

# The Combat EDGE

August 1999

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# The Combat EDGE

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**Air Combat Command's Mishap Prevention Magazine**



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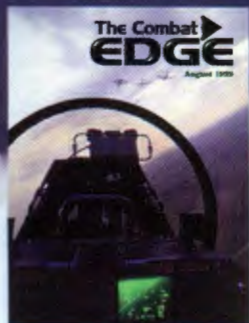
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### About the Cover:

Cockpit view from  
Capt Tim "Goose"  
Gosnell's F-16  
"Viper," assigned  
to the 78th Fighter  
Squadron at Shaw  
AFB SC, while  
flying in support of  
a USAF Heritage  
Flight at

Kissimmee, FL, April 7. Silhou-  
etted in the fore-  
ground from left to  
right are an F-16  
Fighting Falcon,  
flown by Maj Rich  
"Duck" Duckworth of  
the 9th Air Force  
East Coast Demon-  
stration Team from  
Shaw AFB SC, a  
P-51 Mustang  
named "Moonbeam  
McSwine," flown by  
Vlado Leneoch, and  
an F-86 Super  
Sabre, flown by  
CAPT Dale "Snort" Snodgrass,  
USN, Ret.



-Photo by Kelly.

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**[M]** Denotes images digitally manipulated.

# ACCent on Safety

This will likely be the last ACCent I write as I close out my tour of duty here at ACC Headquarters. Since late June of 1996, I have had the distinct honor and pleasure of serving you, the men and women of Air Combat Command and her gained reserve component units. Like most folks who have had the opportunity to author a recurring column, I am compelled to make this last effort as memorable a tome as my limited skills allow. So, without further ado....

It's about "Time." See, you can count time in a lot of ways. You can count minutes or hours, days, weeks, months, or even years. Whether measured by the passing of grains of sand in an hourglass or by the unvarying rhythmic pulses of an atomic clock, these are what most of us mean by the word, "Time." On the other hand, some cultures still keep track of time by counting the phases of the moon, or the turn of the seasons, or even by the migrations of certain animals. Indeed, you can even keep count of time by the rings that form during the growth of a tree.

But I am a safety officer, and I keep a much more grim account of time. For sure, the calendar says that I have been here for some 36 months. However, I count this time as 47 lives and 51 destroyed aircraft, all lost to aviation mishaps. I have ticked off my calendar marking the 51 additional deaths that have come through ground mishaps, on and off duty. On a purely pecuniary basis, the count of these misfortunes has exceeded \$2 billion. Yes, the tolling of this time has been, indeed, a heavy one. Lest you despair, don't get me wrong, for as terrible as this all sounds, these years have, in fact, been some of the best that our safety record has ever known.

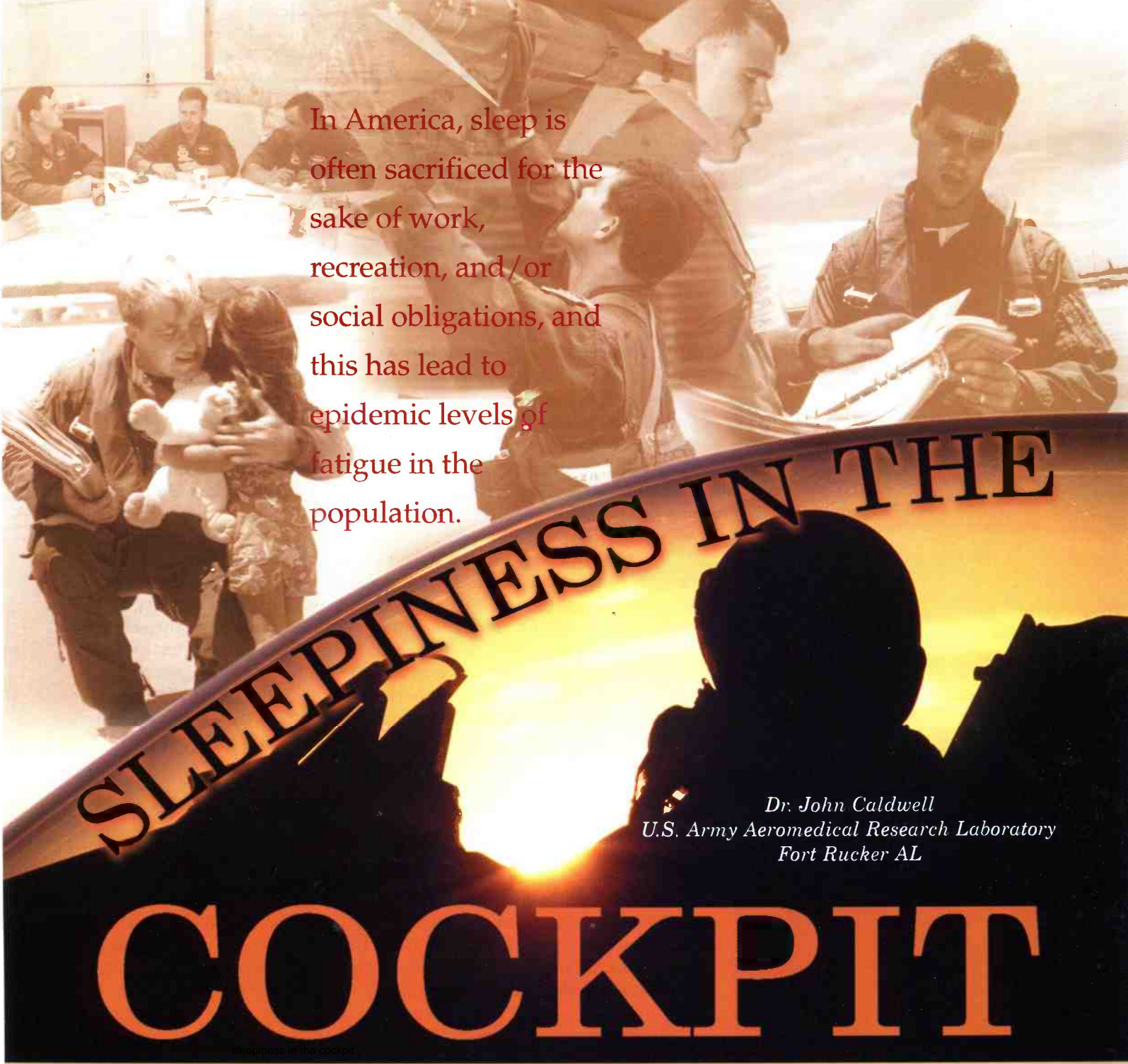
But my purpose in recounting these horrors has been to remind you that further progress in mishap prevention is needed. As the old saying goes about failing to learn the lessons of history, so too, can we be doomed to repeat the mistakes and tragedies of our past. If ever there was a "Work In Progress," then "Safety" ought to be it.

Best of luck to you, stay steady in the faith, and....

**KEEP SAFE!**

*Colonel Turk Marshall*  
Chief of Safety





In America, sleep is often sacrificed for the sake of work, recreation, and/or social obligations, and this has led to epidemic levels of fatigue in the population.

# SLEEPINESS IN THE COCKPIT

*Dr. John Caldwell  
U.S. Army Aeromedical Research Laboratory  
Fort Rucker AL*

## **Introduction**

Among the factors that affect aviation safety, the overall mental condition of the pilot is paramount. However, aviator fatigue resulting from lengthy work periods, irregular schedules, and inadequate sleep can compromise decision-making and other cognitive skills. Impairments in vigilance, judgment, and coordination can occur after only moderate amounts of sleep loss. In fact, restrict-

ing sleep to less than 6 hours per day produces noticeable deteriorations in performance (Belenky et al., 1994). Furthermore, remaining awake for prolonged periods can create difficulties in accomplishing even simple tasks. Just 17 hours of continuous wakefulness degrades aspects of performance to the same extent as a blood alcohol concentration (BAC) of 0.05% — the proscribed level of alcohol intoxication in many countries.

After 24 hours awake, performance is reduced to the level of what would be observed with a BAC of 0.10% (Dawson and Reid, 1997). Unfortunately, in situations where time-critical judgments are essential, these types of decrements, especially when they occur in the cockpit, may have disastrous consequences. In fact, many of the errors made by pilots are probably the direct result of fatigue-related inattentiveness and failures



to respond to critical information in flight (Dinges and Graeber, 1989).

Traffic safety research has demonstrated the effects of sleepiness on the well-practiced behavior of driving by determining that 52 percent of the 1984-1986 crashes on the Pennsylvania Turnpike and 35 percent of the 1995 traffic fatalities on the New York State Thruway have been associated with driver sleepiness (Graham, 1996). In addition, 31 percent of the heavy truck crashes fatal to the driver were attributed to fatigue. It is reasonable to assume that these types of findings are applicable not only to automobile and truck drivers, but to aviation personnel as well.

Dinges (1990) cautions that the performance of drowsy pilots becomes less consistent, especially during the night hours. Sleepy pilots often fail to respond appropriately to cockpit demands, and they are at serious risk for missing task-related details because of an increase in unpredictable and involuntary sleep lapses. Problem solving, reasoning, and control accuracy degrade. Overall, the aviator's ability to pay attention to flight instruments and to manage radio communications, crew coordination, and navigational tasks is severely impaired. Caldwell (1998) and Perry (1974) point out that sleep-deprived aviators tend to unconsciously accept lower standards of performance and lose their ability to integrate information. They may suffer from "tunnel vision" which leads to a general loss of situational awareness. In addition, overly tired pilots tend to become inactive in an effort to conserve energy, and this, combined with the loss of their ability to effectively divide mental resources among different tasks, may lead them to simply sit and stare off into space (Dinges, 1990). Once fatigue has reached severe levels, perceptual illusions may even occur. In some cases, very tired individuals see lights that aren't actually there or suffer from other types of hallucinations. Thus, improperly managed fatigue can spell disaster for aviators (as well

as automobile and truck drivers or anyone else) who must remain alert, make complex judgments, and respond quickly. Fortunately, the best strategy for minimizing fatigue is simply to ensure that adequate restorative sleep is a daily priority. However, it may be difficult to gain enough sleep because of excessive time demands and/or poor sleep habits.

### **The Problem of Sleepiness in American Society**

In America, sleep is often sacrificed for the sake of work, recreation, and/or social obligations, and this has led to epidemic levels of fatigue in the population. DataStat (1998) found that on average, adults are sleeping less than 7 hours a night (even though 8 hours are recommended). As a result, one-third of the respondents to a recent survey reported they were significantly sleepy during the day, and 6 percent indicated they were severely sleepy (Gallup Organization, 1997).

