TAC ATTACK

APRIL 1986

ANGLE OF ATTACK

One advantage of being the Chief of Safety for our Boss, General Russ, is that he encourages me to get out to the trenches (where the action is) and see what we can do to help accomplish the mission smarter. We all know smarter is synonymous with safer, and I must say the work centers I have visited that have the safest records also display a great deal of pride. But some of these work places are not on the flight line and are hardly ever visited by the steely-eyed fighter pilot.

On my trips, I try to see the troops in some of these "out of the way" work areas. These behind-the-scene workers form the very backbone of our combat capability. Their jobs, more often than not, involve greater than normal risks and, because of the unique hazards normally present, a dedicated team effort is required to accomplish their mission. If you want to see team effort and pride in action, take a trip out to the bomb dump--oops, I mean weapons storage area.

The ammo troops have always displayed pride and professionalism but now you can see the excitement in their eyes. Their facilities and equipment are being upgraded. They can't wait to show you around. Most are excited about the CMU concept and unit pride is growing. I can't remember seeing cleaner work centers -- in use, not idle; spotless equipment with creative and attractive emblems; and load teams eagerly awaiting the next wing Turkey Shoot, so they can show everyone who the number one squadron really is. It goes on and on, but the bottom line is that the same pride and competitive spirit which builds the team also fosters discipline.

Discipline is the key to accomplishing any mission safely. It really makes sense when you think of it; if you haven't, take an hour out of the next pilots' meeting and visit your ammo troops. They will water your eyes.

Another team wearing the TAC patch that we single-seat jocks seem to forget are the EC-135 crew members. I had an opportunity to log some time with them a few weeks back. A different mission, but the hazards and risks are the same.

Once again the sense of pride and mission accomplishment came through loud and clear. The troops in the comm department are all pros, too. An important job that will be a big asset to us should the call go out.

I also observed firsthand a night refueling. If you think easing your sporty viper up to the boom on a moonless night is a challenge, try horsing a 135 into the contact position. They had a handful, but the crew's performance was superb. Their hookups with the tanker off autopilot went much smoother than some stabs in the dark I can remember even when the tank was as stable as a rock.

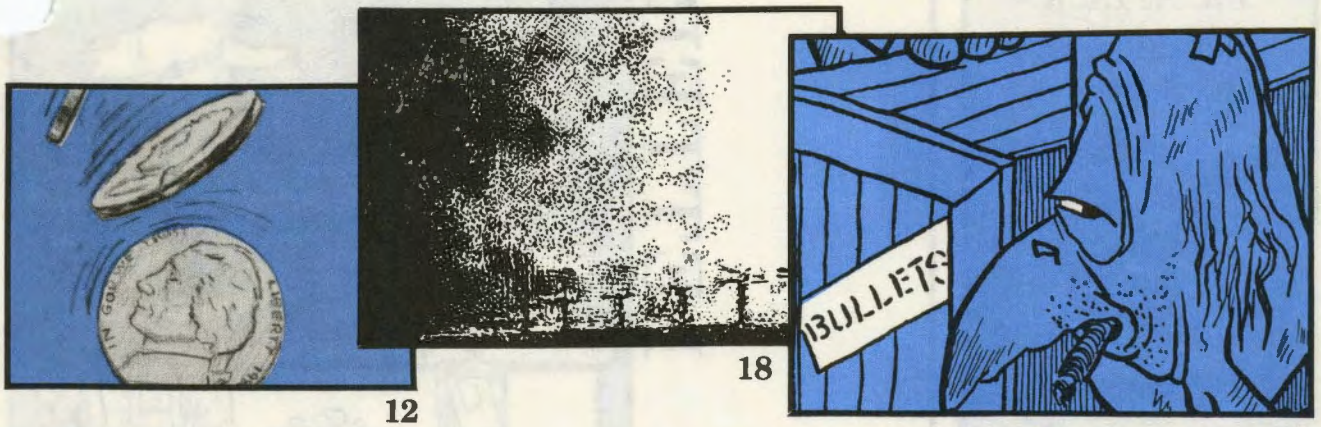
The crew knew their mission and did things like a well-coached team--by the book. When you go about routine tasks as they did, the margin of safety will remain high throughout the entire mission because every phase is treated the same. It's done right--by the checklist--first time, everytime.

What's your angle of attack for the routine?

EDSEL J. DE VILLE, Colonel, USAF
Chief of Safety

TAC ATTACK

DEPARTMENT OF THE AIR FORCE



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FEATURES

DEPARTMENTS

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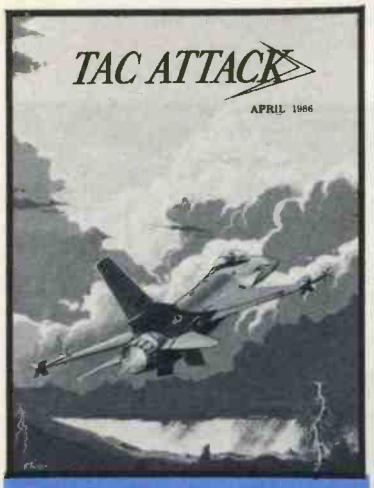

RUSSELL A. ROURKE
SECRETARY OF THE AIR FORCE

GEN ROBERT D. RUSS
COMMANDER

COL "COUPE" DE VILLE
CHIEF OF SAFETY

MAJ DON RIGHTMYER
EDITOR

STAN HARDISON
ART EDITOR

MARTY DILLER
WRITER-EDITOR

SRA KELVIN TAYLOR
STAFF ARTIST

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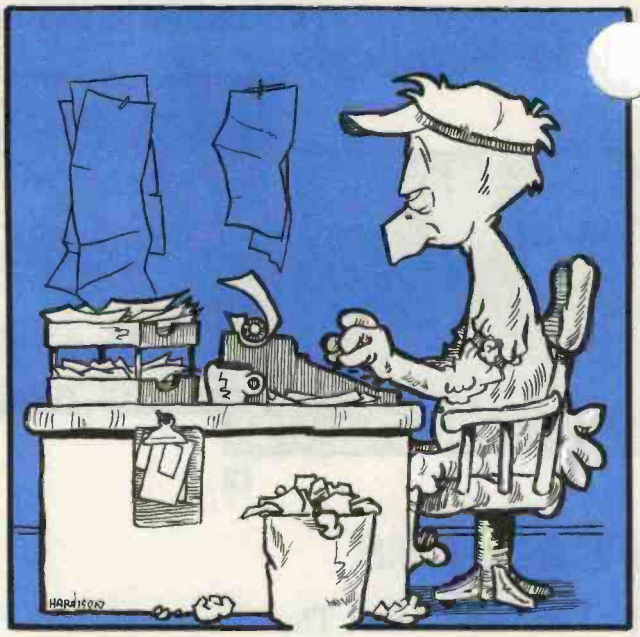
LETTERS



Dear Editor

As commanding officer of a recently formed front line squadron in Germany, I am well aware of the need to keep all aspects of flight safety well to the fore in everyone's minds, both aircrew and groundcrew alike. Having just read your November 1985 edition of *TAC Attack*, I must congratulate you on what I consider to be a first-class safety magazine. To blend hard facts with graphically illustrated humour would certainly appear to be one way of getting the message across and one which certainly arouses interest, at all levels, amongst personnel of my squadron.

Best wishes for 1986 and may I wish you continued success with *TAC Attack*.

Wing Commander
J. J. Whitfield, RAF
Officer Commanding,
No. 14 Squadron
RAF Bruggen, FRG

Dear Editor

In reference to your October 1985 Weapons Words feature, I believe the "Would You Let It Go?" article omitted an important bit of information. True, the download crew was in error by not checking the umbilical block retainer; but the upload crew committed an error just as serious.

The umbilical block retainer should have never been connected to a captive AIM-9 missile. The retainer should be stowed instead in accordance with TO 1F-15C-33-1-2, page 4-6, para 22.

James D. Savage
McDonnell Douglas Services
Taif, Saudia Arabia

Dear Mr. Savage

You're right about the umbilical block retainer. Our check of 1F-15C-33-1-2 (Change 2 dated May 1985) confirmed your point. It should have been stowed. Thanks.
ED

YOU CAN'T TRUST THUNDERSTORMS

Capt Gerald R. Borger
HQ TAC/WES

As a forecaster, my hat's off to those of you who fly. In the spring and early summer, the deck is really stacked against you when it comes to thunderstorms. Although your training says to avoid thunderstorms, I realize you sometimes don't have a choice in the matter.

If you're anywhere near thunderstorms, there's a lot you have to be aware of. First, you have icing to contend with. Nothing to panic about, though. Usually, you'll be in and out of any storm cell before icing can really become bothersome. On the other hand, if you find yourself in a cluster of cells, icing can quickly force you to at least change altitude. Things go downhill from there: turbulence, lightning, hail, wind shear. With thunderstorms, who needs an enemy to worry about. You don't even have to be *in* a thunderstorm to get clobbered. Take turbulence, for example. The severity of turbulence is roughly proportional to the height and width of the cell. Bigger thunderstorms are generally better turbulence producers than small ones, and you can run into some pretty rough air even 10 miles away from a big thunderstorm.

Lack of strong turbulence doesn't mean lack of severe weather, though. Consider lightning. NASA research shows the probability of a direct strike is highest in regions of negligible-to-light turbulence (as well as in regions of negligible-to-light precipitation). You can get hit by lightning from the front, the sides or the back of the storm. It can even get you in the clear air behind the storm. NASA research also shows that at high altitudes, lightning strikes are more likely at temperatures of −40 degrees C or colder. At lower levels, the probability of a lightning strike is almost the same in a temperature range from 0 to −20 degrees C.

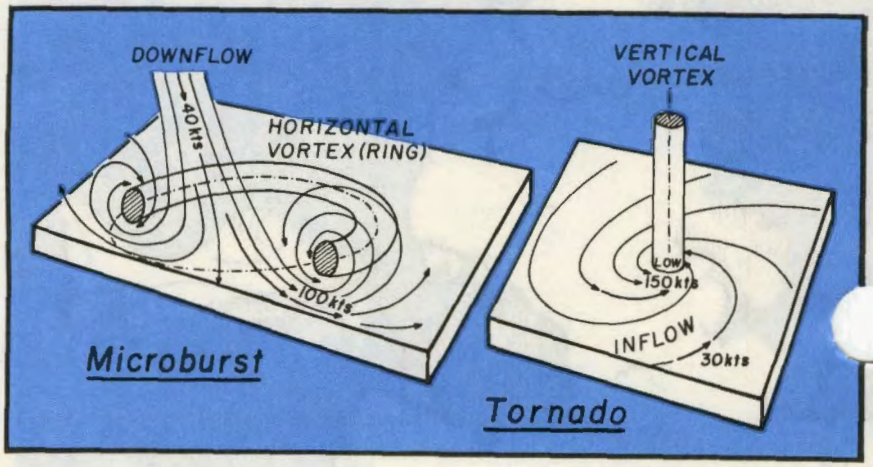
Thunderstorms continually frustrate forecasters not only be-

THUNDERSTORMS

cause of the difficulty in predicting exactly where they'll be, but also where within the thunderstorm all the associated phenomena will occur. *Every* thunderstorm has the potential for hail in or near it at some level, some time during its life. Unfortunately, forecasters can't tell you for sure when, where or even if hail will develop. What we can do is study the stability of the atmosphere and, using our various tools, techniques and experience, tell you the most likely scenario. For instance, you're more likely to encounter hail on the downwind side of thunderstorms. Details of a particular situation usually allow forecasters to give you at least a few more hints about a storm's behavior. It's important, though, for flyers to be aware of our limitations. Surface observations don't always tell the whole story. The absence of hail reaching the ground doesn't mean there's none aloft. Also, hail falling from a storm's anvil (the cirrus shield at the downwind edge of a cell) through clear air won't show up on weather radar.

