TAC ATTACK

OCTOBER 1987

HOSTING A HEAVY
Pg. 18

ANGLE OF ATTACK

One of the *critical* elements in preventing future flight mishaps is the ability to accurately determine what occurs in each mishap that we suffer. To do that with any assurance of success, each person having knowledge about the facts of a mishap must be able to relay that information and know that "what I'm going to say is privileged." That is the whole purpose behind the privileged information provisions of AFR 127-4.

A mishap board must be able to call upon the mishap pilot (if available), other flight members, witnesses and technical specialists to provide as much information as possible in order to determine what caused the mishap. The accumulated experience and insights of a technical specialist or the resources of an aircraft manufacturer may be crucial to piecing together the available pieces of circumstantial and material evidence. The willingness of witnesses to speak freely might be compromised if they feel the information is likely to be provided to unauthorized persons.

We don't willfully violate the requirements to protect privileged information. But, how many times have you heard the facts concerning a mishap briefed at a flying safety meeting and then thought "I can tell this information to whoever I want"?

The thing we must always remember is what is best for the fighter pilot community. If we are unable to ensure the privileged status of testimony and mishap information, we will find history repeating itself time and time again as the same uncorrected causes are allowed to take their toll in additional aircraft and aircrews lost. It's our survivability that hangs in the balance. The causes of peacetime mishaps will do the same thing during combat operations if we don't discover and correct them now. That will result in aircraft and aircrews lost at no expense to the enemy's air force. Those are losses that you and I are not willing to take.

If you have questions about proper handling of mishap reports and the information contained within, look up AFR 127-4 or ask someone in flight safety to explain it to you. Don't just "play it by ear."

Let me close by recommending Lt Col Hank Goddard's article, "Flight Leadership: It All Starts Here," for your reading. This is one of the best articles I've ever read on the subject. Take a few minutes to consider the thoughts he offers.

Jack Gawelko

JACK GAWELKO, Colonel, USAF
Chief of Safety

TAC ATTACK

DEPARTMENT OF THE AIR FORCE

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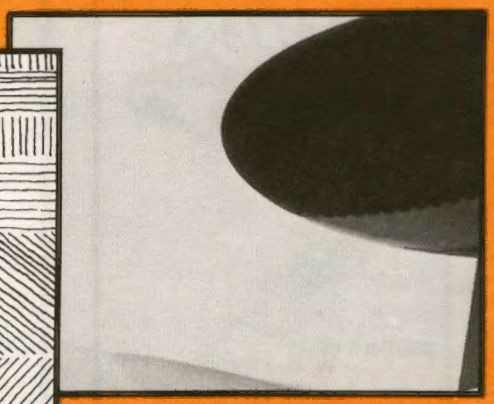

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features

departments

TACSP 127-1

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FLIGHT

Lt Col Hank Goddard
33 TFW
Eglin AFB, FL

Well, it's your big day. Your flight commander just told you you're finally going into FLUG (Flight Lead Upgrade). After months of suffering on the wing of flight leads (most of whom weren't doing nearly as good a job as you could, right?), it's your turn to shine. Doubtless, you are highly qualified and experienced, and your peers will soon stand in awe of your prowess. Maybe. Let's talk for a few minutes on what it all means—this flight lead business.

First, why have you been selected? TACM 51-50 says your squadron commander selected you from "the most highly qualified and experienced pilots available." I hope that's really true. Your experience better be 350 hours and not 35 hours repeated ten times. If you haven't used every minute of that time to learn something, we're in trouble. If you've used that time effectively, then you fill the "qualified" part of the equation. If you've been selected because it's "your turn" or your squadron "needs flight leads," and not because you're the best wingman in the squadron, you've got a long, hard row to hoe ahead of you.