Much of the U.S. workforce experiences difficulties initiating or maintaining nightly sleep, and this leads to impaired concentration and problem solving, poor interpersonal relationships, and less-than-optimal performance (Lou Harris and Associates, 1997). The majority of those who are most seriously affected report sleeping only 6.4 hours per night, but half say they sleep only 6 hours or less. Although these statistics are based on a sample of the general workforce, there is every reason to believe that they apply to aviation personnel as well. Considering sleepiness costs an estimated 18 billion dollars per year in lost productivity, is associated with an untold number of accidents and deaths, and is thought to be responsible for disastrous or near-disastrous industrial accidents such as the nuclear melt down at Chernobyl, impairments in on-the-job alertness is a major societal concern. Drowsiness on the highways alone is responsible for about 200,000 accidents and 1,500 fatalities in the U.S. each year (Graham, 1996).

### **Sleepiness in the Cockpit**

Excessive on-the-job sleepiness in aviation is likely a large (but under-reported) problem. In this author's opinion, a substantial percentage of aviation mishaps, which are broadly attributed to "pilot error," are probably directly related to fatigue and sleepiness in the cockpit (Billings and Reynard, 1984). However, since aviators are reluctant to admit they were dozing while on the controls (especially if an accident results), and since there is no Breathalyzer® for fatigue, the true extent of the problem is unknown. What is known is that on-the-job sleepiness is becoming more common throughout society, and aviators are just as likely as anyone else to suffer from its ill effects.

In the past few years, great strides have been made toward educating pilots and others about the dangers of impaired alertness on the job; however, despite increasing awareness, individual aviators and their leaders often underestimate the impact of fatigue on performance, or they assume that training or experience will serve as an effective countermeasure. However, as Dinges (1991) points out, even the most highly-skilled and motivated individuals are not immune to the biological limits imposed by fatigue, and reliance on "high time" aviators offers no safeguard against the insidious threats posed by sleepiness in the aviation environment. In addition, the impact of fatigue cannot be overcome by monetary or other incentives. Also, while individual pilots often are relied upon to remove themselves from flying when they have become overly tired, it is a fact that fatigued individuals are among the poorest judges of their own levels of impairment because the accuracy of self-judgments suffers along with performance.

In light of these facts, managers, safety officers, and aviators are well advised to familiarize themselves with the causes of impaired alertness and countermeasures that can keep chronic fatigue from becoming a problem. Sufficient knowledge will make it easier to predict dangerous situations related to on-the-job sleepiness,



recognize warning signs of excessive fatigue in aviation personnel, and take action to prevent fatigue-related hazards in the air.

### **Causes of Excessive Daytime Sleepiness**

The causes of serious on-the-job sleepiness are numerous; but due to size limitations imposed upon the narrative of this article, I will only discuss three of the major categories: (1) long work hours (especially those under stressful conditions), (2) rotating work shifts (particularly those conducted at night); and (3) intentional sleep restriction. The first two categories often cannot be avoided because of the demands of the job, but the third one usually is amenable to individual control.

#### **Long Work Hours**

In commercial aviation, long work hours have become a fact of life due to economic competition that requires air carriers to staff their routes with the fewest possible pilots.

In the military, long work shifts are required because budget constraints have drastically reduced the number of aviators available to fly all types of missions. For example, during the past 10 years, Army personnel have been cut by 35 percent while the missions have increased 300 percent (Department of the Army, 1996). Moreover, the operations tempo imposed on the other military services (i.e., Air Force, Navy, and Marines) have also increased while manning to support the missions have been reduced. Thus, long work hours are almost unavoidable. In addition, rapidly rotating day/night mission schedules are common because of the tactical function around-the-clock operations afford. Requiring the enemy to defend their positions 24 hours per day allows little time for the restoration of their personnel, and this produces demoralization and ineffectiveness which gives friendly forces the combat edge.

Thus, both civilian and military pilots have to meet rising job demands which often conflict with individual requirements for rest and recupera-

tion. Unfortunately, in situations where the job itself makes sufficient rest nearly impossible, the best strategy often consists of little more than learning to cope with the impact of fatigue until time off can be scheduled. However, in situations where sleepiness results from nonwork-related factors, more effective countermeasures are available. Intentional sleep loss and poor sleep hygiene are not a consequence of external job pressures; and because of this, they can be brought under individual control. Although work demands often may lead to excessive fatigue, a great deal of individual sleepiness can be avoided simply by properly planning and prioritizing work, recreation, sleep needs, and by attending to factors that promote restful sleep.

### **Rotating Work Shifts**

Likewise, rotating work schedules are commonplace because 24-hour-per-day operations are essential to meeting customer demands in a timely fashion. Next-day or overnight deliveries of information, supplies, equipment, and/or repair parts has become an economic necessity in many sectors, and air transport is a key component in maintaining this "just in time" delivery system.

Rotating work shifts disrupt an individual's circadian rhythm (i.e., a person's daily rhythmic activity cycle based on 24-hour intervals). This is also true if travel across time zones is involved (Krueger, 1991). Pilots in these situations can expect to suffer from shortened or disrupted sleep because they are attempting to sleep at times out of phase with internal biological rhythms or external environmental cues. When the body's normal schedule is disrupted, internal desynchronization occurs. This results in reduced energy and motivation, impaired sleep, degraded performance, and gastrointestinal discomfort.

Although circadian disruptions often are unavoidable because of work requirements, the effects can be minimized by managing activity levels, meal times, and bright light exposure. Aviators who transition

to a new time zone or work schedule for only brief periods should not attempt to readjust their circadian rhythms to the local time, but instead should remain on their original meal and activity/rest schedules as much as possible. They can take advantage of naturally-occurring periods of sleepiness (coinciding with their usual sleep schedule from their origination time zone) to gain short periods of sleep as needed.

A pilot making only a single night flight should adhere to the normal activity schedule prior to the night except that an afternoon or evening nap should be added (Caldwell and Caldwell, 1998). When the flight is complete, he/she should remain awake for the rest of the day (except for a short nap if necessary) until the normal evening bedtime. Bedtime can be advanced slightly to compensate for the sleep deprivation, but an effort should be made to remain awake until the usual time. Circadian rhythms adjust rather slowly (about 1.0-1.5 hours per day) so there is little to gain by attempting to completely resynchronize to a new work/rest schedule when it is only temporary.

Aviators who travel to a new time zone or transition to a new work shift and remain on the new schedule for a week or more, should rapidly adjust meal, activity, sleep, and wake-up times to normal intervals for the new work/rest periods, and rigidly adhere to this new schedule even on weekends and days off (Comperatore and Krueger, 1990). In addition, sunlight exposure should be carefully managed to promote circadian resynchronization. Generally speaking, persons transitioning from the day shift to the night shift should, if possible, minimize or avoid bright light in the morning between leaving from work and going to bed. This will prevent reinforcing the normal circadian rhythms (which increase alertness after sunrise), allowing sleep to occur later and later each day until the sleepest time changes from its usual 2200 to as late as 0800 hours (or even later).



## Intentional Sleep Restriction

Intentional sleep restriction is a controllable cause of daytime sleepiness that occurs because sleep is considered an option rather than a requirement. Over the past century, American society has reduced the average amount of sleep by 20 percent while adding a month to the annual working and commuting time (The National Sleep Foundation, 1995). Recent studies suggest that one-third of young adults restrict their sleep to less than 6.5 hours on week nights and later try to make up this sleep debt on the weekend (Bennett and Rand, 1995).

Reasons for intentional sleep restriction include family responsibilities, social pressures, perceived work requirements, and the desire to participate in recreational activities. Pilots on reverse cycle and other crew members working nights are especially tempted to sacrifice daytime sleep for the sake of spending time with family members and friends. Those who are very career-minded may feel that it is necessary to lose sleep in order to be successful. In fact, 26 percent of respondents to a recent survey (Lou Harris and Associates, 1997) felt it was impossible to be successful in a career and to obtain sufficient sleep. However, consistent self-imposed sleep deprivation is counterproductive because of the impairments in mood, alertness, and performance that result.

Aviators should carefully evaluate whether or not they are taking adequate advantage of their opportunities to sleep. Indicators of insufficient sleep include: difficulties awakening without the aid of an alarm clock; repeatedly pressing the snooze button when the alarm sounds; feeling that a nap during the day is necessary to alleviate sleepiness; consistently looking forward to weekends or other times for the purpose of "catching up on sleep;" and frequently experiencing an inability to stay awake in meetings, while watching television, or during other sedentary activities. Pilots who show any of these symptoms probably are not sleeping well enough or long enough while off duty, and this may place them at great risk in the cockpit. They should gradually lengthen their normal sleep schedules (trying each new schedule for at least a week) until they discover the amount that makes them feel alert and rested during the day.

## Conclusions

Excessive sleepiness is a serious threat to aviation safety and efficiency. Research has proven that insufficient sleep is not only costly, but dangerous as well. Although drowsiness in the cockpit can result from unavoidable work-related factors, many of the most common causes are subject to individual control. Impaired alertness attributable to intentional daily sleep restriction; stress, discomfort, and circadian disruptions; and poor personal sleep habits can be minimized once the causes and effects are recognized and understood. Problems that can be resolved with behavioral interventions should not affect flight status, but will promote air safety, on-the-job effectiveness, stress tolerance, and personal well being. ■

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# A NEAR MISS!

Author Unknown



**M**ost of us who mow grass have probably had “a near miss” with the lawn mower at one time or another. It may have been just a little slip or loss of balance that reminded us to stay on our toes. As the below photo indicates, just such an incident happened re-



cently to one of our airmen. The combination of using the mower on a hill while the grass was damp resulted in a little slip, and suddenly... his foot was under the mower. Thankfully, he was wearing the proper equipment... or his foot would have been made a little shorter that day.

When mowing grass on a slope, you can protect yourself by recognizing the hazards and wearing the right gear. If you're required to mow grass or use a grass trimmer at work, your supervisor has the responsibility of providing you with safe lawn equipment and protective gear. However,

even though you may have all of the proper protective equipment in your possession, the manner in which you use each individual apparatus is key. Therefore, the majority of the safety responsibility still falls on you — the individual user.

Your proactive participation in the implementation of smart risk management practices when using lawn mowing systems is key to safe, secure operations and has real tangible benefits. For example, by following the simple suggestions below, you'll help ensure your personal safety; and as the photo depicts... the use of all your fingers and toes! These guidelines are simple, easy to follow, and are based on common sense.