Thunderstorms are by nature evil and malicious creatures. They will, on occasion, drop wind-bombs on aircraft during the critical phases of taking off or landing. These bombs, called downbursts or microbursts, are severe wind shear events that steal your aircraft's lift. They can kill you. The diameter of a microburst is .5 to 2 miles; downbursts are a bit larger, typically 2 to 30 miles across. Figure 1 below shows a simplified model comparing microburst and tornado structures. The point is, you'd be better off flying within a mile of a tornado than within a mile of a microburst-producing thunderstorm. Which thunderstorms produce microbursts? We don't know, but we do know that they tend to occur in families. So, if there are reports of microbursts within your area or about 150 miles upwind, time your takeoffs and landings so you'll be well clear of any local thunderstorms.

Figure 1



You can't always depend on the rule-of-thumb that only the biggest thunderstorms produce microbursts or other severe weather. One good reason is that heights of thunderstorms vary with season and latitude. A storm topping 35,000 feet in February may be more intense than one with 50,000 foot tops in May or June. Likewise, for the same intensity, storms in Texas usually have higher tops than those in Ohio.

So far all I've told you is a half dozen ways that thunderstorms can ruin your day—most of which you've heard before. So what can you do to avoid thunderstorms? First, listen to the forecasters. Nothing new in this advice but, if you follow it, someday it may save your life—or your buddy's. Pay attention during your weather briefing. Find out where thunderstorms are likely, if any exist now and what direction they're heading. Don't hesitate to play a few "what-if" games in your head and *ask questions*. You say you get briefed by CCTV (closed circuit TV) or mass briefings and don't want to take the time for

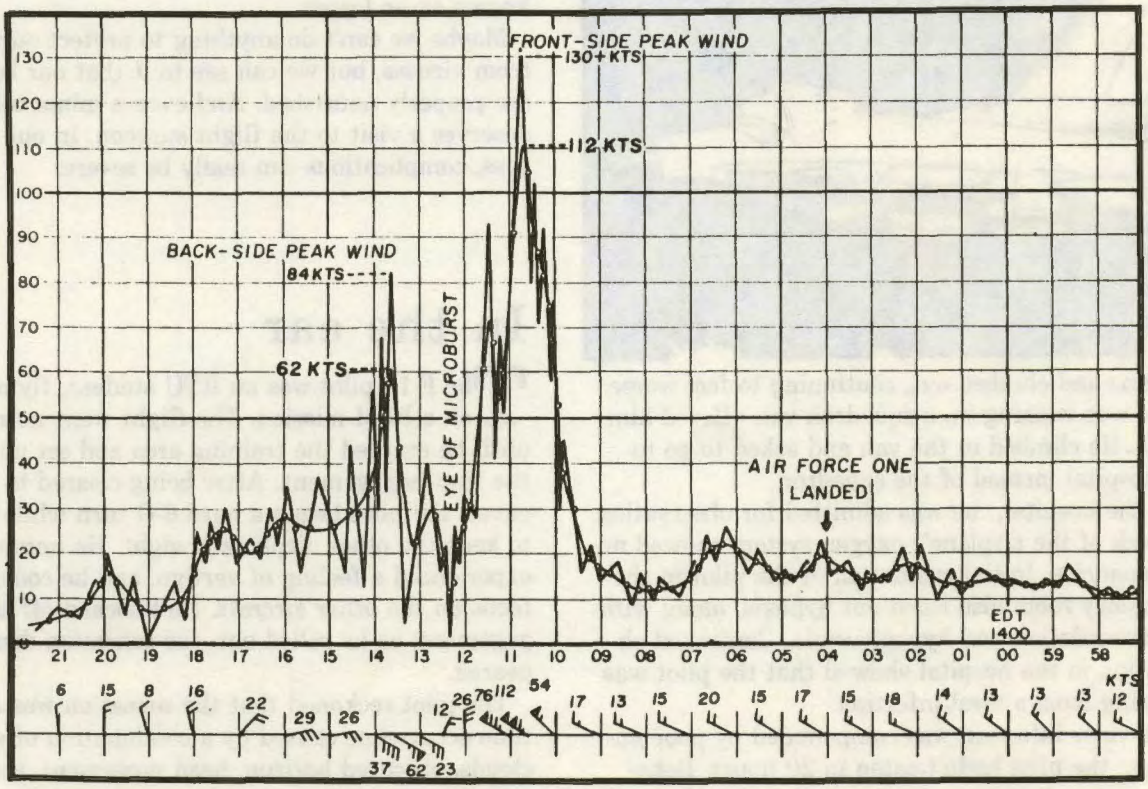
questions? Take the time. You may be glad you did later on during the mission. The flow of information doesn't stop when the briefing's over.

When you're airborne, use your pilot-to-metro service (PMSV). Granted, you might be able to get some weather information from the controllers, but remember that their radar has had weather returns engineered out. They're primarily interested in aircraft separation, not weather identification. On the other hand, the weather folks are trained and equipped with a radar that has height finding, intensity and quantitative measuring capabilities. The meteorologist can devote his or her full attention to any echoes on the scope. You'll also learn if other flights have reported hail, turbulence or lack of it, wind shear, etc.—the same things you should report. Remember, the information you consider insignificant for a PIREP could be critical for the next flight through. If you're on the ramp ready to go and you see the wind sock changing rapidly or if you're ready to land and there's a significant difference between the reported surface wind and your approach wind, get on the radio and find out what's happening. A few minutes delay can make a world of difference. Air Force One missed a microburst with 130-knot winds by less than 7 minutes at Andrews AFB in August 1983 (see wind trace, Figure 2).

Finally, give feedback to the people at the weather station. Tell them what verified, what didn't and anything unusual you noticed. Help them help you.

Good luck when flying near thunderstorms and, like I said before, my hat's off to you flyers.

Figure 2



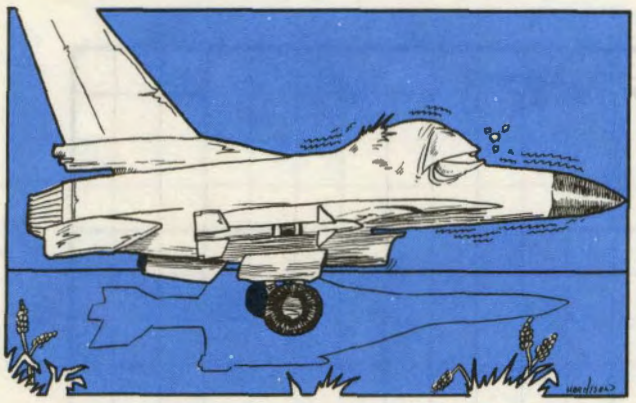
TAC tips

Tac tips

INTERESTING ITEM

Got the shakes

An F-16 pilot was flying his second mission of the day. About an hour into the mission, he began to feel bad. He suddenly felt tired, and his legs seemed to be very heavy. He returned to his home field and landed OK; but while taxiing back, he began to shiver from the chills. He parked the



airplane and climbed out, continuing to feel worse. As he was walking in, a squadron van offered him a ride. He climbed in the van and asked to go to the hospital instead of the squadron.

At the hospital, he was admitted for observation. A check of the airplane's oxygen system showed no discrepancies. Initial evaluation of the pilot in the emergency room also ruled out hypoxia, along with hyperventilation and hypoglycemia. Continued observation in the hospital showed that the pilot was suffering from a viral infection.

The virus infection was compounded by poor nutrition: the pilot hadn't eaten in 20 hours. Dehydration, fatigue from a long day and the stress of adverse weather and demanding missions contributed to the severity of his symptoms.

The pilot recovered from the virus with no complications. But if the weakness and shakes had come upon him during a more demanding phase of the mission, he might have become one of those u known-cause losses.

Maybe we can't do anything to protect ourselves from viruses, but we can see to it that our bodies are properly nourished. And even a minor ailment deserves a visit to the flight surgeon. In our business, complications can really be severe.

In the ear

The F-16 pilot was an RTU student, flying solo on a BFM mission. The flight went normally until he entered the training area and set up for the first engagement. After being cleared to maneuver, the pilot began a hard 6-G turn while trying to keep the other airplane in sight. He immediately experienced a feeling of vertigo, and he couldn't focus on the other aircraft. He knocked off the engagement; as he rolled out, the sensation disappeared.

The pilot reckoned that the sensation was a one-time occurrence caused by a combination of sun, clouds, obscured horizon, head movement and hig

G-forces. So he and his instructor decided to give it another try. They set up for another engagement, and again the pilot began a hard 6-G turn. Again he felt the same sense of vertigo. This time they called knock-it-off for good, declared an emergency and headed for home. The pilot was met by the flight surgeon and taken to the hospital, where examinations showed an ear infection.

The ear—that's where we have all those delicate mechanisms that keep us balanced. If we have the slightest suspicion that it isn't up to par, we shouldn't fly. Not taking off with a known discrepancy applies to us as well as the airplane.

A second glance

When you find something wrong on your preflight and you ask your crew chief to get it fixed, do you insure that it's fixed before you start? Or do you go ahead and crank engines on time, assuming the problem is straightened out?

On an FCF after extended downtime for an F-4, the pilot noticed during preflight that both pitot-static drain caps in the nosewheel were safety-chained. Recognizing the potential FOD, the pilot asked both the line supervisor and the crew chief to attach chains to the caps. Then he and his backseater completed their preflight, boarded the airplane and started engines.

Their ground operations were normal until takeoff. Near their maximum abort speed, the airspeed indications stagnated. The pilot decided to continue the takeoff. Once airborne, he declared an emergency, joined up with another F-4 and followed it in for a successful straight-in approach and landing.