What is the most important characteristic in a wingman that reflects his potential as a flight lead? Discipline. Plain and simple. A wingman who's always where he's supposed to be, when he's supposed to be there, doing what he's supposed to be doing is a wingman who has gone a long way toward being a good flight lead. This includes being in the right formation, sanitizing your radar search responsibility, being on time when you've got mobile and pulling your load in the squadron without whining. All of these things indicate you've got the amount of self-

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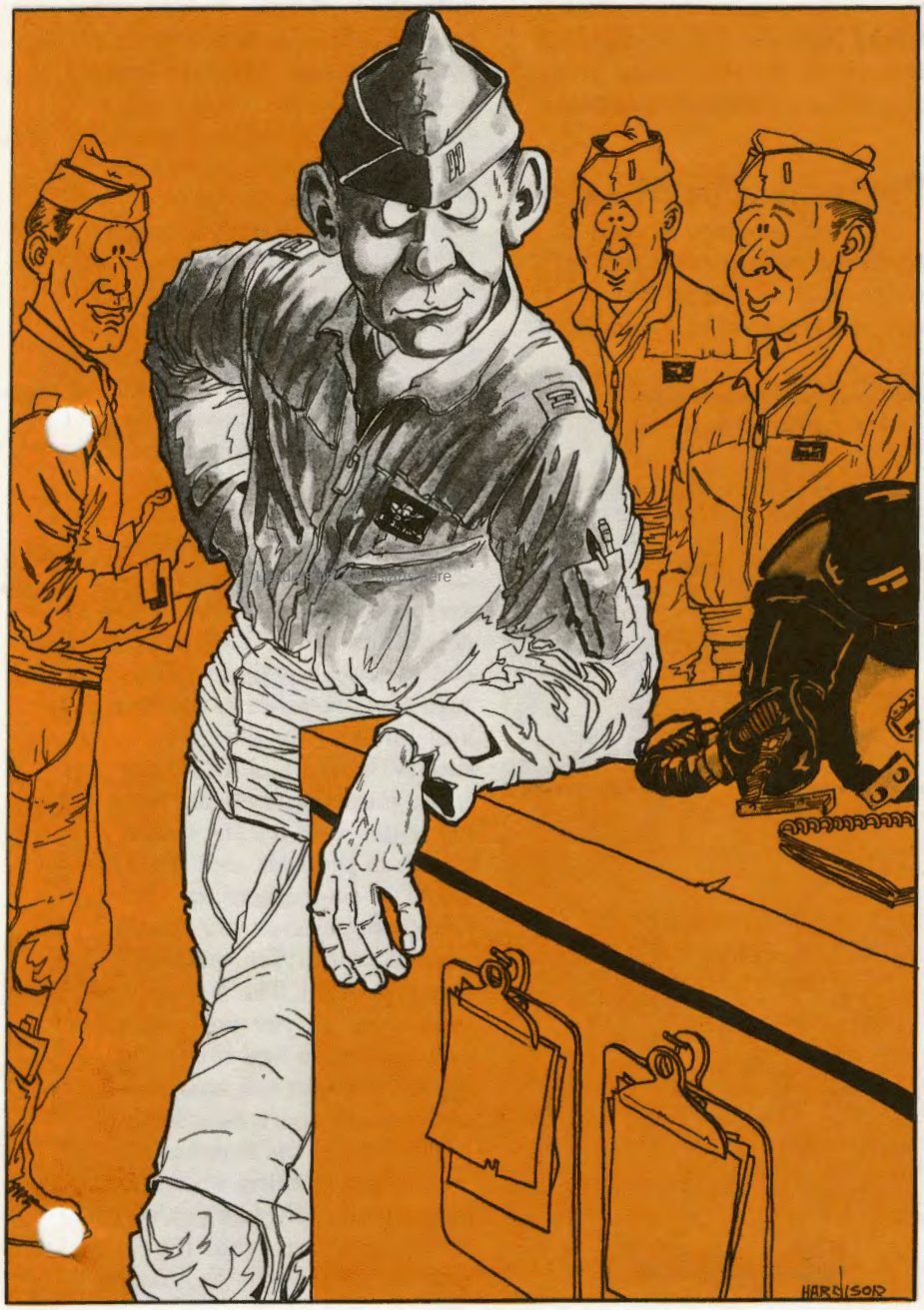
LEADERSHIP: it all starts here



discipline needed for yourself and your wingmen.