## Safe Lawn Mowing Practices

- Conduct a pre-season safety inspection on all your lawn equipment.
- Wear safety toe shoes or metal toe guards.
- Wear hearing protection.
- Adjust the mower blade cutting height before you begin mowing — with the motor off.
- Clear loose objects off the lawn before you start mowing the lawn, such as sticks, rocks, trash, wire, toys, etc.
- Ensure any children in the area are a safe distance away from all lawn cutting activities (indoors is best).

- Because of the increased risk of slipping on a watery surface, always wait until a wet lawn dries before mowing it.

- Always mow across a hill or slope, not up and down. It's easier this way and makes it less likely for you to slip and fall down.

- Be on guard for fixed obstacles, such as tree stumps and sprinkler heads when mowing a lawn.

- Never use your hand to clear grass from around the blade or from the chute. Always turn off the mower to perform this task, and even then... use a stick to clear out the grass, not your hand.

- If you must reach under the mower for any reason, first turn it off and disconnect the spark plug.

- Goggles must always be worn to protect your eyes while using grass/weed or hedge trimmers.

- Goggles should also be worn while using a lawn mower, especially if the ground has rocks, small pebbles, or other debris in it.

Eliminating, reducing, or controlling risk is key to preventing mishaps. Risk management applies to everything we do (both on and off duty), including the safe operation of lawn and garden equipment. To avoid losing fingers or toes, take these guidelines to heart and mow your lawn with safety in mind, not just depending on luck. As stated by R. E. Shay, “Depend on the rabbit's foot if you will, but remember it didn't work for the rabbit.” ■



# Almost A Mishap

SMSGT Bart A. Ivy, ACC/IGIL-B, Langley AFB VA

**D**uring a recent Operational Readiness Inspection (ORI), I pulled up beside a line delivery driver as he was chocking his trailers and diving for cover during an Alarm Black. While I was admiring his sense of urgency, I passed by the trailers giving them the once over when I noticed a cluster of BDU-33 practice bombs hanging over the front edge of a trailer. The accompanying picture shows how close the BDU-33s were to falling through the 2x4 wood frame. The wood frame had no supporting bottom panel structure attached to it. In fact, the only thing that kept the BDU-33s in place was the striker on the tip of each bomb that became tightly wedged against the wood frame as it tilted downward. Now... for the big question... "How did this happen?"

• **Method of transportation:** BDU-33s were being transported on the trailer deck with a 2x4 frame to prevent them from sliding around. (Note: This method of delivery is only used during an ORI/ORE.)

• **Method of tie-down:** A tie-down strap was placed across the frame at an angle. Once the trailer brakes were applied, the 150 pounds of BDUs slid forward with nothing to prevent their forward movement.

For as long as I can remember (and that's over 21 years), we've been delivering BDU-33s (as well as MK82s and BDU-50s) to the flight line during operational exercises. In fact, the last time I delivered BDU-33s to the flight line, they were in a box with a bottom and dividers and then loaded onto the back of the trailers. Nevertheless, this occurred at one base a long time ago; and every base does it a little different. Moreover, the only reason we did it that way was because

of the Inspector General (IG) regulations. I'm ashamed to say it is still there: Paragraph 3.5.4.2 of ACC Supplement 1 to AFI 90-201, "Inspector General Activities," states: "BDU-33/48s will be transported on the trailer with the half load of training/inert bombs." (Note: In order to eliminate the possibility of a mishap in the future resulting from this type of transport method, this statement will be removed in the next update to Air Combat Command's supplement to AFI 90-201.)

Is there a better and safer way to deliver BDU-33s to the line during operational exercises? Yes, there certainly is — use a doghouse (i.e., a



transport module out of the Munitions Maintenance Handling Equipment [MMHE] booklet) to deliver BDU-33s to the aircraft before or after the delivery of bombs for the half-up/half-down. The delivery of BDU-33s is not part of the evaluated exercise; therefore, you are authorized to use a non-player vehicle, trailer, and crew to make this delivery.

## Safety Lesson Learned

There is a lesson to be learned here. Built munitions must be delivered according to an approved method. Technical Order (T.O.) 11-1-38, "Positioning and Tie-Down Pro-

cedures for Non-Nuclear Munitions," does not provide a delivery method for BDU-33s, nor does T.O. 11A3-3-7, "BDU-33 Series Practice Bombs, MK106 MOD 1 Practice Bombs, BDU-48/B Practice Bombs, Signal Cartridge MK-4 MOD 3, and Spotting Charge CXU-3A/B." Since there is no guidance in current technical orders that covers the delivery of built BDU-33s, local procedures must be developed IAW AFMAN 91-201 "Explosive Safety Standards." In this case, a locally manufactured device was used to secure them to the trailer. Since this box is not listed in the MMHE handbook, it required approval before use. ACCI 21-201, "Non-Nuclear Munitions," paragraph 1.5.8 states: "The use of unauthorized munitions locally manufactured equipment (LME) is prohibited... Unit request for LME not listed in pamphlet must be coordinated through the local Quality Assurance and Safety offices prior to forwarding to MAJCOM. MAJCOM approvals are valid for 2 years as long as no changes are made to equipment designs." Using unapproved LME is a widespread problem. I have seen and written up a lot of units who are using locally manufactured equipment to deliver chaff, flares, 2.75 rockets, and BDU-33s without evaluation or approval. Unit weapon safety offices need to place special interest in this area during their unit inspections.

## What's the Bottom Line?

In the munitions community, we cannot continue to perform tasks a certain way only because that is the way we have done it in the past. We must constantly reevaluate what we do each day to determine if there is a safer and more efficient way of doing business. ■





# Think First, Then Act

*TSgt Luis Ayala, 372 TRS, Det 15, Kadena AB, Japan*

**Q**uick disconnect pins (or safety pins as some call them) are used to prevent two parts or items from separating. These pins are used in some applications where rapid removal and replacement of equipment is necessary. In addition, they are often used on aircraft equipment by support personnel to make it safer and easier to reach those hard to get places on a jet. Take, for example, the B-5 stand that is used during aircraft maintenance. The stand can reach a height of 7 to 12 feet. Without the use of safety pins, the stand can come crashing down and cause possible personnel injury... or even death.

Various sizes and types of quick-disconnect pins can be used on different types of equipment. The assortment of pins includes the T-handle type, button head type, L-handle type, and ring type pins. As

an example, the B-1, B-2, and B-4 maintenance stands use L-handle pins to prevent lowering of platforms while in use. (Note: Some stands can reach a height of 20 feet. Without the use of safety pins, working at this level of height can be very dangerous!) Other equipment like the 3000, 3110, and 4000 series trailers for maintaining and transporting engines are just a few other areas where pins are used to support and facilitate maintenance. These type of pins are also used in the tearing down and building up of jet engines.

For almost 18 years in the military, I've worked in various jet engine maintenance fields. Whether it was backshop, small gas, non-powered age, test cell, flight line, or phase maintenance, I've seen a lot happen in these areas as a jet engine mechanic; and I would like to share a few true to life experiences with you.

## **The Pin Won't Come Out!**

I was stationed at Clark Air Base in the Philippines several years ago and was working on J85 engines in the backshop. My supervisor and I were called out to work on an F-5 jet that was in the phase hangar. We were going to do some minor maintenance before the engine was to be installed into the aircraft. Across from us was another jet and two maintainers installing an engine. The mechanic was moving the engine from the transfer gear to the installation gear. However, he was having trouble with one of the forward mount quick disconnect pins on the transfer gear. So he pulled and tugged the pin — but to no avail. Not realizing why the pin was being so difficult to remove, he went to his toolbox, retrieved a ballpeen hammer, and commenced hitting the pin to knock it out. To his surprise (and everyone else's as well), as soon as the pin was



knocked out, the engine quickly tilted forward like a seesaw and the tail pipe went upward crashing into the support equipment. Needless to say, the incident resulted in aircraft downtime; and disciplinary action also took place. Why didn't the mechanic first take the time to observe why the pin was so difficult to remove? Could just reading the technical order have prevented the incident? Maybe the jet engine mechanic could have lowered or raised the stand in order to facilitate the removal of the pin. What's the lesson to be learned here? Well, when he first pulled at the pin and it wouldn't come out, he should have realized that something was wrong. The necessity of using a ballpeen hammer to knock out a safety pin ought to tell you that the pin may be holding up a part of the engine's weight. Nevertheless, the lesson learned here is "think first, then act."

Here's another example of a pin that wouldn't easily come out. In RAF Bentwaters, England, a mechanic took a hammer to remove a quick disconnect pin; and as soon as it was removed, the engine came crashing down... barely missing another individual that was working on the bottom side of the engine. (Note: It was just seconds prior to the incident that the individual had moved away from the engine. He is very fortunate that he didn't get hurt. When supervisors say, "Make sure you know who's working in and around your area," you better follow their advice. It's the right thing to do.) You should never try to remove a safety/quick disconnect pin by hitting it with a hammer; it may be supporting a very heavy load. Using a hammer on a safety pin will not only damage the locking mechanism of the pin, it will also damage the surrounding equipment. Even worse than that, personnel injury could occur by such a careless maintenance practice as this. Remember that if the pin is extremely difficult to remove, "think first" about the fact that it might be hold-

ing up the weight of a heavy object, "then act."

### **The Pin Won't Stay In!**

There was another incident where a mechanic was rolling an engine onto a 3000 transportation trailer and installed the quick release pins to hold both trailers together. However, since the pin was too small, it wouldn't stay in, it vibrated out, and the trailer was left with a gap between the rails. Once the engine went across the two rails, it came to a screeching halt. The only thing the engine was being supported by was the edge of the mount rollers. Needless to say, it was a tense situation. To recover, the maintainers had to lift the engine and roll it back so they could get the right size pin installed onto the trailer. After that occurrence, the workers made it a point to ensure they always had the right size pin before doing the job. They were training themselves to "think first, then act."

### **The Pin Wasn't Put Back In!**

When I was working on the flight line several years ago, I saw a maintenance troop using a B-4 stand. He removed the safety pin and then lowered the stand to a different level. After doing so, he forgot to install the pin back into the stand. Not even thinking about whether or not the pin was missing, the stand later came crashing down on his toes that were sticking out too far on the steps. (As a side note, a good thing to remember is that steel toe shoes don't always protect your feet if the impact is beyond the protective covering in your boots!) The incident could have been avoided if he had adhered to the following rule: "think first, then act."

### **The Locking Balls Weren't Protruding Out!**

Not too long ago, I was helping a young troop install several quick disconnect pins on an engine maintenance adapter. The engine was being built up, and some of the adapters had different size pins at-

tached to them. The mechanic installed all the pins and said the engine needed to be moved forward. Practicing what I had been preaching to the younger troops, I walked around the engine. I noticed the locking balls on one of the previously installed pins was not protruding out from the support equipment, making it unsafe for the engine to be moved. After observing this, we immediately took action to ensure the locking balls protruded from their opening... thereby preventing the pin from possibly backing out of its full install position.