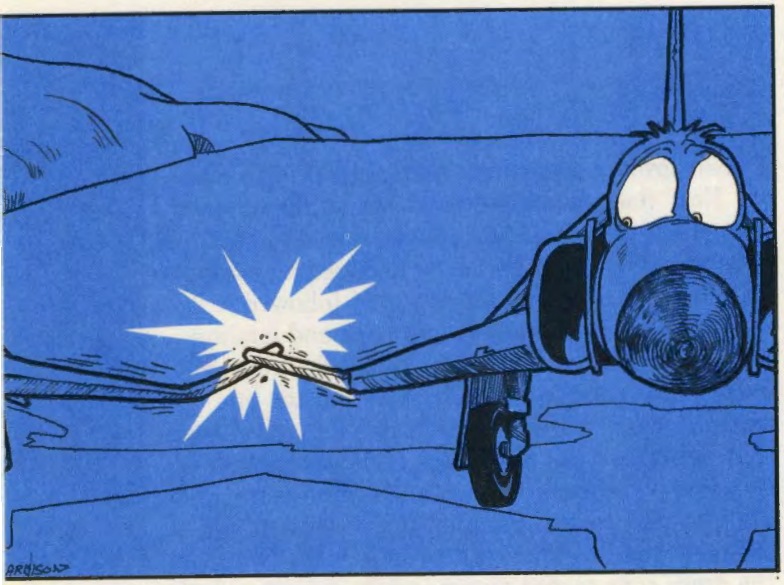
The problem was that the pitot-static drain caps were missing. Both the crew chief and the line supervisor had misunderstood the pilot and thought that he wanted the drain caps removed because they weren't chained. So while the pilot was climbing into the cockpit, the line supervisor had told the crew chief to take off the drain caps. Removing the drain caps caused an air leak in the pitot-static system.

The results of this misunderstanding could have been avoided if the pilot had rechecked the drain lines and made sure they were correct before he climbed into the cockpit. The delay wouldn't have been more than a couple of minutes. Seems like something worth correcting on a preflight should also be worth rechecking before we accept the airplane.

Taxies like he drives

The leader of a two-ship of F-4s couldn't taxi at the prebriefed time, so he told his wingman to press on. Later, when lead pulled up in EOR (end

of runway), he parked next to his number two man but slightly behind with overlapping wing tips. Following quick-check and clearance to take off, lead pulled forward and his wing tip struck number two's wing. Needless to say, the mission was scrubbed.



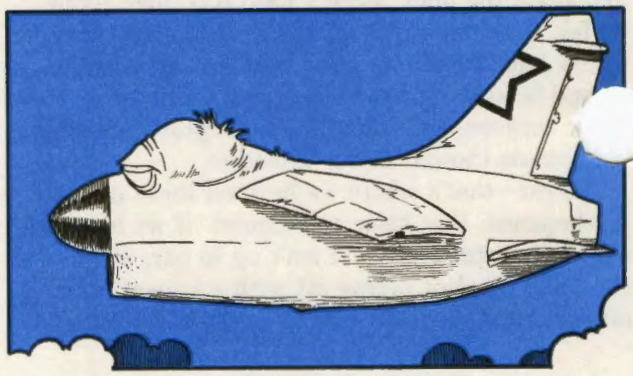
Nearly all of our bases have lines marked for taxiing as well as arming crews to assist in quick-check parking. While some of those aids were missing in this case, it certainly didn't mean this accident had to happen. In spite of everything else, the final responsibility for clearance of wing tips or any other part of the aircraft lies with the crew. *Even* with yellow lines to follow and someone to direct your movements, it's absolutely essential to keep your head out of the cockpit and make sure you aren't maneuvering into an uncomfortable situation. Clear your own wing tips and taxi path in all quadrants. Watch out for anything parked where you or your wing tips are about to go. Remember, our business is readiness and you might find yourself flying out of an airstrip somewhere in the world with marshalling lines spaced for other types of aircraft, or no taxi lines at all.

The ultimate coincidence

Maj Jeffrey A. Wilkins, VAANG
Assistant Operations Officer, 149 TFS
Byrd International Airport, Virginia

A flight of A-7s was preparing for an air-to-surface mission. The briefed emergency of the day covered a fuel low level light with 3600 pounds of fuel remaining. This malfunction can indicate a failed fuel selector valve which traps fuel in the aft and mid tanks. The checklist only provides for recovery of some of the trapped fuel.

Later, following the planned weapons events on the range, lead and number two proceeded to a nearby airport to do a practice precautionary land-



ing approach. To complete a recent check ride requirement, number two led the approach with his leader evaluating from a chase position.

While the two-ship was about 65 miles out from home plate during RTB, the unbelievable happened. Number two got the fuel low level light with 3300 pounds of fuel remaining. Emergency fuel was declared, direct routing was obtained from center and the checklist was completed. On this particular day, the trapped fuel wouldn't budge, thus usable fuel at that point was less than 800 pounds. Two took the lead, flew maximum range cruise to an idle descent and accomplished a flawless precautionary pattern and landing. His usable fuel at touchdown was 300 pounds.

Practice does make perfect. Paying attention during the flight briefing, especially during the EP of the day, is important. Any questions?

TAC SAFETY AWARDS

INDIVIDUAL SAFETY AWARD

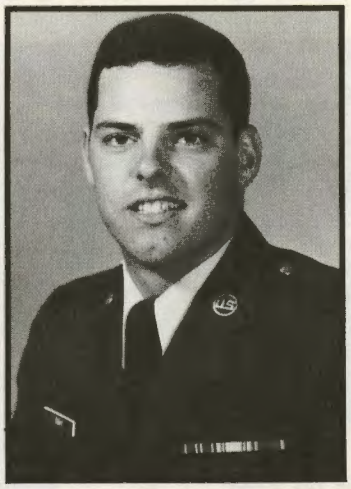
SrA Nicholas E. Bobay was in his dorm room watching television when the fire alarm sounded and the light over the sink flickered and sparked. Though fire drills and false alarms are common in the dorms, the flickering light led Airman Bobay to action.

He opened his door and found the hallway filled with smoke; so he knocked on all the doors to get the residents out of the dorm and then called the fire department.

At that time he noticed the smoke was coming out of the room that adjoined his. Unable to open the hallway entrance to that room, he went through the bathroom and broke the door down to ensure no one was in the room.

When he broke in, he found the contents of a trash can and the wall adjacent to it burning. At that time the fire department arrived and extinguished the fire.

Airman Bobay's swift reaction is commendable. But his knowledge of how to proceed through this emergency is what earned him the TAC Individual Safety Award.



SrA Nicholas E. Bobay
405 AGS, 405 TTW
Luke AFB, Arizona

CREW CHIEF SAFETY AWARD

In October, A1C David M. Johnson was awaiting the return of the F-4D he was crew chiefing when he noticed that the in-ground fuel pit on the next row had blown a seal and a geyser of fuel began spurting from the unattended pit.

Airman Johnson ran to the scene and immediately turned off a Dash-60 power unit which was operating. With the power unit turned off, Airman Johnson pulled it away from the continuing and ever-increasing fuel spill. He returned to the spot and pulled out impulse carts, tool boxes and several miscellaneous items he felt might provide an ignition source for the fuel, then attempted to close the lid on the pit. The flow of fuel streaming out of the pit began to slow and Airman Johnson was eventually able to hold a rubber cap on the open fuel fitting and contain the spill until help arrived.

Airman Johnson's quick thinking and decisive action averted a catastrophic mishap.

A1C David M. Johnson
307 TFTS, 31 TFW
Homestead AFB, Florida

BEING A FLIGHT COMMANDER:
Another nickel on the grass

Colonel Coupe De Ville
TAC Chief of Safety

In our profession, there are certain things you just can't get from books or in a classroom. In fact, you can't get it from any sort of formal learning atmosphere. For example, where would you learn how to become the best flight commander in the Air Force? Sure, the basics and the fundamental steps of how to be a flight commander can be taught, but the point I'm trying to make goes much deeper. I'm talking about something that must be believed in—a way of life. That exchange of information and experience can only occur between a sage (sounds better than "old") fighter pilot and a true professional. In other words, the sage (seasoned fighter pilot) must pass on his beliefs, his sense of duty and mission to those younger with the hope that they will understand, pick up the torch and carry on. With that in mind, here's another nickel on the grass.

First, let's talk about why a flight commander is the most important leader in the squadron. That's right—the most important leader. Some individuals think after they gain a little rank and complete SOS, they will automatically become good flight commanders. Some may expect the job offer simply because they've been in the squadron longer than most. To become the type of flight commander I'm speaking of involves much more than a short course on how to be a leader or how to dodge the flesh peddlers long enough to stay in the same hootch longer than 2.0 years. It takes work, dedication, loyalty and the wisdom to keep it all in the proper perspective.

When you become a flight commander, if you're going to be a good one, you see and sense that being one of the boys in the squadron is no longer possible. When you become the boss, regardless of the level, you're no longer one of the troops. You're their champion and you've got to perform like one. No soft-shoe routine I know of will work here. You simply have to be one of the best pilots first, one of the best leaders next. No shortcuts. No seniority. No rank. Airmanship—that's where the rubber meets the road. I'm talking about the kind of airmanship that's gained

from tactical knowledge and flying skill second to none. Once that is attained, you are able to remain close to your guys but still maintain their respect. Only then can you serve as the vital link between them and the commander; the most important job a flight commander can perform for his boss.

As you move up the ladder of command, it becomes increasingly difficult to establish the special relationship with your people that seems to be open only to flight commanders. In order to lead properly and fairly, you have to see and understand clearly. That's difficult if you're caught up with the same emo-ns, frustrations and aspira-as of the troops around you. So you do what topnotch flight commanders do everyday for their people. You learn to fight for them, not among them. There is a difference and the most important way you fight for them is as their scheduler.

Here's an example. A senior captain arrived in Vietnam wanting to be a flight commander so bad that he could taste it. Unfortunately, there was a long line of rank ahead of him, so he did the only thing he could: work day and night to be the best fighter pilot in the squadron. As a result of his performance and leadership, the squadron commander selected him to take over a flight ahead of some more senior men, almost unheard of at that time. The new flight commander was at max L/D for a while, but soon his -strations began to mount when he began to see what he had never before realized.

The squadron had a central shop that managed the daily flying schedule. That's the way it had always been; so no one ever gave it a creative thought, except for the new guy on the block. A couple of other flight commanders didn't like the current system either. They had been put in the out-basket a few times for allowing something on the schedule which they felt they had no control over. In actuality, they did have control but hadn't taken the initiative. It was easier to blame the scheduling shop if things didn't go as planned.

Finally, the flight commanders banded together for a 5 v 1 on the boss concerning flight commander scheduling. They wanted the full responsibility for deciding the fate of their flight members. They felt the more involved they were in deciding that, the more effective they would be in selecting who flew a particular mission and if he had the skill to handle it. It should be their decision—if someone didn't return, no one could pass the buck. The flight commander had the hammer, and that's the way they wanted it. When you understand this, then you have discovered what being a flight commander is all about.