When you pull a four-ship onto the active, you've got several million dollars' worth of machinery and a group of highly trained college graduates under your command. The least of your responsibilities is to ensure that the taxpayers' dollars you're spending to go fly are used efficiently. You have to squeeze every drop of effective, realistic training you can out of every gallon of JP-4 and every quart of oil. The greatest responsibility you have is for those aircrew lives and the aircraft under your control. This responsibility is shared, of course, by the other members of the flight, each of whom is responsible for his own jet, but your responsibility is "first among equals." The responsibility for accomplishing effective, realistic training is yours alone. If the training your flights receive is inadequate or, worse, unrealistic and doesn't relate to the threat, you are wasting money and time.

So, how do you meet that responsibility? Before you fly that first upgrade sortie, get a grip on the written guidance that's out there. Saying, "I read all that stuff just last year, and I hear it all the time" won't hack it. Read it again from the

FLIGHT LEADERSHIP: It all starts here

Before you fly that first upgrade sortie, get a grip on the written guidance that's out.

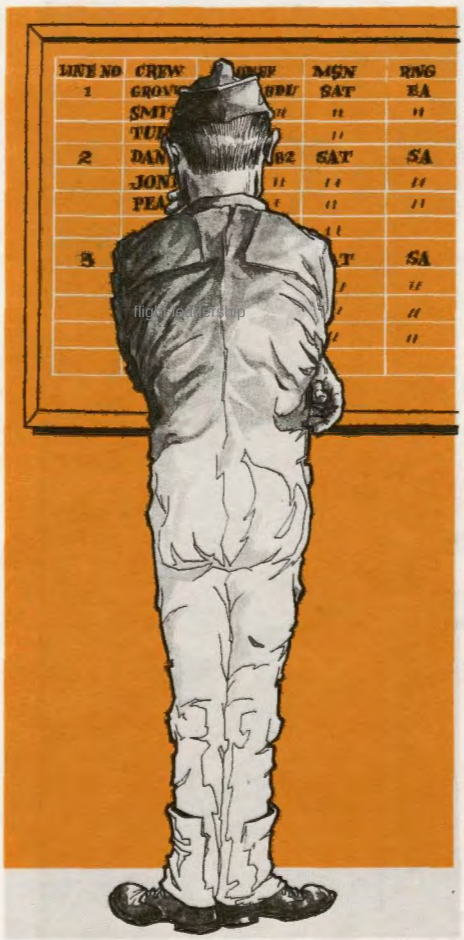
perspective of a flight lead. *You* now have to decide what is and is not legal, what does and does not meet the letter and spirit of the regs, and what you can and cannot do in most circumstances. Nobody's going to hold your hand in this—you either know it or you don't. If you don't, and you screw up, ignorance is no excuse.

Another important mental exercise in preparation for flight lead upgrade is a little soul-searching. You are being checked out as a flight leader, with heavy emphasis on *leader*. The guys on your wing are looking to you to lead them out, bring them home, make the right decisions and provide positive guidance when needed. You have to be mentally prepared to make that leap from being told what to do to making the decisions and telling others what to do. As the leader, it's on your shoulders.

Well, now you've mentally and academically prepared yourself for FLUG. Successful flight leads don't ad lib. Everything is planned well in advance, including a hip pocket full of fallback options. So, let's talk about the first major part of leading a mission—planning.

Planning The Mission

The easiest place to start is by filling out a lineup card, of course (Check the board against the printed schedule so you're not surprised by the differences, if any). Now you've got the initial hack at who, where and why. The first thing to look at is *who*. What's the experience level of your wingmen? That doesn't necessarily boil down to stars on the sleeve, either. What's each pilot's recent experience been? Is he just coming back from SOS? Just out of MQT? Low GCC pilot in the squadron for the last two months? Is he a wing staff puke? Basically, you've got to look at the lineup and tailor your scenario to the lowest common denominator. That doesn't mean he shouldn't be challenged, but you've got to keep mission events below his saturation level. (This is especially critical at night.) Confirm their weather categories and currency for planned events (LOWAT, AAR, Dart). Last, you need to check training squares. If it's the fourth month of the half, and #2 still needs 18 instrument approaches, perhaps you should reconsider the "four-ship-up-initial" option. The bottom line is to know all you can about your wingmen and tailor the flight to meet their needs and abilities. In short, be a leader.



The *why* is the mission. You've got to think about that also, along with who you've got on the wing and what the weather is. Now is the time to

The bottom line is to know all you can about your wingmen and tailor the flight to meet their needs and abilities.