### **So What's the Answer?**

What could have been done to preclude all of these incidents from happening? Answer... Training! Training! Training! Sufficient training time is necessary for all good maintenance practices. Show your troops the proper installation procedure, and provide them with a scenario of what could happen if a safety pin is not properly installed. This sort of training can be an eye opener for younger troops who may have never experienced a mishap involving improper use of safety pins.

These are just a few incidents that can occur when safety pins are not taken seriously. When I'm with my fellow mechanics, I make every attempt to show them what they need to know in the proper use of safety pins. In summary, make sure your crew has the right size pin, that the locking balls properly protrude from their opening, and that you don't use a hammer to knock out a safety pin that is difficult to remove (the pin may be supporting a heavy load). These are simple guidelines in the use of quick disconnect pins, but practicing them will help prevent an unnecessary mishap from occurring. Therefore, the next time your safety pin won't come out, won't stay in, wasn't put back in after being removed, or the locking balls aren't properly sticking out, "think first, then act." ■



# Death by Accident



**A**s a traditional guardsman, I am our unit's Safety NCO. I am also a professional firefighter and serve as the Safety Officer for the San Diego City Fire Department. In my 23 years in the Fire Service, I have responded to thousands of traffic accidents — some minor and some very deadly. Each accident had its own story — some almost humorous and some very tragic.

Most people don't get to witness up close the destruction that results from a traffic accident. Flesh is torn, organs get exposed, limbs are bent and twisted into horrible configurations... or worse, they are ripped from the body. Blood is everywhere. It's mixed with clothing, broken glass, and personal belongings. It runs onto the ground taking life and all of its hopes and dreams with it. Vehicles also become crematoriums; this is es-

pecially gruesome. Also, there is a stench at accidents that is not easily shaken. It is a mix of gasoline, oil, smoke, blood, and very often... alcohol.

Extrication equipment is loud, and the great efforts taken to protect the victim is never enough. As the metal and material is pulled from the victim, the agony is unbearable. The screams and the moans reverberate in your ears. The sadness is over-



whelming as loved ones watch death approach and carry away the future.

Several excellent articles have been published that describe what individuals did that resulted in an accident or a near miss. The lessons to be learned are many. The disheartening fact is that for many people, until it happens to them, the safety lessons are seldom ever learned. My experience as a firefighter has taught me that as human beings, time diminishes tragedies in our memories; and we often forget our lessons learned.

In wildland firefighting, we have a safety mechanism that alerts us to the dangers of this type of response. It is "18 Situations that Shout Watch Out!" These situations identify common causes that resulted in firefighters dying in wildland fires. Over the years, I have likewise observed common elements that lead to traffic accidents. The following is my list of:

### **"17 Driving Situations that Shout Watch Out!"**

1. You are driving a vehicle while under the influence of alcohol or drugs.
2. You are driving a vehicle while fatigued.
3. You are driving a vehicle while angry (i.e., road rage).
4. You are driving a vehicle in excess of safe or posted speed limits.
5. You are driving a vehicle that has not been properly maintained (i.e., brakes, tires, wheel alignment, shock absorbers, fluids, lights, turn signals, etc.).
6. You do not come to a complete stop at a stop sign.
7. You are not driving defensively.
8. You accelerate through a yellow light at a controlled intersection when you had ample time to stop.
9. You are driving in areas that you are not familiar with.
10. You are driving a vehicle without using the safety restraint systems.
11. You are distracted by activity in the car (i.e., kids, radio, etc.).
12. You are engaged in activities that take your attention away from driving (i.e., cell phone, putting makeup on, shaving, eating, reading the paper, etc.).
13. You are following too close to the vehicle in front of you.
14. You are attempting to overtake and pass another vehicle while your forward vision is limited.
15. You are driving a vehicle you are not familiar with.
16. You are driving in inclement weather.
17. You are driving a vehicle while towing another car, a boat, or trailer.

Vehicle accidents are preventable. We take our vehicles for granted and fail to remember that they are deadly weapons. A good thing to remember is that the barrel gets pointed at us each time we enter a roadway. The key is to maintain a cautious respect for the capability of a vehicle to destroy the important things in our lives. When driving, always stay alert for the actions of others. Look ahead of the traffic, and be ready on a moment's notice to pick an escape route should something happen in front of you. Maintain proper separation from vehicles around you. Stay watchful, drive defensively, don't speed (i.e., slow down), and look, look, and look again.

Vehicle accidents rob us of our quality of life. They can result in a loss of income, loss of a career, loss of our homes, and our belongings. Moreover, while the pain associated with recovery from injury may pass, the pain associated with the loss of a loved one will not.

Keep in mind that the typical automobile accident scenes I described earlier in this article are not fantasy. I see them time and time again. These types of mishaps happen all too often and there are never any winners. For example, imagine yourself trapped in a vehicle where metal has to be pulled from your broken body to free you. Imagine the agony you would feel as your twisted legs are straightened so that you can be placed in the ambulance. Imagine your fear as you see your child's hair embedded in the windshield and his/her lifeless body lying on the seat. Imagine your guilt when you realize that you were traveling too fast, too close, and not being alert for the actions of other drivers. Imagine the fear and shock that will grip you when you sober up and realize that you were responsible for killing a family, a friend, or a child.

So what's my bottom line? Well, it's simply this: When it comes to driving, consider the risks... but also consider the consequences. If you don't, you're bound to face "death by accident." ■



# The Core of the Matter

We all stand numb,  
yet feel the pain.  
Survivors and family  
members wrestle with  
painful questions in a  
way no classroom  
discussion can.

*Chaplain Thomas P. Azar, 10 ABW/HC, USAFA CO*





**T**he unexpected murders of young people at Columbine High School in Littleton, Colorado, have taken a deep bite out of the heart of America. We all stand numb, yet feel the pain. Survivors and family members wrestle with painful questions in a way no classroom discussion can. The recent high school massacres have psychologists, pastors, and other professionals engaging with teens and their families. School boards, youth programs, and parent's groups have joined in the crusade to end lethal teen violence. Many now realize that there is a desperate need to make our children's schools a safe haven in this sometimes-heartless world.

Why did this happen? There is no easy explanation for the Columbine killings. Debate continues as to whether it was lack of parental involvement in the lives of their children or if the violence exhibited in today's morbid computer games, movies, television, or music that emphasize anger, murder, suicide, death, and drugs are to blame.

Hopefully, no such behavior would ever take place at the Air Force Academy or any other Air Force training institution or organization, but one needs to be watchful and alert anyway. In fact, every Air Force member needs to turn on his or her "radar" and watch for signals that produce behaviors contrary to our Air Force core values. Our core values are there for us to live by and cherish. They should inspire us to do our very best at all times and should serve as a common bond among all comrades in arms. Air Force Chief of Staff General Michael E. Ryan said, "Our core values — Integrity First, Service Before Self, and Excellence in All We Do, set the common standard for conduct across the Air Force. These values inspire trust and an unbreakable bond that unifies the force. We must practice them ourselves and expect no less from those with whom we serve."

Core values must continue to remain a major topic in our Air Force educational and training program — from accession schools (such as basic military training, OTS, ROTC, and USAFA), professional military education schools (such as the Senior NCO Academy and Air War College), to every training course taught in every Air Force organization. As our personnel rise in their professional training and education to assume higher levels of leadership responsibility, they must live according to our Air Force core values.

I raised my hand to take the oath because I believe in our Air Force core values. When our military family encourages and enforces these positive values, it benefits all of us, as well as those in the civilian sector who look for us to be the pioneers of higher standard of values. Consider the following question: Will our Air Force bases and educational institutions continue to be safe havens for our people, or will they degenerate to the point one day where they will manifest a wave of mass murders such as are being witnessed in America's schools today? In reality, the answer to this question is up to each and every one of us as part of our Air Force family. In order to help keep our Air Force installations safe and deter any possible rise of violence in the future, it is up to each of us to extend our area of responsibility to include "Integrity First, Service Before Self, and Excellence in All We Do." Adhering to these core values will allow us to transform a potentially dangerous climate of anger and violence like that which was demonstrated at Columbine High School into an environment of safe, ethical commitment with respect for others and human life.

Without these core values, we will fail; with them, we will succeed. Moreover, as guardians of our nation's freedom, our failure to maintain these Air Force core values will

destroy the trust of the American public — the very people living under the Constitution we swore to support and defend. You ask, "Why do we have our Air Force core values?" My answer, "Because they are the foundation of our Air Force and make the Air Force the elite service that it is today... where professionals refrain from senseless anger and act in the certain knowledge that all persons possess a fundamental worth as human beings." After all, that's the core of the matter, isn't it? ■

*Integrity First — is a willingness to do what is right even when no one is looking and is characterized by courage, honesty, responsibility, accountability, openness, self-respect, and humility.*

*Service Before Self — tells us that professional duties take precedence over personal desires and is manifested through following rules and respect for others. More specifically, this core value requires the control of one's anger and religious toleration.*

*Excellence in All We Do — directs us to develop a sustained passion for continuous improvement and innovation that will propel the Air Force into a long-term, upward spiral of accomplishment and performance. Personal/community excellence and mutual respect characterize it.*