It was amazing how meticulously the schedule was gone over each day after that. Whiners went into a whimper mode about the schedule and then disappeared altogether. So did the changes. No one, and I mean no one, messed with the schedule unless the flight commander involved had okayed it. Everyone began to realize that the flight commanders knew what their guys were capable of doing. They were motivated to know and to keep abreast of their troops. Were their guys— Having problems on the home front? Feeling okay? Depressed? Tired? Getting a little too aggressive? Picking up too many AAA rounds? The best choices to fly a particular mission? Did their guys — Have blood in their eyes? Fly at night lately? Recently carry a particular ordnance load?

All these questions and many more became part of each day's activities. Why? Because they knew if someone was scheduled for a mission he wasn't ready to perform, he might not return. It was obvious what the flight commander's primary job was: make sure his troops were ready to fly. If they weren't, they didn't. Most important was that the flight commander knew why. The result— Their jocks were the best because they worked at it on every mission. They knew the bossman knew, and they cared because they knew he did. If there should be a different philosophy for peacetime, it's gonna take more than a flight of four to convince me.

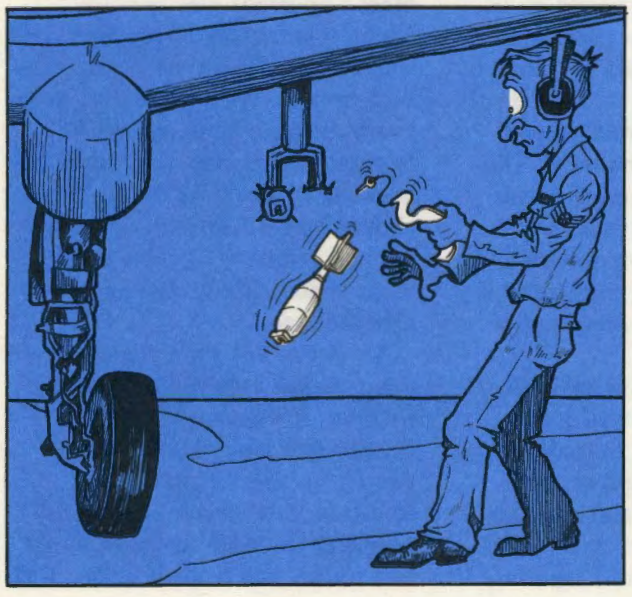
So, if you ask me to spell out what makes a good flight commander, it's airmanship first, loyalty and keeping it in the proper perspective next and knowing your people, really knowing them. And that's never last unless you want it to be. ➢

WEAPONS WORDS

I can't wait

An A-10 had received its end-of-runway (EOR) "last chance" check for any problems that would prevent flight, and the weapons crew was cleared in to begin pulling pins to arm up the gun and practice bombs. Everything went fine until a weapons specialist found that one of the pin streamers was wedged between a BDU-33 bomb and the BDU adapter. The specialist removed the safety pin from the ejector rack and snatched on the streamer. As he did so, the streamer caught the manual release lever and caused the bomb to fall to the ramp. Because the safety block was still installed, the bomb didn't go off and further damage was avoided.

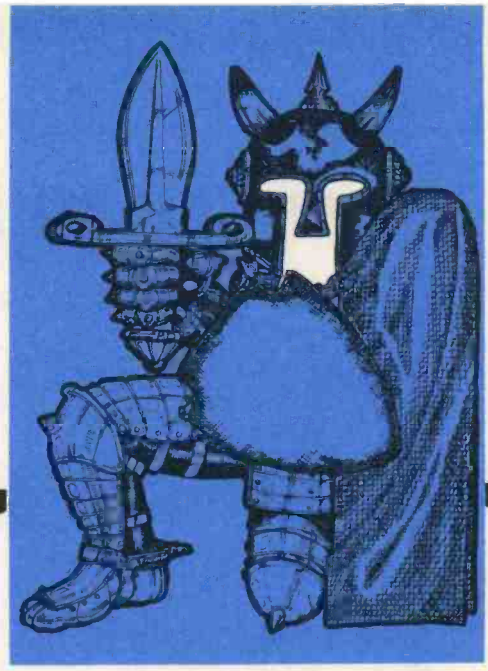
This is a classic example of one person's mistake, causing someone else a problem later on. If the weapons loader who installed that BDU had done it properly, there would have been no problem when the jet got to EOR. It was an obvious error that should have been caught back in the chocks. The second weapons specialist in EOR was wrong in trying to fix the problem with brute force. When you're confronted with a malfunction or improperly installed part, use your head, not your brawn, to fix the problem and get the sortie on its way.



It just gets in the way

The A-7s had had a great day on the range with live Maverick deliveries and strafe passes using high explosive incendiary ammo. Later, during the postflight dearming, the ground crew noted that armament panel F-7 was open and wouldn't close. Back in the chocks, the crew chief noticed a one-inch square puncture on the nose gear door. Further examination of the panel and the skin puncture showed that the two were directly related.

The armament panel apparently came open during flight and, in the fully open position, extended into the path of the aft nose gear landing door. Whether the panel came open due to a bad fastener or improper closure was impossible to determine. We can keep on top of such problems by ensuring that panels are cinched down properly and shaky fasteners are replaced before the airplane is released to fly.



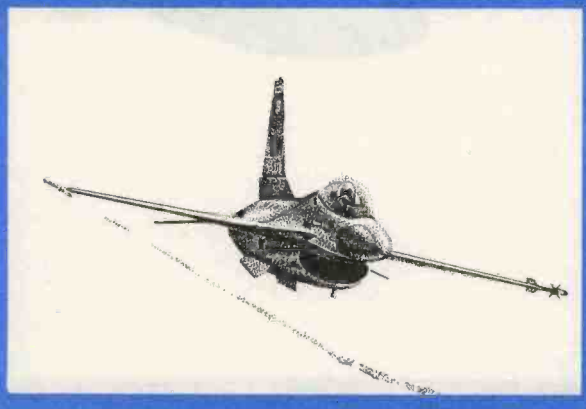
The missing pin

A munitions crew was assigned to upload a SUU-20 bomb and rocket dispenser on an F-16. The number three man who was driving the MJ-4 bomblift raised the table in order to position the SUU's suspension lugs into the bomb rack hooks. After the SUU was in place, the team chief closed the MAU-12 rack with the hook manual release. He noted that the red shaft wasn't visible on the rack's latch linkage indicator. The bomblift was moved away from the aircraft and two of the men began to sway down the bomb dispenser. As they did, it fell to the ground, suffering considerable damage.

There was nothing structurally wrong with the bomb dispenser or the rack. The SUU simply hadn't been properly loaded on the aircraft. While the team chief had verified that no red showed on the latch indicator, that indication alone doesn't guarantee that the suspension lugs were securely locked in the MAU-12. The load team did not perform a step in the TO which requires the insertion of a ground safety lock pin during the loading of an empty bomb dispenser. The pin's insertion ensures that the linkage is overcentered and the rack hooks are locked in position.

Job guide procedures are established to assist you in doing a maintenance job most efficiently and correctly. They're straightforward "how to" steps on doing the job right. Most of our weapon systems are designed with two or more safety devices. Ignoring even one of those places a weak link in the chain of events. Safety can only be assured when *all* devices are in the proper place.

