controls of an airplane or motor vehicle.

One potentially useful step to alleviate fatigue is as simple as scheduling physically demanding work at times when workers are at peak performance. Training, or at least an awareness program, should be provided for new shift

workers and their families. Various ways for coping with shift work, such as emphasizing a good night's sleep, establishing the sleep routine that works best for the worker, and looking at the combination of exercise, diet, and relaxation techniques for helping resist fatigue, should be considered. Bright lights may also be used to help the body's circadian rhythms adjust and alter the times of peak alertness. However, this strategy takes expert planning and may not be practical for some shift workers.

Still not convinced? People who get six or less hours of sleep a night have a 70-percent higher mortality rate. It's evident the human body can live longer without food than without sleep. Being overly tired can make it difficult to concentrate, increasing the possibility of error or job-related injury. Digestive problems, heart problems, and stresses from interference with family and social life also have been shown to be associated with shift work. While sleep deprivation is unlikely to kill you, it does bring home the point that sufficient sleep is important, and continuing to short-change yourself will take its toll on your health and performance.

Are you getting enough sleep? Rate your chances of dozing off in the following situations using the rating scale below:

3 - high chance of dozing off	
2 - moderate chance	
1 - slight chance	
0 - none or stay wide awake	
Sitting or reading	_____
Watching television	_____
Sitting in a public place (like a theater)	_____
Lying down for an afternoon rest	_____
Sitting or talking with someone	_____
Sitting down after lunch without alcohol	_____
Being driven in a car for more than an hour	_____
Sitting in a car stopped in traffic	_____

Score: If your total score is 0-5, you're getting enough rest. If your score is 6-12, you probably have a case of mild sleep deprivation. If you scored 13 or higher, you may have chronic sleep deprivation. ■



# A Dark & Scary Night

*Capt. Sowers, USAF, VAQ-134, Navy Expeditionary EA-6B Squadron*

**I**t was during the Cold War days, when the Berlin Wall wasn't for sale in gift shops and I had graduated from the F-4 Phantom to dropping bombs in the F-111E. We called it "Whispering Death," although the local residents didn't seem to think it whispered very much, which is why we rarely flew at nights. This made night squares hard to fill. When the Wing decided that we could only make one bomb run per range at night, it made night bomb squares even harder to fill. But Wang, my pilot and I had a plan to "lead by example" and fill all of our squares in one night.

Takeoff went smoothly, as did the flight over to the Isle of Man. The terrain-following radar (TFR — it's what we used in the pre-LANTIRN days) descent went fine. The aircraft pulled out of the dive at 1,700 feet, leveled off at a thousand feet, and we swung around the north tip of the Isle for Jurby Range. I had previously hand cranked the offset dial to show the proper range (in feet) and bearing (in 1/100s of degrees, or as best as I could see in the little window). This aided finding the target — a raft floating off the coast. We used to worry about finding targets in the pre-Global Positioning System (GPS) days. A few radio calls, a precision dropped radar bomb, a hit, a promise of a bottle of whiskey to the range control officer at Christmas, and we climbed out for our next night square.

We made another TFR descent over water as we prepared to enter the Highlands Restricted Area (HRA) in north Scotland. The only anomaly noted was as we leveled off at a thousand feet. The winds showed 110 knots from a direction perpendicular to the ridgelines. I tried to remember what the weather guy said at instrument school, but I'd been

daydreaming during meetings for a long time. "Could be turbulent," the pilot noted. I didn't worry. Pilots are stick actuators and, in a proper world, radio talkers. What do they know? We turned the corner and headed east over the first of those perpendicular ranges.

Moments after crossing at one thousand feet and 540 knots, the jet began "a-buckin' and a-snortin'." For those who don't speak Arkansasese, this means we were getting the snot beat out of us. "What the \*&#k are we doing?" Wang asked. "Night squares," I calmly replied. The shaking stopped as we started climbing over the next ridge. Moments later, the 80,000-pound F-111 went spastic again. It was kind of hard to see the radar, E-scope, and instruments. "What the \*%@k are we doing?" Wang

asked again. "Night squares," I repeated calmly. Well, there might have been a little stress. Night/ Instrument Meteorological Conditions (IMC) low levels weren't my favorite, particularly when we were being shaken like a martini. Still, squares were squares.