### **Statistics (Specifications for the F-105D model)**

**Wingspan:** 34 ft 11 in

**Length:** 64 ft 5 in

**Height:** 19 ft 8 in

**Weight:** 52,838 lbs max

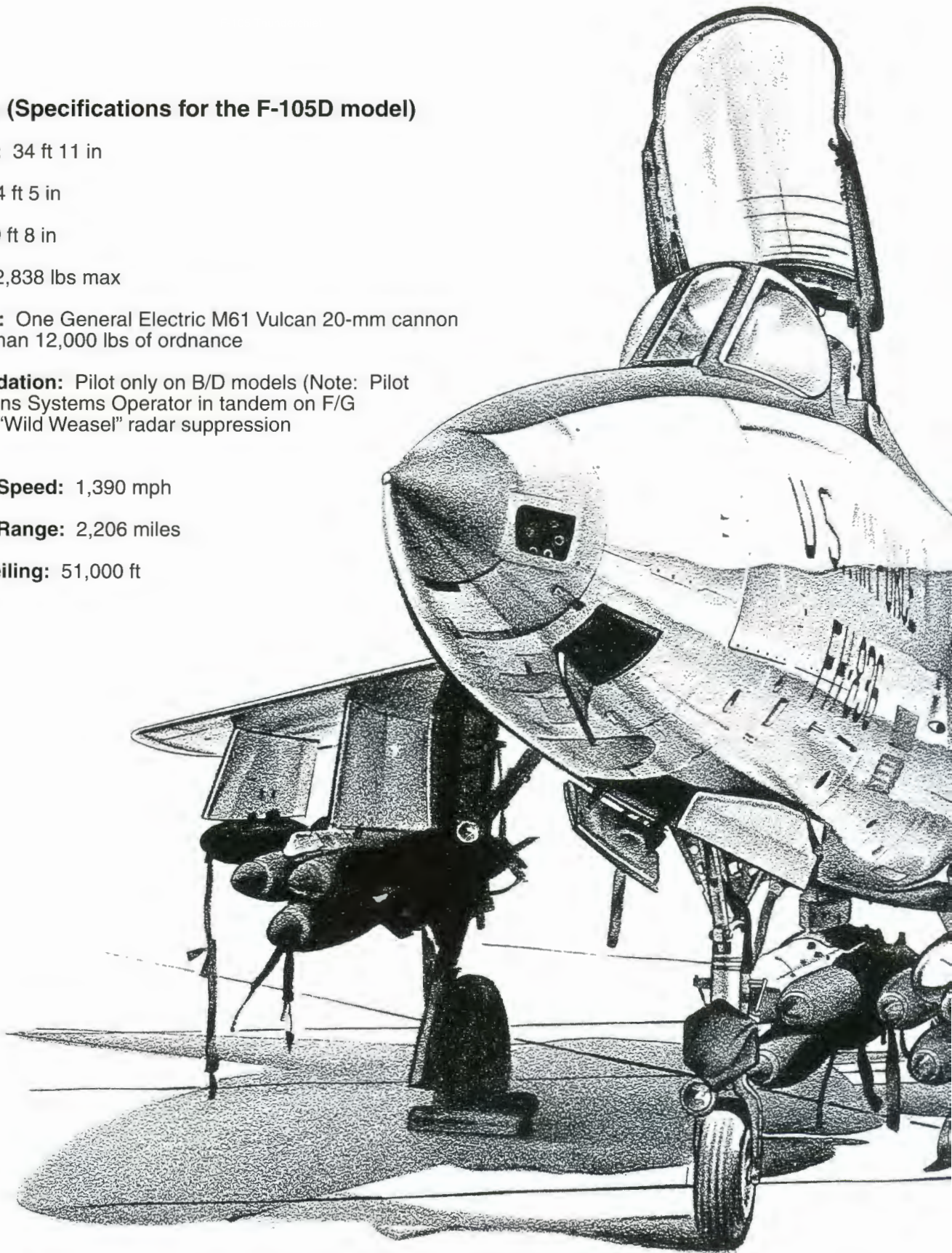
**Armament:** One General Electric M61 Vulcan 20-mm cannon and more than 12,000 lbs of ordnance

**Accommodation:** Pilot only on B/D models (Note: Pilot and Weapons Systems Operator in tandem on F/G models for "Wild Weasel" radar suppression mission)

**Maximum Speed:** 1,390 mph

**Maximum Range:** 2,206 miles

**Service Ceiling:** 51,000 ft



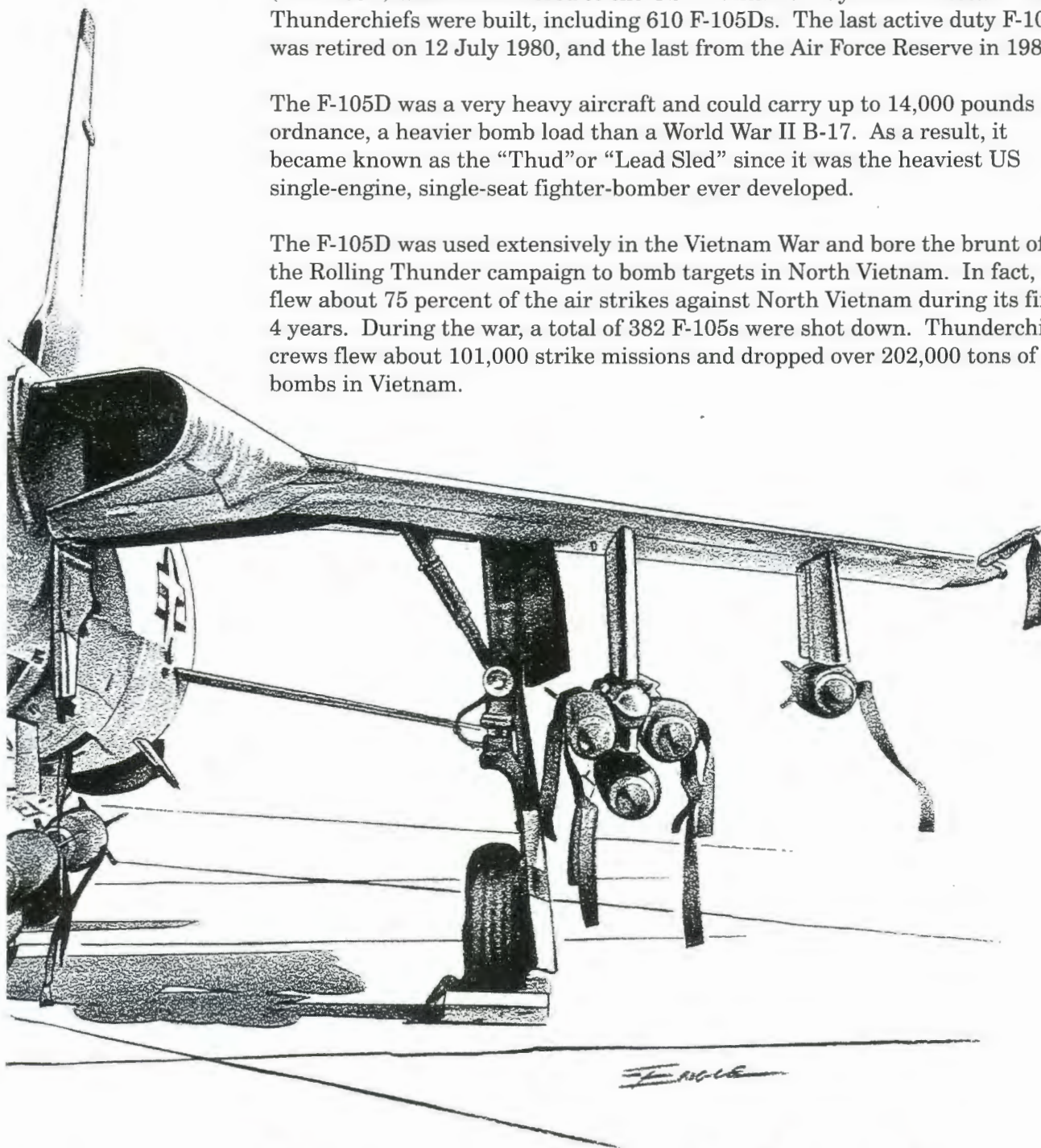
# F-105 Thu



**T**he F-105 Thunderchief was a supersonic aircraft capable of carrying heavy loads of internally and externally mounted conventional/nuclear weapons at high speeds over long ranges. Although the prototype YF-105A made its first flight on 22 October 1955, the actual first production aircraft (an F-105B) was not delivered to the USAF until 27 May 1958. A total of 833 Thunderchiefs were built, including 610 F-105Ds. The last active duty F-105 was retired on 12 July 1980, and the last from the Air Force Reserve in 1984.

The F-105D was a very heavy aircraft and could carry up to 14,000 pounds of ordnance, a heavier bomb load than a World War II B-17. As a result, it became known as the "Thud" or "Lead Sled" since it was the heaviest US single-engine, single-seat fighter-bomber ever developed.

The F-105D was used extensively in the Vietnam War and bore the brunt of the Rolling Thunder campaign to bomb targets in North Vietnam. In fact, it flew about 75 percent of the air strikes against North Vietnam during its first 4 years. During the war, a total of 382 F-105s were shot down. Thunderchief crews flew about 101,000 strike missions and dropped over 202,000 tons of bombs in Vietnam.



# nderchief



A firefighter in red gear is seen from behind, spraying a powerful stream of water onto a large fire at night. The fire is intense, with bright orange and yellow flames and thick black smoke rising into the air. The scene is illuminated by the fire and the light from the water spray.

# Fire is Fast!

*SrA Jennifer Johner  
552 ACW/PA  
Tinker AFB OK*

# Fire is Hot!

**D**uring the past few weeks, I have had a crash course in learning how a fire can change your life. My experience doesn't begin to compare to the tragedy being faced by my neighbors, but there are a few things I can pass on to help others when faced with the same situation.

After a regular Friday night outing, my roommate and I arrived home to an awesome sight. We were shocked at the sight of at least three fire engines and several police officers and firefighters scattered in the parking lot of our apartment complex. The firefighters were busy rolling up the hoses, and the police officers were trying to contain the situation. We were allowed to enter the apartment complex because it

might have been our apartment that had caught on fire.

As we rounded the corner, we saw a large black hole where our neighbors' home once was. They had lost everything. We just stared at it for a few minutes, trying to comprehend all that had happened. Our neighbors told us that the fire department responded to the emergency call for help very, very quickly. They informed us that no one was hurt; even our neighbors' dogs were all right. They did say we had smoke damage to our apartment; but fortunately, the fire had not spread to our residence. After hearing how fast the fire spread throughout our neighbors' dwelling place, I was amazed that our apartment was still standing. All I can say is

that if it wasn't for the timely response of the fire department, our home would have been burned up as well.

Just how fast does a fire spread? Well, according to the United States Fire Administration (USFA), "fire is fast!" There is no time to lose when it comes to fire. For example, in less than 30 seconds, a small flame can get completely out of control and turn into a major fire. It only takes minutes for thick black smoke to fill a house. In minutes, a house can be engulfed in flames. Most fires occur in the home when people are asleep. If you wake up to a fire, you won't have time to grab valuables; because fire spreads too quickly and the smoke is too thick. There is only time to escape.



Not only is fire fast in how quickly it spreads, it is fast in generating heat levels of deadly proportions. For example, the USFA states that heat from a fire is more threatening than its flames. Be on guard for the heat generated by a fire; the heat alone can kill you. For example, room temperatures in a fire can be 100 degrees at floor level and rise to 600 degrees at eye level. Inhaling this super hot air will scorch your lungs. This heat can also melt clothes to your skin. In fact, in just 5 minutes, a room can get so hot that everything in it ignites at once: this is called "flashover." While it is true that "fire is fast," at the same time (as trite as it may sound), "fire is hot!"