HEADS UP

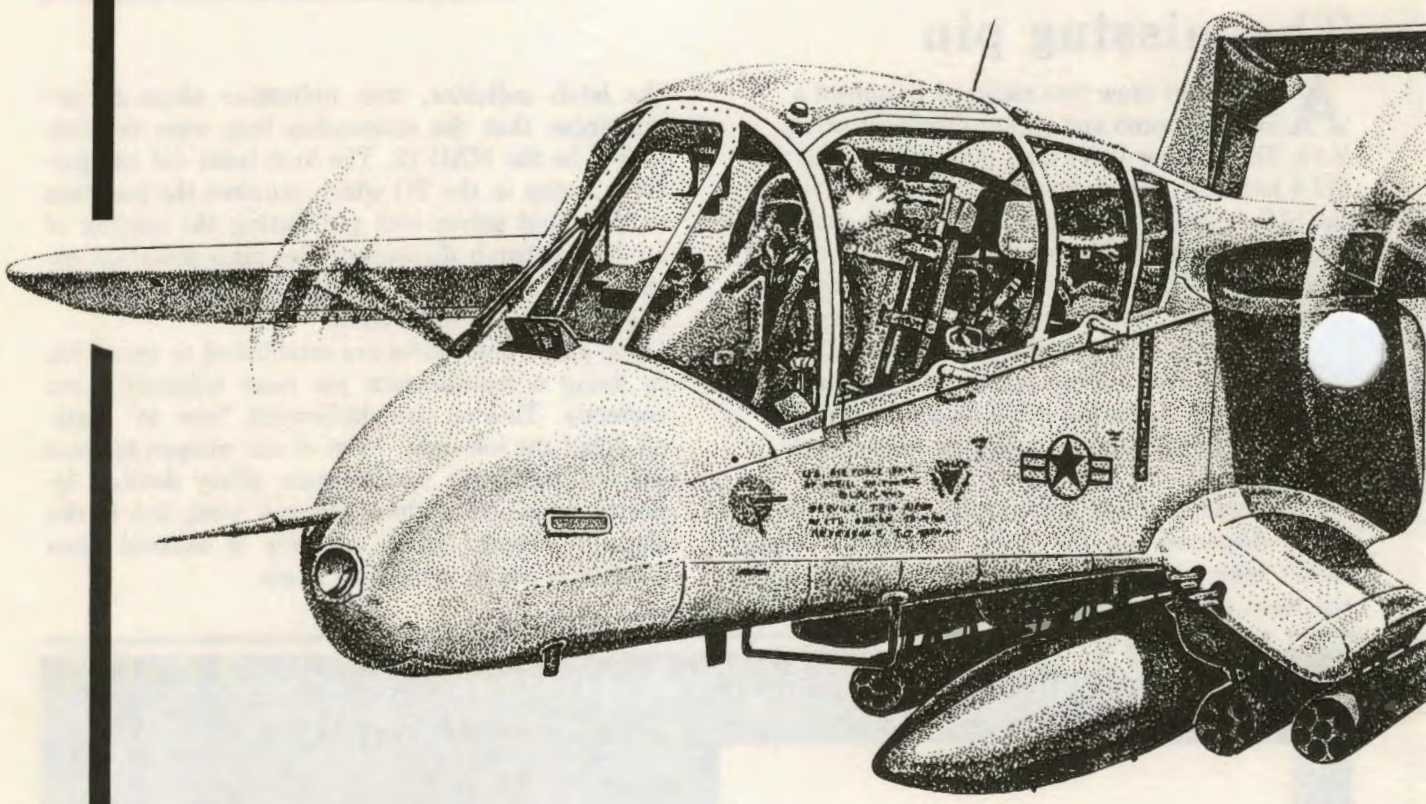


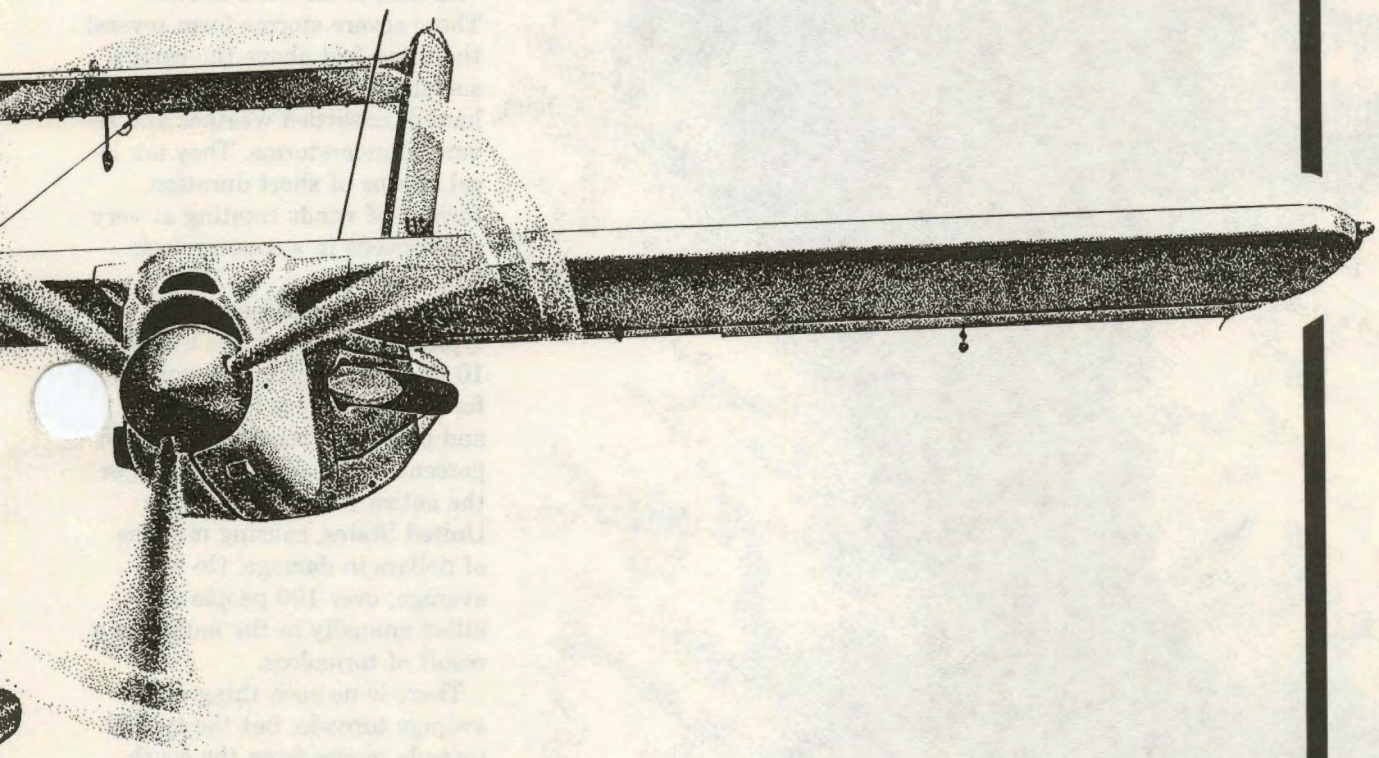
Next month, in the

MAY

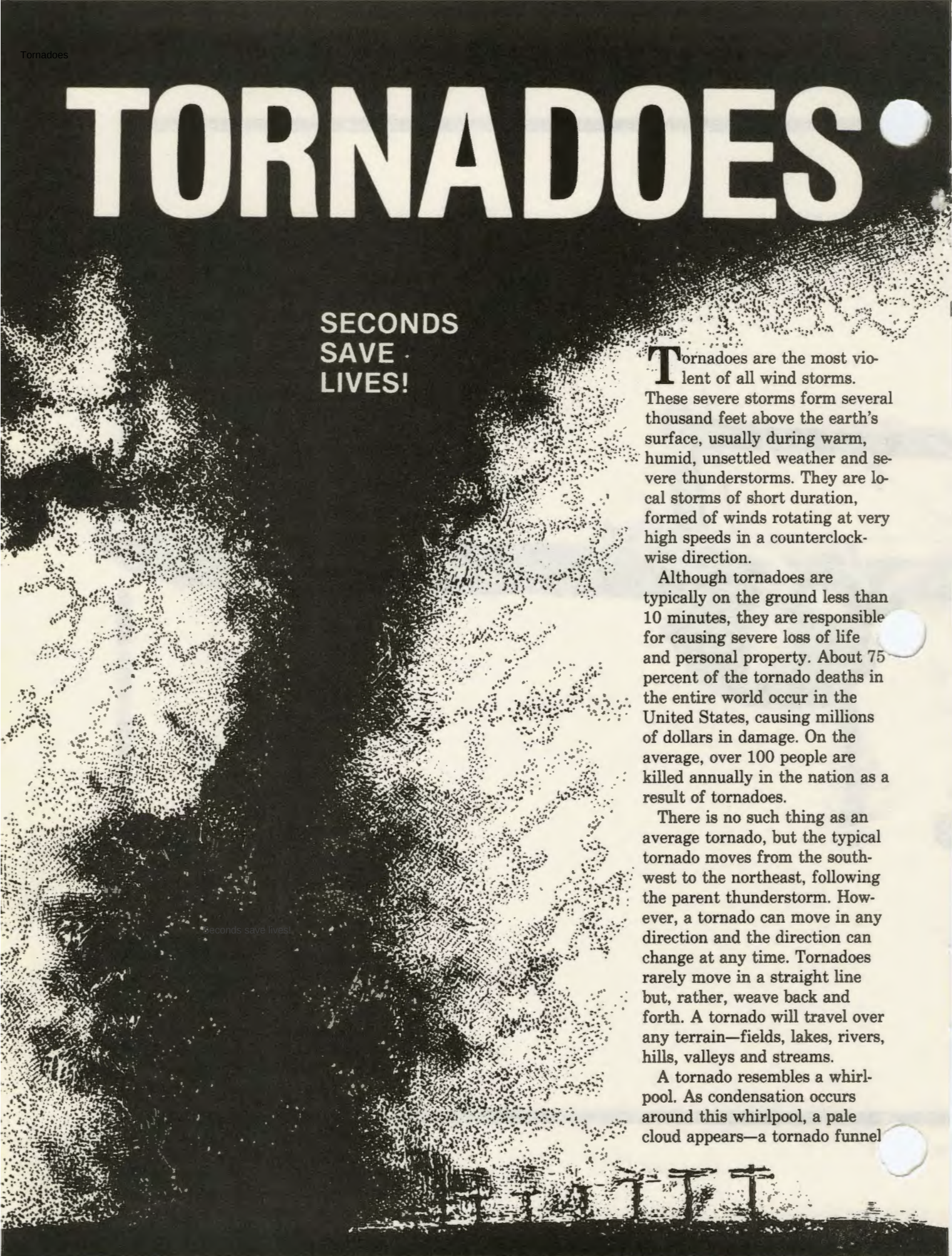
issue of *TAC Attack,* you can look forward to seeing SrA Kelvin Taylor's stipple rendition of an F-16 firing an AIM-9 missile IN THE CENTER.

OV-10 BRONCO





TORNADOES



Tornadoes are the most violent of all wind storms. These severe storms form several thousand feet above the earth's surface, usually during warm, humid, unsettled weather and severe thunderstorms. They are local storms of short duration, formed of winds rotating at very high speeds in a counterclockwise direction.

Although tornadoes are typically on the ground less than 10 minutes, they are responsible for causing severe loss of life and personal property. About 75 percent of the tornado deaths in the entire world occur in the United States, causing millions of dollars in damage. On the average, over 100 people are killed annually in the nation as a result of tornadoes.

There is no such thing as an average tornado, but the typical tornado moves from the southwest to the northeast, following the parent thunderstorm. However, a tornado can move in any direction and the direction can change at any time. Tornadoes rarely move in a straight line but, rather, weave back and forth. A tornado will travel over any terrain—fields, lakes, rivers, hills, valleys and streams.

A tornado resembles a whirlpool. As condensation occurs around this whirlpool, a pale cloud appears—a tornado funnel

As the storm moves along the ground, the outer ring of rotating winds becomes dark with dust and debris, which may eventually darken the entire funnel. Funnels usually appear as extensions of dark, heavy clouds of thunderstorms.

A tornado funnel may resemble a thin dangling rope, an elephant's trunk or a huge, wide solid-looking funnel. It always has a characteristic spinning motion. The funnel darkens as it picks up dirt and debris.

Tornadoes are classified as weak, strong or violent. Weak tornadoes comprise 62 percent of all tornadoes but cause only 2 percent of the fatalities. Strong tornadoes comprise 36 percent and cause 30 percent of the deaths. Only 2 percent of all tornadoes are classified as violent, yet they cause 68 percent of the deaths.

The average tornado travels about 30 miles per hour along a path about an eighth of a mile wide and seldom more than 5 miles long. However, there have been cases in which tornadoes have cut a path more than a mile wide and 300 miles long and moved at speeds up to 70 miles per hour. The winds within the funnel are estimated to reach 300 miles an hour. The deep roar of a tornado sounds like the rumble of a large number of aircraft. However, victims sometimes report that no roar was heard.

When and Where do Tornadoes Occur?

Texas, Oklahoma and Kansas are the targets for one-third of all tornadoes in the United States. On a per square mile basis, Oklahoma and Kansas ranked first and second in number of tornadoes from 1953 to 1974.

Tornadoes occur in all 50 states but occur most often on the Continental Plains and Gulf Coast, often called "Tornado Alley." Normally, the number of tornadoes in the United States is lower in December and January and the highest in May.

The tornado season usually begins in February over the Gulf Coast states. During March the center of tornado activity moves into the Southeast Atlantic states where it reaches its peak in April. During May the center of tornado activity moves into the Southern Plains and in June moves to the Northern Plains and Great Lakes states. As winter approaches, tornado activity decreases because there are fewer encounters between warm- and cold-air masses.

The possibility of tornadoes increases greatly during certain weather conditions. These conditions are most likely to occur during the spring of the year and require the presence of layers of contrasting air. Warm moist air from the Gulf, hot dry air from the southwest and a strong invasion of cold air from the north. As these differing air masses meet, squall lines form and turbulence in the atmosphere increases. As the tops of the clouds reach into the jet stream to about 38,000 feet, the possibility of tornadoes increases. Tornadoes nearly always occur in conjunction with heavy thunderstorms. Lower clouds are often in rapid, confused motion with frequent lightning.