It smoothed out as we crossed the next ridge, but not for long. I think Wang said, "What the \*%!& are we doing?," but it was hard to tell because my noggin kept smacking against the canopy. "Maybe we should abort," Wang suggested. Or maybe he said, "We're aborting NOW!" It was kind of hard to tell. We had done at least 50 nautical miles of low-level, so I concurred. It was still hard to read the instruments, which explained why we had 80 degrees of bank when we hit smooth air. Of course, this is why we practice unusual attitude recoveries.

We over-flew the rest of the HRA and coordi-

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nated with London Mil for our drop at Tain Range. We did an abbreviated TFR descent, leveled off and turned to a rather short final. Of course, most finals look short on a 30 nautical mile scope. Oops. I quickly checked the offset. Oddly enough, the Jurby offset didn't work at Tain. Hmmm. It was going to take several minutes to hand crank the correct offset in. Of course, that is why we do range study. Now to armed indications. My switches looked good. Tain still looked small on the 30-mile scope. I clicked it down while shouting, "Arm it, Arm it!" Wang threw the Master Arm about the same time I reached 5-mile scope — which is to say, at the same time the bomb came off. "Thirty-four feet at three," the ranger called. Of course, that's why we say it's better to be lucky than good. I told Wang to follow my steering more closely the next time. He didn't know we had been on a 30-mile scope, and I saw no reason to tell him.

We climbed up and proceeded to our last night square — Wainfleet Range. The Wing had coordinated a new hold for use for night bombing. We arrived a little early and began our hold. Suddenly, we noticed lights very close to us in the hold. A few moments later it happened again.

"Umm, London Mil, Wang One — is anyone else waiting to get on to Wainfleet Range?"

"Roger, you're one of six Varks holding — and kindly tell your wing their hold point is located in rather busy airspace." Wang and I looked at each other for a moment.

"London Mil, Wang One — requesting vectors Heyford." Time to call it a night.

That Friday I held a flight meeting. Wang and I reviewed what happened and why. I pointed out that it was my responsibility as flight commander to see that folks were scheduled enough times at night to get their squares filled safely. If, as it happened, the Wing canceled night flying early, it was my job to take the heat. It was NOT the flyers' job to cram a load of squares into a single night sortie.

So what lessons from this fun-filled night still apply?

Priorities. Squares are a good thing to fill, but four IMC-TFR descents, three night/IMC radar bombs and one night/IMC low-level may have been too much for one sortie. Add in winds over 100 knots and new range patterns, and it probably was too much. Add in the fact that it was Wang's first IMC-TFR flight in the United Kingdom, and it was definitely too much. Filling squares isn't as important as coming home. The modern military spends a lot of time and hours patrolling the world. Training is hard to come by — but that's the job of generals and admirals. Our job is to train safely.

Turbulence. It isn't always a minor thing. Later that evening, another F-111 entered the HRA. They aborted when they could no longer see the instruments. When things smoothed out, they had 135 degrees of bank, 20 degrees nose low going back down through 5000 feet. They recovered, but some words of advice from us to London Mil might have prevented a possible

tragedy. "Being lucky rather than good" isn't the way to get old in aviation. Weather that can toss around an F-111's 80,000 pounds of manliness can also do a number on Prowlers — or anything else.

Pacing. We spent too much time thinking about what went wrong or right with the previous missions,

and not enough time preparing for the next one. You cannot change the past, but what you do in the present can change the future. The HRA wasn't going to be smooth regardless, but our bombing passes would have gone better if we had spent the medium altitude time preparing for the next event instead of rehashing the previous one. If something goes wrong, either put it behind you or...

Know when to quit. We had all the lessons we needed after aborting the HRA. When you've been rattled, either literally or figuratively, you don't need to jump immediately into another demanding event. If it was bad enough to interfere with your preparation for the next event, quit and fly another day. You've learned enough for one flight. ■





*Front and back cover DoD photos by Staff Sgt. Jim Varhegyi, 1st Combat Camera Squadron*