What can one do for protection from fire? The best thing you can do is to have working smoke alarms in your home. This will dramatically increase your chance of surviving a fire. Ensure you have a smoke alarm installed outside each sleeping area and on each additional level of your home in accordance with local codes. If people sleep with doors closed, install smoke alarms inside sleeping areas too. Vacuum cobwebs and dust from your smoke alarms monthly, and use the test button to test your smoke alarms once a month. If you have a battery-powered smoke alarm, replace batteries at least once a year. Also, replace your smoke alarms every 10 years. They become less sensitive over time.

In the event of a fire, remember that time is your biggest enemy — every second counts. Therefore, if a fire ever invades your home, your first priority is to escape; and then call for help. And don't forget to practice a home escape plan frequently with your family... because "*Fire is Fast! Fire is Hot!*" ■

## What to Do During a Fire

- **If the fire is well established and out of control, get out first (away from toxic smoke and gases); then call the fire department from a neighbor's home or from an outside phone.** Use your neighbor's phone, an available cellular phone, or nearby pay phone to call for help.
- **If a stove fire starts, slide a lid over the burning pan; and turn off the burner.** Leave the lid in place until the pan is completely cool. Using a lid to contain and smother the fire is your safest action. Getting the fire extinguisher or baking soda to extinguish the fire delays action. Flour and other cooking products can react explosively to flame and should never be sprinkled over fire. Moving the pan can cause serious injury or spread the fire. Never pour water on grease fires.
- **If you try to use a fire extinguisher on a fire and the fire does not immediately die down, drop the extinguisher and get out.** Most portable extinguishers empty in 8 to 10 seconds. After some residential fires, people have been found dead with fire extinguishers near them or in their arms.
- **If you are escaping through a closed door, feel the door, cracks, and doorknob with the back of your hand before opening the door.** If it is cool and there is no smoke at the bottom or top, open the door slowly. If you see smoke or fire beyond the door, close it and use your second way out. If the door is warm, use your second way out. It is a natural tendency to automatically use the door, but fire may be right outside. Feeling the door will warn you of possible danger.
- **If you see smoke or fire in your first escape route, use your second way out.** The less time you are exposed to poisonous gases or flames, the safer you will be.
- **If you must exit through smoke, crawl low under the smoke to your exit.** Fires produce many poisonous gases. Some are heavy and will sink low to the floor; others will rise carrying soot towards the ceiling. Crawling with your head at a level of 1 to 2 feet above the ground will temporarily provide the best air.
- **Close doors behind you as you escape to delay the spread of the fire.**
- **If smoke, heat, or flames block your exit routes and you cannot get outside safely, stay in the room with the door closed.** Open the window for ventilation, and hang a sheet outside the window so firefighters can find you. Wait by the window for help. The first thing firefighters will do when they arrive at a fire is check for trapped persons. Hanging a sheet outside the window lets them know where to find you. If there is a phone in the room, call the fire department; and tell them where you are.
- **Once you are out, stay out!** Firefighters are trained and equipped to enter burning buildings. If someone is still inside, direct the firefighters to that person's probable location.

*Excerpted from: Talking About Disaster: Guide for Standard Messages. Produced by the National Disaster Education Coalition, Washington, D.C., 1999.*



# Monthly Awards

## PILOT SAFETY AWARD OF DISTINCTION

*Capt Pete Fesler  
390 FS, 366 WG  
Mt Home AFB ID*

Immediately after aerial refueling, during an operational F-15C Offensive Counter Air mission in support of Operation Southern Watch, Capt Fesler's aircraft entered a sudden, uncommanded left roll. Capt Fesler countered the roll with flight control inputs and was able to safely gain separation from the tanker aircraft. During return to base, his wingman confirmed that both rudders were deflected to the left and rudder pedal inputs did not fully alleviate this "hardover" condition. Capt Fesler was only able to maintain aircraft control by applying opposite aileron, using approximately 6-inch stick deflection, and almost full opposite rudder. Capt Fesler accomplished the checklist procedures for flight control malfunctions, which did not fix the problem. He found that the rudder trim switch would drive the rudders to neutral, but they deflected to the left again as soon as he released the switch. Countering significant and fatiguing flight control forces, he accomplished several controllability checks to determine the safest configuration for approach and landing. Capt Fesler dumped fuel to lower his gross weight and flew a straight-in approach. During the approach, he made only right-hand turns to avoid deflecting the rudders further to the left. Capt Fesler executed a flawless approach and arrestment. After engaging the cable, the aircraft yawed violently to the left. Capt Fesler applied right rudder and braking to keep the aircraft from departing the runway surface. The aircraft came to a stop 20 feet from the left side of the runway. Capt Fesler demonstrated superb airmanship and skill in handling an unusual emergency situation and saved a valuable Air Force aircraft.



## WEAPONS SAFETY AWARD OF DISTINCTION

*SSgt Vincent K. Lawhon  
65 OSS, 65 ABW  
Lajes Field, Azores*



Since his arrival in June 1998, SSgt Lawhon has invigorated the 65th Operations Support Squadron's weapons safety program. Inheriting a condemned weapons inspection site, he quickly renovated one of his storage bays into an inspection facility allowing this squadron the ability to support wing tasking and the Portuguese Air Force. During the 35% design review of a construction project to renovate the dilapidated storage magazine at Lajes Field, Sgt Lawhon noticed a deficiency in the design of the newly designed blast doors for the magazine. He made redesign recommendations saving the costly retrofitting of improperly designed doors. Additionally, to correspond with the renovation project, a new Explosive Site Plan was accomplished. This new plan redesignated 14 of our existing 28 storage bays as inert storage only, severely limiting munition storage at Lajes. His first action was to develop an interim munitions rewarehouse plan to accommodate the restraints of the lowered Net Explosive Weight, while maintaining 100% compliance with all safety and storage instructions. He also initiated the amendment process through base, NAF, and ACC Safety agencies.

His continual focus on weapons safety turned a lackluster program into one worthy of benchmarking. Sgt Lawhon recognized the need for Emergency Action Checklists. He developed and implemented 11 different checklists covering everything from aircraft incidents to storage bay fires and hazardous waste spills. He coordinated for the demolition of 16 pounds of unstable water gel with the Portuguese EOD team, affording the host nation a rare training opportunity while saving thousands of TDY dollars to deploy a USAF team. Finally, during the initial design phase for a new maintenance and inspection (M&I) facility, Sgt Lawhon was responsible for the initial drafting of the building design. His design suggestions for a safe and ergonomic facility were accepted and incorporated into the design plans. Sgt Lawhon's safety awareness is key to personnel safety and a major contributor to munitions mishap prevention at Lajes. During the recent 8th AF Safety Staff Assistance Visit, Sgt Lawhon was lauded for his outstanding contributions, safety awareness, and initiative. He now has been appointed as the wing additional duty safety manager fulfilling a critical need at Lajes Field.



## FLIGHT LINE SAFETY AWARD OF DISTINCTION



*SrA Abel Flores, Jr., A1C Asif M. Hyder  
57 AGS, 57 WG  
Nellis AFB NV*



SrA Flores and A1C Hyder, members of the 57th Aircraft Generation Squadron, Falcon Aircraft Maintenance Flight, were performing end-of-runway (EOR) duties. It was during their day shift that an F-16 aircraft taxied into the EOR area. Amn Hyder noticed the aircraft's left main brake was smoking and engulfed in flames. Amn Hyder alerted Amn Flores to the emergency at hand. In concert and without hesitation, they immediately notified the pilot of the fire and retrieved the fire extinguisher. Amn Flores and Amn Hyder successfully extinguished the fire. Their quick and decisive actions ensured the safety of the pilot and saved the \$32 million F-16 fighter aircraft from further damage.

## CREW CHIEF SAFETY AWARD OF DISTINCTION



*A1C Michael D. Poole  
77 FS, 20 FW  
Shaw AFB SC*

A1C Poole was performing end-of-runway (EOR) duties as the "B" man during a local Phase II Operational Readiness Exercise. His primary function was to give the base assigned F-16CJ aircraft an initial safety once-over prior to returning to its parking location. When aircraft 91-1383 taxied in for dearming and inspection, Amn Poole quickly noticed smoke coming from the right brake area. Without hesitation, his training automatically kicked in and he warned the weapons crew to stay clear of the aircraft while he investigated the situation. After taking all necessary precautions, he approached the aircraft and discovered a broken hydraulic brake line leaking fluid on the brakes. Amn Poole reinstalled the safety pins and instructed the pilot to declare a ground emergency and shut down. The aircraft was towed to its original parking spot without any further complications.

Both EOR Super and pilot noted Amn Poole's actions as a "great catch." Despite Amn Poole's limited experience and recent graduation from the wing's initial Combat Trained Technician program only a week prior to the incident, his keen safety awareness and demonstrated sense of urgency prevented a possible fire and/or catastrophic incident.



## GROUND SAFETY AWARD OF DISTINCTION

*1Lt Jason R. Luhn, SMSgt Robert L. Ford, Jr.  
2 MXS, 2 BW  
Barksdale AFB LA*

1Lt Luhn and SMSgt Ford proactively manage the 2d Maintenance Squadron's Safety Program, ensuring its people perform duty and pursue recreation in the safest manner possible. Their responsibilities, although additional duties, encompass Barksdale's largest squadron comprised of 22 separate AFSCs, 16 geographically separated facilities and over 550 personnel. Their leadership garnered an "Excellent" rating during the 2 BW Safety's annual inspection, up from a "Satisfactory" the year before. They constantly seek out new avenues for improvement; including utilizing outside walk-throughs by wing Safety's Staff Assistance Visit (SAV) program and by creating an internal inspection schedule, so each of the squadron's six flights will receive attention on a regular basis.

In seamless fashion, Lt Luhn and Sgt Ford have integrated technology into their program in order to enhance its effectiveness, as well as enabling access to safety by any squadron member 24 hours a day, 7 days a week via computer. They created a safety homepage with important links to various sites, as well as access to important statistics. Over 2 years of information is available for instant viewing and update on a Microsoft Access database, enabling automatic trending of mishap-related data in this safety-critical environment. To effectively compare safety statistics, those categories tracked mirror the categories used by wing Safety, ACC Safety, and Air Force Safety. Their AF Form 55 program was benchmarked during wing Safety's last annual inspection and other units have been referred to them for assistance.