The mathematical chance that a specific location will be struck by a tornado in any one year is slight, about 0.0363 or about once in 250 years. But there have been exceptions. Codell, Kansas, was struck on the same day, May 20, in three consecutive years, 1916, 1917 and 1918.

Tornadoes may occur at any hour of the day or night, but they form most readily during the warmest hours of the day. More than three-quarters of the total occur between noon and midnight, and the greatest single concentration is between 4 p.m. and 6 p.m. when about a quarter of them develop.

Tornado Watch/Warning

Tornado watches are alert messages sent by the National Severe Storms Forecast Center to areas where tornadoes might develop. These messages identify the watch area and the time period, usually 6 hours, when tornadoes are most likely to occur. Tornado watch messages are teletyped to local offices of the National Weather Service and to




TORNADOES

radio and television stations in the threatened areas which broadcast the alert to the general public.

The purpose of the tornado watch is to alert people to the possibility of a tornado. Persons in watch areas need not interrupt their normal activities other than to watch for threatening weather and listen for weather advisories.

Although the watch bulletin states approximately where and for how long the severe local storm threat will exist, it does not mean that severe local storms will not occur outside the watch area or time frame. The watch is only an indication of where and when the probabilities are highest. Persons within 75 miles of the watch area should be on the alert for threatening conditions.

Tornado warnings are issued when a tornado has actually been sighted by an observer or detected by radar. The warnings tell where and when a tornado was sighted, the area to which it is expected to move, and the time period in which it is expected to move through the warned area. When a tornado warning is issued, persons close to the storm should take immediate safety precautions. Persons farther away from the storm should be prepared to take cover if threatening conditions develop.

Quick Action Can Save Lives

If a tornado watch is announced, listen to the radio for weather advisories. A battery-powered radio should be available in case electric power is lost. Move loose objects indoors or tie them down.

If a tornado warning is announced, stay away from windows, doors and outside walls. Protect your head.

In office buildings, move to an interior hallway on a lower floor or go to the designated shelter area.

At home, go to the most protected and strongest part of the basement. If you have no basement, seek shelter at the lowest level in the center of the house, in a small room or closet or under sturdy furniture.

While shopping, don't seek shelter inside a building with a wide, free-span roof.

At school, follow the school disaster plan. Stay away from auditoriums, gymnasiums and other areas with wide, free-span roofs. Also stay away from windows.

In open country, get to shelter. If there is not enough time to move into a shelter or avoid the storm, lie flat in a ditch, ravine, culvert or under a bridge. Don't stay in your car and don't try to out-drive the tornado. At least 26 of the 43 persons killed and more than half those seriously injured when a tornado struck Wichita Falls, Texas, in April 1979 were trying to out-drive the storm.

In a trailer or mobile home, move to more substantial shelter even if the mobile home is tied down. If there is no nearby shelter, lie flat in the nearest ditch, ravine or culvert far enough away from the mobile home if it's blown over.

Tornadoes often accompany severe thunderstorms and are only one of many thunderstorm hazards. Others include the following: Lightning—kills and injures hundreds and starts fires. Winds—very strong, gusty winds can cause great damage. Rain—heavy downpours may result in flash floods. Hail—not a killer but can be very damaging. Flash floods—destroy life and property.

If you observe a tornado, call the nearest law-enforcement officer or National Weather Service Office. Give the location and direction of movement.

After a Tornado

Be alert for potential hazards. Take extreme care when moving about in an area damaged by a tornado. Be alert for broken power lines, shattered glass, splintered wood or other sharp protruding objects.

If your property is damaged, make temporary repairs to prevent further loss from rain, wind and looting. Keep your receipts—the cost of temporary repairs may be reimbursable under your insurance policy.

Contact your insurance representative as soon as possible. Prompt service usually is available within hours after a tornado or other disaster strikes a community.

AIRCREW OF DISTINCTION

On the morning of 20 November 1985, Captain Byron Dodgen, aircraft commander, and First Lieutenant Michael Parker, weapon systems officer, were flying an RF-4C on a simulated night reconnaissance training mission. While flying in the weather, the aircraft experienced abrupt uncommanded pitch and yaw transients. At the same time, Lieutenant Parker saw a fire break out in the rear cockpit near his right elbow. Captain Dodgen immediately depressed the emergency quick release lever to stop the flight control inputs while Lieutenant Parker initiated checklist emergency procedures for electrical fire as well as smoke and fumes in the cockpit. Both crewmembers selected 100-percent oxygen and Captain Dodgen turned off both generators in accordance with checklist procedures. Less than a minute later, the battery failed and all electrical power to the aircraft was lost. The ram turbine (emergency electrical generator) was deployed, but it failed to come on line. Using the emergency attitude indicator, Captain Dodgen began an immediate climb seeking visual flight conditions. Flames from the electrical fire persisted approximately ten minutes after the generators were turned off, causing damage to two circuit breaker panels and numerous wire bundles. Due to intercom failure, Captain Dodgen and Lieutenant Parker were forced to communicate their plan of action by passing notes.

Finding a small clear area between cloud layers, the crew circled and attempted to restore electrical power. They were not successful; and the loss of all electrical power left them with no instrument navigation capability, attitude reference systems, fuel monitoring or transfer capability, UHF/HF radio, intercom, transponder, nose gear steering, antiskid protection, external fuel tank jettison capability, gear and flap indications, or other critical electrical components. With an unknown and depleting fuel state, no electrical power, surrounded on all sides by weather, and unsure of the reliability of the RCP ejection system, Captain Dodgen decided to attempt a landing at a small civilian airfield which was visible through a small opening in the surrounding clouds.

1st Lt Michael K. Parker
Capt Byron C. Dodgen
16 TRS, 363 TFW
Shaw AFB, South Carolina

Captain Dodgen flew a single low approach to the runway to clear the airfield and to determine its length and suitability, noting steep terrain drop-offs on both ends of the runway. Because of the short runway length (estimated at 3500 feet) and the inability to confirm gear position, he elected to make a gear-up landing. He flew a shallow straight-in approach to touch down 350 feet from the approach end of the runway. The aircraft skidded 2800 feet on the external tanks before coming to a stop about 1800 feet from the end of the runway. The crew performed an emergency ground egress as a small fire erupted from residual fuel in the external tanks.

Captain Dodgen's superb flying skill and Lieutenant Parker's exceptional crew coordination during this complex and potentially catastrophic emergency saved a valuable USAF aircraft with minimal damage.

DOWN TO EARTH

ITEMS THAT CAN AFFECT YOU AND YOUR FAMILY

Is your hobby making you sick?

For the last few years, public concern over toxic substances has been growing. Newspapers and magazines have been full of articles describing the potentially harmful substances that are being found in food, water and soil. And while many consumers have carefully altered their eating and drinking habits to avoid coming into contact with toxins, some may be overlooking a common source of potential poisonings: crafts and hobbies.

Thousands of weekend hobbyists work with chemicals and minerals that can threaten their health and many are unaware of the potential hazards posed by the dusts, fumes and vapors. Take, for example, the man whose doctor was baffled by his recurring flu symptoms. Only when the doctor discovered that the man was a weekend potter did he realize his patient was being sickened by gases from an unvented kiln and fine clay dusts.

Statistics indicate that more and more Americans will be exposing themselves to the toxins in arts and crafts materials. The World Crafts Council reports that U.S. interest in crafts is increasing by 20 percent a year. It's especially important for these newcomers to become familiar with the possible hazards of their chosen crafts.

Ceramists, for example, must be aware that soi clays contain silica dust. Clays may contain up to 60 percent silica, usually in combined forms known as silicates, which are not harmful. However, silica that is not chemically bonded, known as free silica, may float in the air for hours as an invisible dust. If this dust is inhaled over a period of years, it can eventually damage the lungs. Glazes used in ceramics can also contain silica dust.

Photographers, especially those who mix their own chemicals, are also at risk of ingesting toxins. Developing baths, stop baths and fixers often contain chemicals that can irritate the skin or damage the lungs if inhaled. Some acids used in photography can get into the body's systems and damage the kidneys, liver and digestive tract.

The oils, pigments, preservatives and other substances involved in painting can damage the kidneys, liver, skin, lungs and central nervous system. There is some speculation that Vincent van Gogh's insanity may have resulted from his habit of licking his paint brush.

Printing and etching processes involve acids, hydrocarbons and solvents that can be toxic. One young woman who collapsed with severe abdominal pain while working with an etching process in her

HERE ON THE GROUND

studio was operated on for appendicitis. Surgeons found that her appendix was normal but later discovered that she'd been poisoned by prolonged exposure to hydrocarbon solvents.

It's important to remember that the actual hazard posed by any of these substances depends on several factors, most of them related to work habits. The length of exposure time can make a great difference in the damage caused by a toxin. The body, if given time, can process many substances without ill effects. But if the body isn't given enough time to process these substances, they will begin to accumulate.

Ventilation can also affect a person's exposure to toxins. Photographers and other hobbyists who work in tight, poorly ventilated quarters are more likely to inhale harmful amounts of vapors. A man using furniture stripper indoors was affected by the fumes, had a heart attack, and died.

Temperature can affect ventilation as well. Solvents and other liquids evaporate and contaminate the air faster in warm temperatures.

A person's reaction to any substance is partly determined by his or her own physical condition. Those who are afflicted with asthma, skin allergies or respiratory problems are more likely to be affected adversely by exposure to toxins. Cigarette smokers, because they already overburden their lungs, are at an especially high risk when working around materials that release potentially harmful vapors.

The large number of potential toxins involved in arts and crafts makes it impossible to list them all here. But there are some basic guidelines for safe working habits that can be applied to any hobby.

1) Read all warning labels on materials and follow the advice given. Try to determine the toxicity of your materials. If the ingredients of a product are not listed on the label, request them from the manufacturer.

2) Whenever possible, substitute less hazardous materials for the more toxic ones.

3) Wear protective equipment whenever possible, including gloves, safety goggles and an appropriate mask if dusts and fumes are involved.

4) Keep your work area well ventilated. If you feel dizzy or lightheaded, you are probably not getting enough fresh air.

5) Avoid using flammable materials whenever possible.

6) Don't bring food, beverages or cigarettes into the working area.

7) Store all materials in their original, approved containers. When you are finished working, put

your materials away and clean up any spills. Dispose of chemicals properly.
8) Be especially careful if you suffer from respiratory or heart problems or are pregnant.
9) Keep safety equipment nearby, including fire extinguishers, eye wash stations and showers. Keep information on emergency medical help handy.
10) Always let your doctor know what materials you use in your work and hobby.