Utilizing Operational Risk Management, Lt Luhn and Sgt Ford have developed "Individual Risk Assessment" worksheets which provide supervisors with a valuable tool to evaluate their people's "risk potential" during feedback sessions enabling them to offer more effective counseling. In addition, a separate checklist is available for supervisors to brief members on potential risk factors they might encounter while on leave. In communicating regularly with outside safety agencies, they keep abreast of current safety information for their Commander's program and remain poised to capitalize on potentially beneficial situations such as the recent revamping of AFOSH Standards. In an unparalleled effort, they worked for several months to develop a detailed checklist directly from AFOSH Standards that cover each workcenter-specific safety agenda. This list enables anyone, regardless of background, to accomplish thorough safety inspections in the workcenter, as well as providing excellent continuity in this TDY-intensive unit. These sustained efforts and innovations have played no small part in the 2d Bomb Wing earning the National Safety Council's highest possible recognition, the prestigious Award of Honor for 1998.













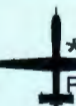
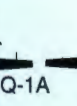
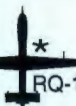

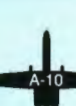






# Flight Safety Stats

## ACC & ACC-Gained Losses for FY99

1 Oct 98 - 6 Jul 99  
Class A Flight Mishaps

8 AF	
9 AF	
12 AF	     
AWFC	    
ANG	 
AFR	
Aircrew Fatalities	

Class A - Fatality; Permanent Total Disability; Property Damage ≥ \$1,000,000

\* Non-Rate Producing



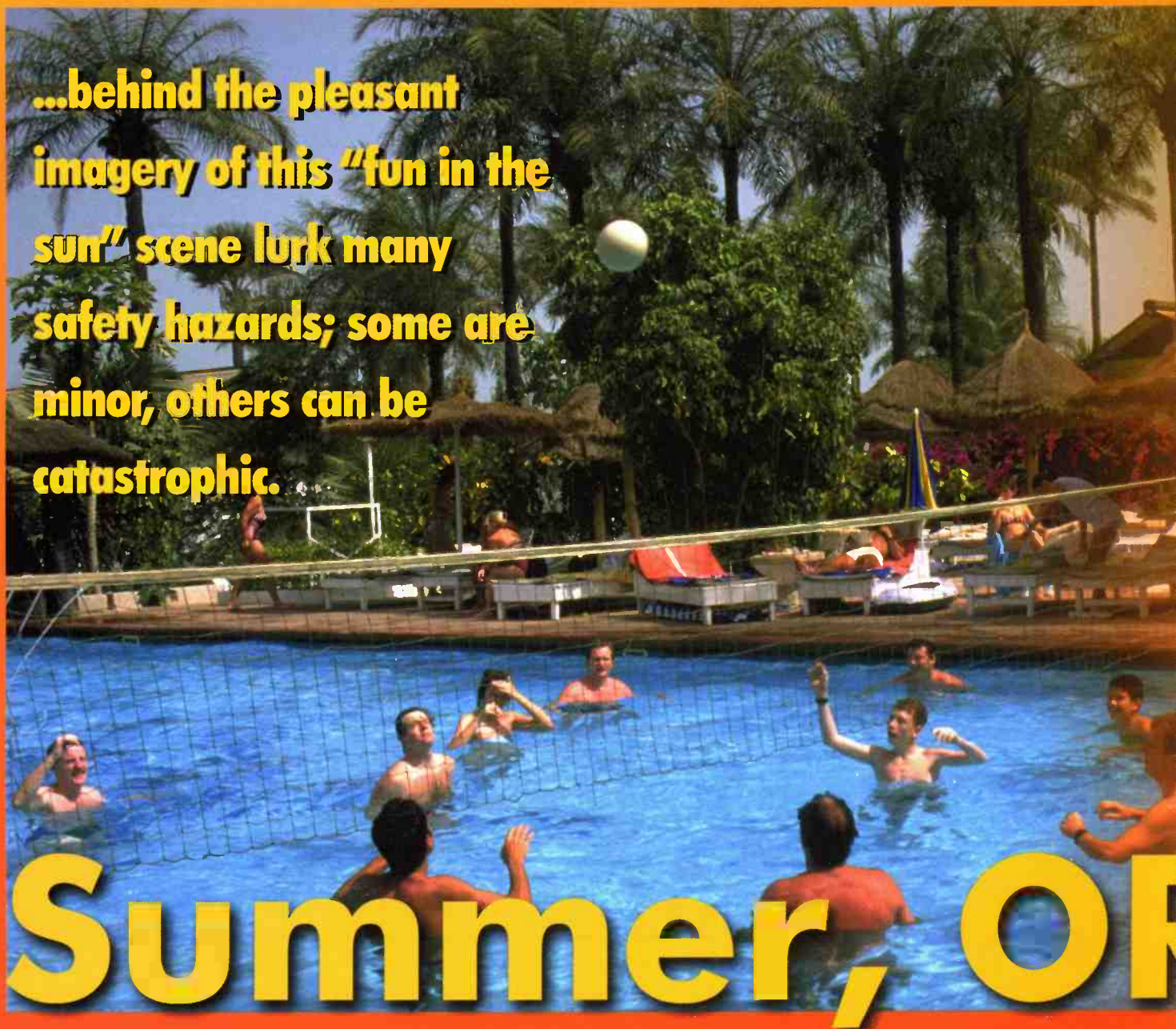
**Summertime...** this expression conjures up images of barbecues, volleyball, swimming, and fun in the sun. Summer is the time to take advantage of good weather and take a break from the often relentless pace of our jobs at work. It's good to stand back from the pressures of the mission — even for just a few moments — to relax with family, friends, and other unit members. But as is so often the case, behind the pleasant imagery of this “fun in the sun” scene lurk many safety hazards; some are minor, others can be catastrophic.

For example, last summer, Air Combat Command (ACC) had eight ground mishap fatalities during the 101 Critical Days of Summer (i.e., the period between

Memorial Day to Labor Day). In order for each of us to experience a safe and enjoyable summer, we need to practice smarter risk management in our own personal lives (both on and off duty). Making the Air Force 6-step Operational Risk Management (ORM) process more practical in our everyday lives can do this.

The following is a good example of the everyday use of ORM. After reading these simple illustrations, I believe that you'll agree with me that the essence of ORM is common sense. As a tool, ORM is practical, sensible, and helpful in preventing mishaps.

- Ed.





## 1. IDENTIFY THE HAZARDS

**Lets look at the potential hazards associated with a simple picnic:**

- Weather (heat, thunderstorms, wind, and humidity).
- Location (near water, desert, forest, or urban area).
- Wildlife (bugs, snakes, poisonous plants, and other not-so-friendly critters).
- Activities (swimming, sports, mountain climbing, and other games).
- Attendees (family members, friends, children, co-workers, or general public).
- Menu (barbecue, store-bought food, cooked on site, refrigerated, alcohol).
- Many other potential hazards can be identified; they are situation-dependent.

## 2. ASSESS THE RISK

**After identifying the hazards, assess the impact of each hazard in terms of potential loss and severity:**

- Injuries and damage due to severe weather, sunburn, etc.
- Incidents involving water, heat injuries, dehydration, POVs, etc.
- Animal bites, insect-borne diseases, skin irritations, and bothersome pests.
- Drownings, sprains, broken bones, overexertion, slips, trips, falls, etc.
- Relative health of attendees, allergic reactions.
- Food poisoning, barbecue burns, flammable liquids, increased susceptibility to heat injury due to alcohol consumption.

## 3. ANALYZE RISK CONTROL MEASURES

**Determine what controls can be implemented to counter the assessed risks.**

- Start with a good, thorough, safety briefing to all participants. (You know how your spouse and kids enjoy your safety briefings!)
- Check the weather and plan

accordingly. Don't take chances with summer thunderstorms. Plan for shady areas and cover in case of inclement weather. Insist on the use of sunscreen lotion and hats.

- Make sure people don't wander off into the water, woods, or the desert.
- Use insect repellent. Get familiar with the type of local critters you may encounter and what you should do if one bites you or someone else at your activity. Talk to the medical folks about this.
- Ensure sports are played by the rules and are supervised.
- If alcoholic beverages are present, watch the drinkers for signs of overindulgence.
- Keep a watchful eye out for the safety (i.e., the whereabouts and activities) of young children.
- Consider the safety of elderly people... or anyone else that may have some known pre-existing medical conditions requiring special care and attention.
- Know the rules of safe barbecuing and follow them. Have a fire extinguisher handy.
- Be careful of food, particularly meats; ensure they are continuously refrigerated prior to cooking, and that they are cooked thoroughly. Pre-cook chicken, if possible.

## 4. MAKE CONTROL DECISIONS

**Determine which courses of action will best accomplish the task with an acceptable level of risk.**

## 5. RISK CONTROL IMPLEMENTATION

**Implement the control measures decided on in the previous steps. Once you select the courses of action, use them! A plan is only good if it is followed.**

## 6. SUPERVISE AND REVIEW

**As always, the situation is subject to change quickly. Monitor the situation, and adjust as necessary to keep things under control.**

**No one wants a summer outing to turn into a terrible tragedy — use ORM to keep your summer safe and enjoyable!**

# ORM, and You



# HURRICANE!



An F-16 Fighting Falcon left in the alert complex lay destroyed after the hangar in which it was stored was destroyed by Hurricane Andrew. Homestead AFB FL. DoD Photo by MSgt James Ferguson

*From Talking About Disaster? Guide for Standard Messages.  
Courtesy of the National Disaster Education Coalition, Washington, D.C., 1999.*

## Why talk about hurricanes?

There are no other storms like hurricanes on Earth. Views of hurricanes from satellites located thousands of miles above the Earth show how these powerful, tightly coiled, weather systems are unique. Each year, on the average, 10 tropical storms (of which six become hurricanes) develop over the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico. Many of these storms remain over the ocean. However, an average of five hurricanes strike the United States coastline every 3 years. Of these five, two will be major hurricanes, which are storms of category 3 or higher on the Saffir-Simpson scale, which corresponds to hurricanes with winds at or above 111 miles per hour.

Timely warnings have greatly diminished hurricane fatalities in the United States. In spite of this, property damage continues to mount. There is little we can do about the hurricanes themselves. However, the National Oceanic and Atmospheric Administration's (NOAA's) Tropical Prediction Center and National Weather Service (NWS) field offices team up with other federal, state, and local agencies; rescue and relief organizations; the private sector; and the news media in a huge warning and preparedness effort.