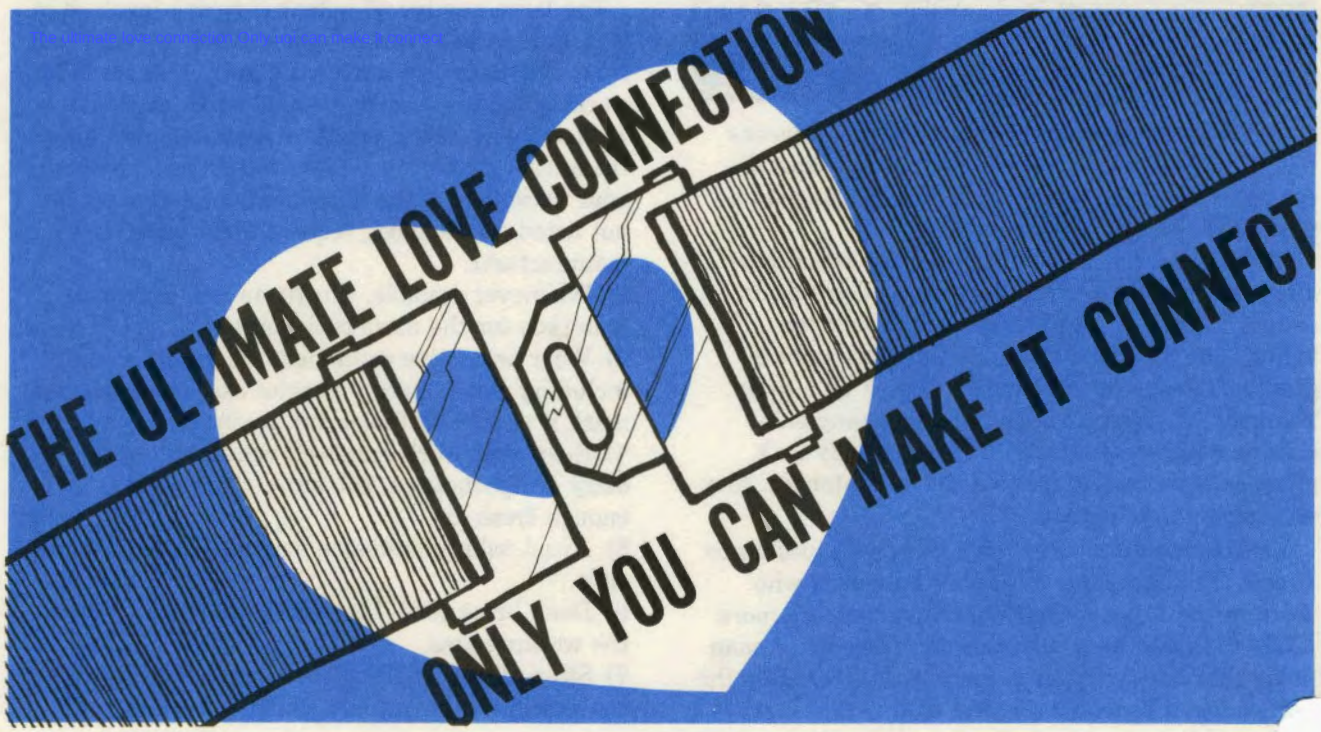
Courtesy *National Safety News*

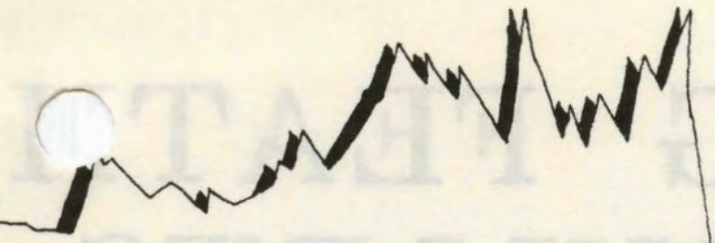
Cold weather property damage

Analysis of recent USAF cold weather property damage findings points to a lack of planning for winter weather and lack of proper management of facility resources. Many military family housing and industrial facilities had the heat turned off or reduced during holiday periods. Facility louvers and windows were left open. Water lines were not insulated or sufficiently buried to protect them from freezing. It was apparent from the findings that energy conservation initiatives did not take into account the potential for property damage losses.

A significant portion of this damage could have been prevented. Here are some recommendations:

- Keep the heat on in military family housing when personnel are on leave during cold weather periods. Likewise, maintain temperature above freezing in minimally manned industrial facilities.
- Open kitchen cupboard doors in family housing and leave water faucets running to prevent water pipes from freezing.
- Replace fixed door louvers with automatic louvers, where appropriate, in maintenance complexes and cover other louvers to prevent penetration of cold air.
- Expand existing checklists for family housing and industrial facilities. Periodically check facilities during inclement weather to insure heating syste are operational and piping has not been damaged.





spillouts can be prevented

Maj Frank Arnemann
USAFTFWC
Nellis AFB, Nevada

TO: Colonel Ace Commander
Pick One Jet Base, Anywhere
SIR: FAA ARTCC radar data confirms that Fighter 01 did spillout of assigned airspace on 19 Sep 86 at 1415Z. Data indicates Fighter 01 came within 4.99 Nautical Miles and 900 feet of Airliner 123. Voice recordings, flight progress strips and radar data are on file at the ARTCC and are available for your review. An FAA Form 8020-11, Incident Report, is being processed through official channels.

Best Regards
I.M. Chief
Noname ARTCC

The above note is a condensed composite from a few real spillout reports which have recently travelled through official Air Force and Federal Aviation Administration channels. The names have been disguised to protect the guilty. "Shack," you think? Perhaps, and unfortunately, in many cases—"shack" it is.

This article's purpose is to focus attention toward what has become an increasingly visible problem for tactical fighter forces. Recent feedback, both formal and informal, indicates that airspace spillouts are a growing threat to the safety and effectiveness of military operations. The safety concerns are obvious and well worth contemplating.

Less obvious is the impact which spillouts have on our credibility and interactions with the FAA and other international air traffic control organizations. Spillouts are a constant concern during air[illegible]e negotiations for all types of special use airspace. The safe and efficient use of what we have significantly enhances the likelihood of getting what is needed for future requirements.

A great deal of effort is expended both in the air and on the ground in order to prevent spillouts. This effort is reflected in the fact that the vast majority of tactical fighter readiness operations are safely conducted within designated areas. These successes represent a great accomplishment. Regretably, it's not the successes that receive wide publicity. For example: When was the last time a headquarters commented about the fact that missions remained within assigned airspace? It just doesn't happen.

There's lots of evidence that supports the premise that spillouts are preventable. And, most importantly, their prevention is absolutely essential in order to ensure our continued safe operation within the increasingly crowded skies. Think about it. →

DODGING FEATH BULLETS

Capt Russell P. DeFusco
BASH Team
Tyndall AFB, FL

Capt Russell A. Turner
USAF Hospital
Tyndall AFB, FL

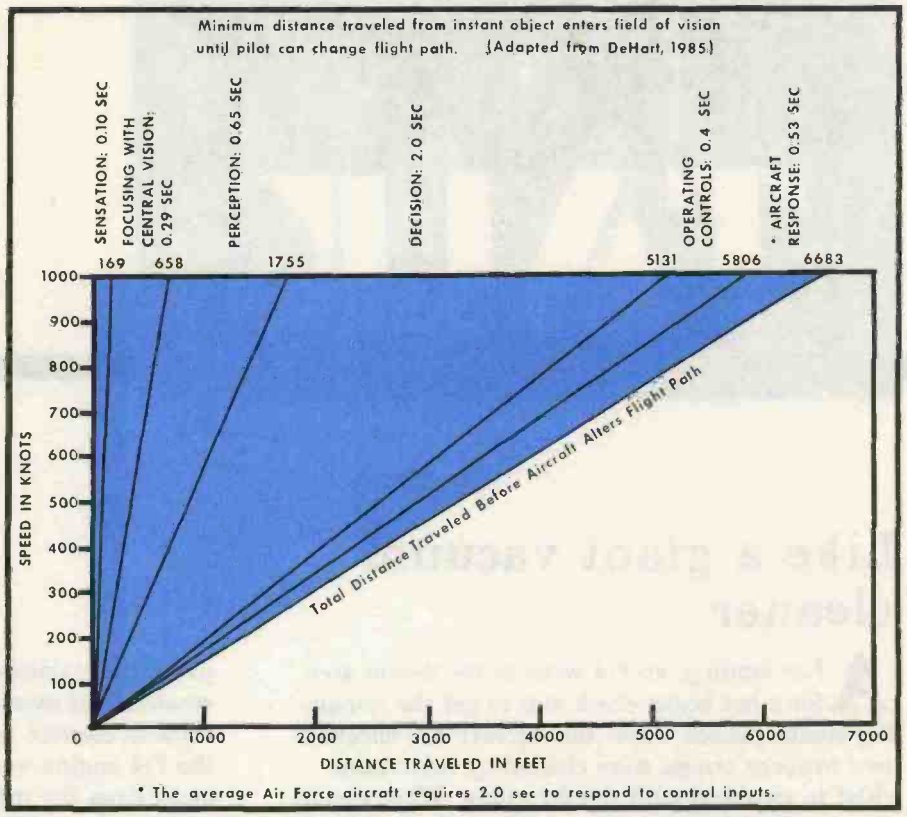
A recent accident investigation board determined that the loss of an A-10 was partially a result of improper pilot response in an attempt to avoid hitting a flock of birds. The pilot pulled his aircraft down and away from the birds, striking high tension lines and causing the loss of the aircraft. Fortunately, he escaped without injury. The question many of you may have is "What *is* a proper pilot response for avoiding birds?" The question is more complicated than it may appear on the surface and specific guidance has not been available.

The bird strike problem is a serious one, costing the Air Force approximately $20 million each year. Nearly 2300 birdstrikes are reported to the Bird-Aircraft Strike Hazard (BASH) Team annually. While many of these strikes are unavoidable, a reduction in the hazard is possible by a variety of means; not the least of which is pilot response to an imminent strike. The effectiveness of a maneuver to avoid birds is dependent on a number of factors including human physiology, the decision process and aircraft response to pilot inputs.

Pilot reaction studies should be considered in determining proper pilot response. The average pilot requires 0.10 seconds for sensation of an image to travel from the eye to the brain. Focusing on the sensed object requires an additional 0.29 seconds. Perception, or recognition of the object, takes another 0.65 seconds for the average pilot. Each of the above factors will vary between individuals and in differing situations. Object size and color, relative motion, background color and composition, contrast, and light intensity level all greatly influence the amount of time required to perceive an object to be avoided. The problem doesn't end there though, as the average pilot requires 2.0 seconds to decide to act on the perceived situation. Decision time varies with experience, level of concentration and situation awareness, but is significant in all cases. Once the decision to react is made, 0.4 seconds are required to operate the flight controls (i.e., pull back on the stick).