## What are hurricanes, and what causes them?

Hurricanes and tropical storms are cyclones with tropical origins

(i.e., tropical cyclones). When the winds of a tropical storm (winds 39 to 73 miles per hour) reach a constant speed of 74 miles per hour or more, it is called a hurricane. Hurricane winds blow in a large spiral around a relatively calm center known as the "eye." The "eye" is generally 20 to 30 miles wide, and the storm may have a diameter of 400 miles across. As a hurricane approaches, the skies will begin to darken and winds will grow in strength. A hurricane can bring torrential rains, high winds, and storm surge as it nears land. A single hurricane can last more than 2 weeks over open waters and can run a path across the entire length of the eastern seaboard. More dangerous than the high winds of a hur-



ricane is the storm surge — a dome of ocean water that can be 20 feet high at its peak and 50 to 100 miles wide. The surge can devastate coastal communities as it sweeps ashore. In recent years, the fatalities associated with storm surge have been greatly reduced as a result of better warning and preparedness within coastal communities.

Most deaths due to tropical cyclones are flood-related. Inland flooding is a common occurrence with hurricanes and tropical storms. Torrential rains from decaying hurricanes and tropical storms can produce extensive urban and river flooding. Winds from these storms located offshore can drive ocean water up the mouth of rivers, compounding the severity of inland flooding. Inland streams and rivers can flood and trigger landslides. Mudslides can occur in mountainous regions. In addition, hurricanes can spawn tornadoes, which add to the destructiveness of the storm.

### **Threat Awareness Information**

- A National Weather Service WATCH is a message indicating that conditions favor the occurrence of a certain type of hazardous weather. For example, a severe thunderstorm watch means that a severe thunderstorm is expected in the next 6 hours or so within an area approximately 120 to 150 miles wide and 300 to 400 miles long (36,000 to 60,000 square miles). The NWS Storm Prediction Center issues such watches. Local NWS forecast offices issue other watches (flash flood, winter weather, etc.) 12 to 36 hours in advance of a possible hazardous weather or flooding event. Each local forecast office usually covers a state or a portion of a state.

- An NWS WARNING indicates that a hazardous event is occurring or is imminent in about 30 minutes

to an hour. Local NWS forecast offices issue warnings on a county-by-county basis.

- A hurricane WATCH is issued when there is a threat of hurricane conditions within 24 to 36 hours.

- A hurricane WARNING is issued when hurricane conditions are expected in 24 hours or less.

Many people do not realize the potential threat of hurricanes - each one is different. Over the past several years, U.S. hurricane warning systems have provided adequate time for people on barrier islands and the immediate coastline to move inland when hurricanes threaten. However, due to rapid population growth, it is becoming more difficult to evacuate people from the barrier islands and other coastal areas because roads have not kept pace with the expansion. The problem is further compounded by the fact that 80 to 90 percent of the population now living in hurricane-prone areas have never experienced the core of a "major" hurricane. Many of these people have been through weaker storms. The result is a false impression of a hurricane's damage potential. This often leads to complacency and delayed actions, which could result in the loss of many lives.

### **What to do during a hurricane WATCH**

- Continue listening regularly to a NOAA Weather Radio or local radio or television stations for updated information. Hurricanes can change direction, intensity, and speed very suddenly. What was a minor threat several hours ago can quickly escalate to become a major threat.

- Listen to the advice of local officials, and evacuate if they tell you to do so. Avoid flooded roads and watch for washed-out bridges. Leaving an area that may be affected will help keep your family

safe. Local officials may call for evacuation in specific areas at greatest risk in your community. Following the advice of local authorities is your safest protection. Local officials may close down certain roads, especially near the coast, when the outer effects of increasing wind and rain from a hurricane reach the coast.

- Prepare your property for high winds. Hurricane winds can blow large, heavy objects and send them crashing into homes. Anything not secured may become a deadly or damaging projectile.

- Bring lawn furniture inside, as well as outdoor decorations or ornaments, trash cans, hanging plants, or anything else that can be picked up by the wind.

- Make trees more wind resistant by removing diseased and damaged limbs, then strategically remove branches so that wind can blow through.

- Secure your home by closing and boarding up each window. Remove outside antennas.

- If you have a boat, moor it securely or move it to a designated safe place. Use rope or chain to secure the boat to a trailer. Use tie-downs to anchor the trailer to the ground or house.

- Fill your car's gas tank. If advised to evacuate, you may have to travel long distances or be caught in traffic, idling for long periods of time. Gas stations along the route may be closed.

- Stock up on prescription medications. Stores and pharmacies may be closed after the storm.

- Recheck manufactured home tie-downs. Manufactured homes may not be as affected by strong winds if they are tied down according to the manufacturer's instructions. Properly tied down homes are more likely to stay fixed to their foundations.

- Turn refrigerator and freezer



to coldest setting. Open only when absolutely necessary and close quickly. Keeping the coldest air in will help perishables last much longer in the event of a power failure.

- Store valuables and personal papers in a safety deposit box in a waterproof container on the highest level of your home. Hurricanes leave much water damage inside homes. Historically, it is shown that protecting valuables in this manner will provide the best security.

- Turn off utilities if told to do so by authorities. Authorities may ask you to turn off water or electric utilities to prevent damage to your home or within the community. Most of the time they will tell you to leave the gas on because a professional is required to turn your gas back on, and it may be several weeks before you receive service.

- Turn off propane tanks. Propane tanks may be damaged or dislodged by strong winds or water. Turning them off reduces the fire potential if they are damaged by the storm.

- Unplug small appliances. Small appliances may be affected by electrical power surges that may occur as the storm approaches. Unplugging them reduces potential damage.

- Review your evacuation plan. Make sure your planned route is the same as the currently recommended route. Sometimes roads may be closed or blocked, requiring a different route.

- Stay away from flood waters. If you come upon a flooded road, turn around and go another way. When you are caught on a flooded road and waters are rising rapidly around you — if you can do so safely — get out of your vehicle and climb to higher ground. Most hurricane-related deaths are caused by floods, and most flood fatalities are caused by people attempting to drive

through water. The depth of water is not always obvious. The roadbed may be washed out under the water, and you could be stranded or trapped. Rapidly rising water may stall the engine, engulf the vehicle and its occupants, and sweep them away. Two feet of water will carry away most automobiles.

### **What to do during a hurricane WARNING**

- Listen to a NOAA Weather Radio, or portable, battery-powered radio or television for updated information and official instructions. Hurricanes can change direction, intensity, and speed very suddenly. Continue listening for local information.

- If officials announce a hurricane warning, they may ask you to leave your home as soon as possible to be safe. Go to a shelter or your family contact's home. Call your check-in contact so someone will know where you are going. Local officials advise leaving only if they truly believe your location is in danger. It is important to follow their instructions as soon as possible. Roads may become blocked and the storm can worsen, preventing safe escape.

- If you are not advised to evacuate, stay indoors, on the first floor away from windows, skylights and glass doors... even if they are covered. Stay on the floor least likely to be affected by strong winds and floodwaters. A small interior room without windows on the first floor is usually the safest place. Have as many walls between you and the outside winds as possible. Sometimes strong winds and projectiles may tear hurricane shutters off, so stay away from windows even if they are covered. Lie on the floor under a table or other sturdy object. Being under a sturdy object will offer greater protection from falling objects.

- Close all interior doors. Secure and brace external doors. Closed doors will help prevent damaging hurricane winds from entering additional rooms.

- Have a supply of flashlights and extra batteries handy. Avoid using open flames (candles and kerosene lamps) as a source of light. Flashlights provide the safest emergency lighting source. Between 1984 and 1998, candle-related deaths from home fires following hurricanes were three times greater than the number of deaths related to the direct impact of the hurricane. Kerosene lamps require a great deal of ventilation and are not designed for indoor use.

- Store drinking water in clean bathtubs, sinks, plastic bottles, and cooking utensils. Public water supplies and wells may become contaminated, or electric pumps may be inoperative if power is lost. Survivors of community-wide disasters have said the individual's greatest need following the disaster is water.

- If power is lost, turn off major appliances to reduce the power "surge" when electricity is restored. When electricity is restored, the surge from many major appliances starting at the same time may cause damage or destroy the appliances. Turning off or unplugging major appliances will allow you to decide when it is best to turn them back on.

- If in a mobile home, check tie-downs and evacuate immediately. Historically, manufactured homes suffer the greatest amount of damage during hurricanes. Prior to 1994, most manufactured homes were not designed to withstand even moderate winds.

- Be aware that the calm "eye" is deceptive; the storm is not over. The worst part of the storm will happen once the eye passes over and the winds blow from the opposite direction. Trees, shrubs, buildings,



*Around the island of St. Thomas, survivors of the hurricane left messages anywhere they could, hoping the media would get their messages out to relatives since phone lines were down in most places. DoD Photo by SrA Tana R. Hamilton*



and other objects damaged by the first winds can be broken or destroyed by the second winds. The opposing winds begin suddenly, and have surprised and injured many people who ventured out in the eye of the storm.

- Watch out for flooding. Hurricanes and tropical storms often drop large amounts of rainfall and cause severe flooding, even when they are weakening or are no longer a named storm. "Weak" tropical storms are just as capable of producing heavy rainfall and flooding as major hurricanes.

- Be alert for tornadoes. Tornadoes can happen during and after a hurricane passes over. Remain indoors on a lower level, in the center of your home, in a closet or bathroom without windows. Going below ground, such as to a basement or storm cellar, increases your risk in the event of flooding.

### **What to do if evacuation is necessary**

- Leave as soon as possible (if possible, in daylight). Avoid flooded roads and watch for washed-out

bridges. Roads and bridges frequently become crowded and traffic moves slow. Evacuation will probably take longer than expected. Give yourself plenty of time.

- Secure your home by unplugging appliances and turning off electricity and the main water valve. This will reduce potential damage to your appliances (from power surges) and to your home.

- Tell someone outside of the storm area where you are going. Relatives and friends will be concerned about your safety. Letting someone know your travel plans will help relieve their fear and anxiety.

- If time permits, and you live in an identified surge zone or area prone to flooding, move furniture to a higher floor. Moving valuable furnishings helps reduce potential damage.

- Bring preassembled emergency supplies and warm protective clothing. People frequently arrive at shelters or hotels with nothing. Having these items will make you more comfortable in other locations.

- While shelters provide a safe

place to stay and food, specialty items for infants and individuals on restricted diets may not be available. It may take several days until permission is given by local authorities to re-enter an evacuated area. Bring these items with you to a shelter:

- First aid kit, manual, and prescription medications.
- Baby food and diapers.
- Cards, games, books.
- Toiletries.
- Battery-powered radio and extra batteries.
- Flashlight (one per person) and extra batteries.
- Blankets or sleeping bags.
- Identification.
- Valuable papers (copies of insurance papers, passports, and other essential documents).

- Lock up your home and leave.

There may be individuals evacuating after you, or returning before you. Police may be busy with hurricane-related emergencies and not able to patrol neighborhoods as usual. Lock your property as you normally would when leaving home. ■



# WATER SAFETY



## Defense

### BILLBOARD 78