The response of the aircraft to control inputs varies among aircraft. Larger aircraft generally require significantly more time to react. The average USAF aircraft requires about 2.0 seconds to respond to flight control inputs. Within the fighter comm

ERED



nity, the F-15, for example, is capable of an instantaneous pitch rate of 22 degrees per second with maximum control deflection. With a 0.5-second aircraft response to control inputs and a 5000-foot turning radius at 450 knots, 0.52 seconds are required to move the aircraft 20 feet to avoid a birdstrike.

So, it requires approximately 4 seconds from the time of initial object sensation until the aircraft has moved sufficiently to avoid a birdstrike. In other words, at 500 knots, a bird must be sensed from a distance of at least 3342 feet, or 0.63 miles, to avoid colliding with it (Figure 1).

Frequently it isn't possible to maneuver to avoid birds, and the strike is inevitable due to the birds' proximity. A recent F-111 Class B investigation board found that "When one considers mental reaction time and the time that it takes for a control stick input to actually move the aircraft, it is unreasonable to assume that the pilot could have avoided hitting the bird." In situations like this (i.e., when the bird is within the gray region of the above chart), it is best to remain level, possibly duck your head and take the strike. Maneuvering within this region may only create additional problems such as pilot disorientation, loss of control, unusual aircraft attitude or increased damages following the birdstrike.

When birds are perceived outside the minimum distance required, maneuvering the aircraft to avoid the birds may prevent a strike. In most cases, birds will tuck their wings and dive if they perceive an oncoming aircraft as a threat. There are exceptions: Gulls, for instance, often turn and attempt to outrun the oncoming threat and are often struck from the rear as a result. Although a few birds maneuver laterally to avoid danger, it is very rare that a bird climbs. Since you don't have the time to categorize the bird and its possible reaction, climbing makes sense. That gives you the best chance of avoiding the bird. It also gives you altitude and time for coping if you do take a hit.

By pulling up, the pilot may be able to protect more vulnerable parts of the aircraft such as the canopy or engines by taking a strike on the undersurface of the aircraft. Most importantly, by pulling up the possibility of collision with the ground or other structures is greatly reduced.

Since bird avoidance is rarely a practiced maneuver, you, as a pilot, should have an idea of what to do before you encounter a feathered "bullet" in your airspace. In a two-place aircraft, crew actions in the event of a birdstrike should be briefed or reviewed before every flight. Remember that there are times when a bird is too close to avoid. Remaining straight and level and protecting your face in this situation is best. When you can respond, pull up to avoid damage to your aircraft and possible injury to yourself.

For more information on the bird-aircraft strike problem, contact the BASH Team at Autovon 970-6240/42/43. Personal experiences or comments will be appreciated.

CHOCK TALK

INCIDENTS AND

Like a giant vacuum cleaner

After landing, an F-4 went to the dearm area for a hot brake check and to get the remaining bombs pinned. After the aircraft was chocked, two weapons troops were cleared by their team chief to go ahead with the dearming. When one of them walked forward from underneath the left side of the aircraft, he suddenly felt a large pin bag that was strapped around his neck being pulled toward the engine's intake. The pin bag went down

the intake, pulling the weapon loader's head in as well. The team chief helped the loader get free from the intake but not before a pin came loose from the bag and caused extensive damage to the engine.

The intake of any running jet engine should be treated with utmost respect. The F-16 engine is particularly noteworthy for the amount of suction created, but every jet engine is just like a giant vacuum cleaner. In this instance, the warning for the F-4 engine was to remain a minimum of 5 feet away from the intake; the weapons loader was within 3 feet. Common sense would dictate that you stay as far away from the intake as possible. Don't press your luck with an engine's suction power or you just might get "taken in" for your trouble.

It just wasn't enough

An F-4 crew had just returned from an out-and-back sortie when the dearm crew informed them that their cargo pod door was open and all the contents were missing. Another "parts distribution" run with aircraft parts such as spare drag chutes, gear downlocks and safety pins left all over the countryside.

Prior to that flight, the IP had noticed the transient alert crew opening the Phillips head fasteners on the cargo pod door with the corner of a flathead screwdriver. During the walkaround and check of the aircraft forms, neither the aircraft commander nor the IP had noticed anything out of the ordinary. An inspection of the cargo pod door after the incident showed that the top two fasteners on the front edge of the door were missing and the sheet metal was torn, indicating that those were the only fasteners locked prior to the flight. Closer exami

tion of the airlock fasteners found that they can appear to be secure when they actually aren't locked. If the locking screw is only turned enough to compress the shaft spring and move the lock overcenter, the locking screw head will be flush with the metal but still a quarter turn short of being locked. In this condition, the screw remains [illegible] until it is jarred or pulled loose by pressure on the door. You can't successfully close the airlock fasteners without a Phillips screwdriver because a flat blade screwdriver will break away from the fastener slot before the job is done.

Each of us must do all we can to lick the dropped object problem. When you open aircraft panels, make sure that you get them all fastened back properly. Make sure you don't inadvertently set someone else up to miss a panel, a door or a fastener that you forgot to reinstall completely.

Missing anything?

The F-5 functional check flight went fine until the left generator light came on as the jet descended through 28,000 feet. When the pilot attempted to reset the generator, smoke filled the cockpit and obscured the engine instruments. He quickly turned the offending generator off and brought the left throttle to idle as he went to 100 percent oxygen and dumped cabin pressure to clear the smoke. The aircraft was immediately [illegible]rned to base and the landing was normal.

The electrical system specialists first thought some pieces of chaff found around the generator had been the cause of the problem. When a new generator was put in the aircraft and power reapplied, sparking, arcing and smoke started coming from the left aft section of the cockpit. Further investigation beneath the left console circuit breaker panel produced several foreign objects, including a drill bit. Even though the terminal board where the short occurred was covered with a fiberglass panel, the foreign objects still managed to become lodged under it and cause the problem.

Good maintenance procedures include taking all the proper tools you need to do a job. Even more important, when you finish a job, make sure you police the area where you've been working. Do a complete inventory of your tool box and make sure there are no empty slots where that drill bit, screwdriver or wrench should be.

1985 TAC SAFETY AWARDS

Major General Benjamin D. Foulois Memorial Award

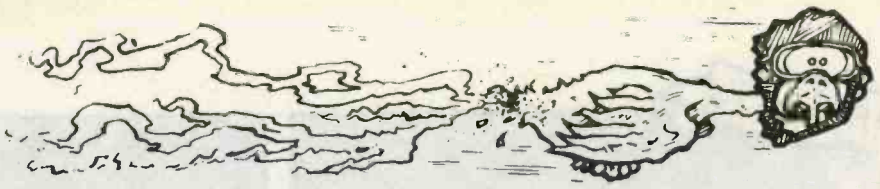
Congratulations to all the members of Tactical Air Command for winning the 1985 Major General Benjamin D. Foulois Memorial Award. In what was a banner safety year for the Air Force, TAC led the way. The Command lowered its Class A aircraft rate for the seventh consecutive year and bettered its previous record by 35 percent. I realize that these impressive accomplishments did not come easy. They reflect what highly capable and professional pilots, aircrews and support personnel can do if properly motivated and led.

CHARLES A. GABRIEL, General, USAF
Chief of Staff

TAC Commander's Trophy for Flight Safety

The TAC Commander's Trophy for Flight Safety honors a numbered air force for promoting flight safety. Selection is based on the lowest command-controlled Class A flight mishap rate in a calendar year. The 1985 award goes to Twelfth Air Force with a mishap rate of 1.3, which includes their Air Reserve Force Units.

TAC TALLY



	TAC			ANG			AFR		
	FEB	THRU FEB		FEB	THRU FEB		FEB	THRU FEB	
		1986	1985		1986	1985		1986	1985
CLASS A MISHAPS	5	8	4	0	1	2	0	0	0
AIRCREW FATALITIES	0	4	2	0	0	0	0	0	0
TOTAL EJECTIONS	7	7	3	0	2	2	0	0	0
SUCCESSFUL EJECTIONS	7	7	3	0	2	2	0	0	0

TAC'S TOP 5 thru FEB 85

TAC FTR/RECCE

class A mishap-free months		
36	33 TFW	(F-15) Eglin AFB, FL
34	366 TFW	(EF/F-111) Mtn Home AFB, ID
33	49 TFW	(F-15) Holloman AFB, NM
32	67 TRW	(RF-4) Bergstrom AFB, TX
18	355 TTW	(A-10) Davis-Monthan AFB, AZ

TAC AIR DEFENSE

class A mishap-free months		
107	48 FIS	(F-15) Langley AFB, VA
66	318 FIS	(F-15) McChord AFB, WA
16	49 FIS	(F-106) Griffiss AFB, NY

TAC-GAINED FTR/RECCE

class A mishap-free months		
158	138 TFG	ANG(A-7) Tulsa, OK
135	114 TFG	ANG(A-7) Sioux Falls, SD
124	183 TFG	ANG(F-4) Springfield, IL
121	180 TFG	ANG(A-7) Toledo, OH
113	124 TRG	ANG(RF-4) Boise, ID

TAC-GAINED AIR DEFENSE

class A mishap-free months		
140	177 FIG	ANG(F-106) Atlantic City, NJ
106	125 FIG	ANG(F-106) Jacksonville, FL
89	119 FIG	ANG(F-4) Fargo, ND
73	107 FIG	ANG(F-4) Niagara Falls, NY
64	147 FIG	ANG(F-4) Ellington AFB, TX

OTHER TAC/-GAINED UNITS

class A mishap-free months		
199	182 TASG	ANG(OA-37) Peoria, IL
183	110 TASG	ANG(OA-37) Battle Creek, MI
179	USAFTAWC	(many fighters) Eglin AFB, FL
171	84 FITS	(T-33) Castle AFB, CA
113	552 AWACW	(E-3, EC-130) Tinker AFB, OK

CLASS A MISHAP COMPARISON RATE

(CUM. RATE BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	1986	4.8	6.7												
	1985	3.2	3.4												
ANG	1986	4.8	2.5												
	1985	4.8	4.8												
AFR	1986	0.0	0.0												
	1985	0.0	0.0												

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FLEAGLE
HUH... WHAT'S THIS?
HE'S MILES AWAY. PLENTY OF TIME TO TAKE ACTION.
©STAN HARRISON 1986
HE SURE DO LOOK BIG AND CLOSE ALL OF A SUDDEN.
GREAT GOBS O'GOOSE FAT!! THAT FOOL'S GONNA HIT ME!!
BASH!
CRUNCH!!
BEND!
OUCH!
TEAR!
BREAK!
FALL
WHO HIT WHO, GRIFF?
LOOKS LIKE A DRAW T'ME, ROB. WHEN IT COMES TO A MID-AIR, MOST OF TH' TIME, THERE'S A LITTLE BIT O'BLAME ON BOTH SIDES.
HARRISON