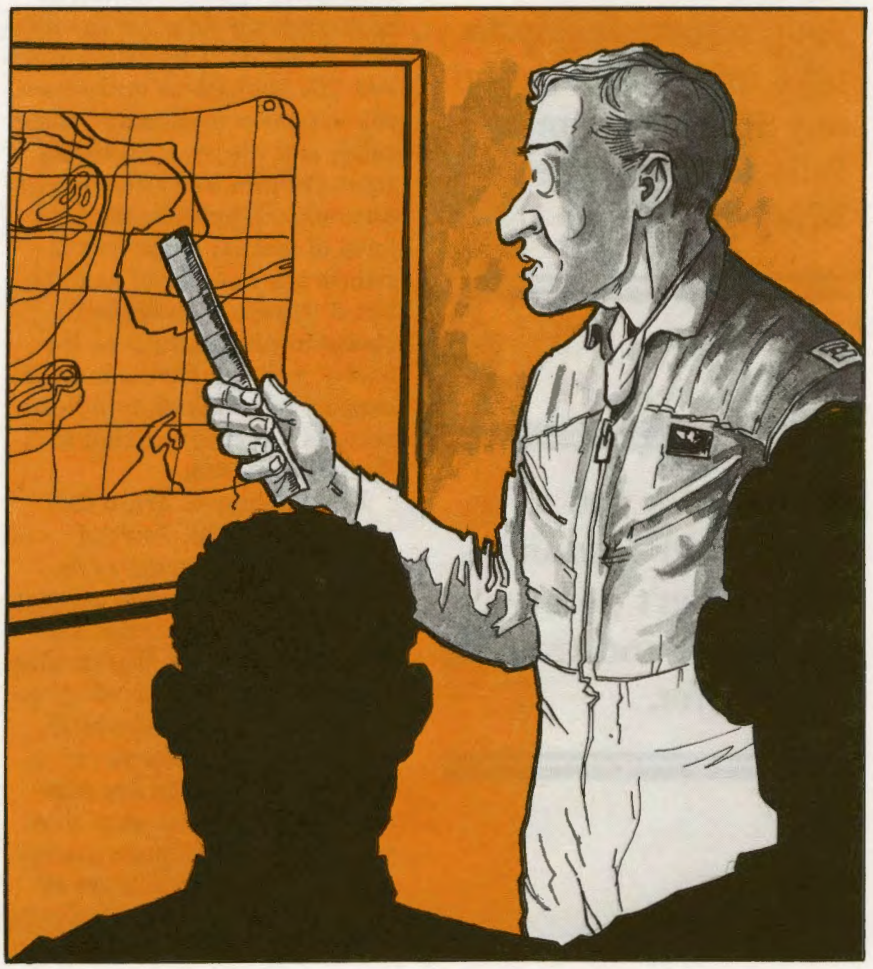
change things if something doesn't add up, rather than trying to ad lib it at 450 knots. You've also got to decide on alternative missions and fallout. This is an issue you don't want to address while you burn up gas and area time. Remember, if you didn't brief it, don't fly it. So, you need to think through the alternatives *before* you brief.

Last, review applicable documents as a part of your preparation. That may be as simple as running through your CAP (combat air patrol) versus sweep briefing notes, or it may entail a trip through TACR 55-79 and your local regs if it's a LOWAT, and you haven't led one recently.

Now you're prepared. You've built a logical, realistic scenario which meets the needs and capabilities of your wingmen, makes sense given the environmental conditions and has do-able, well thought out backups. It's time now to tell your boys what you're going to do and how you're going to do it.

Leading The Briefing

You're the commander from the time the briefing room door closes. Look and act the part, or you're going to lose them early. Preparation is a big part of that. It's tough to inspire respect and awe when you're tap dancing. You must inspire discipline in your wingmen by showing them you have it yourself. Start on time, keep up a good flow and be professional about *every* briefing item. This is where a disciplined flight starts. Here's the balance you ought to achieve: At the end of



FLIGHT LEADERSHIP: It all starts here

As the leader, it is your responsibility to take immediate action anytime a wingman fails to perform as briefed.

Respect for you as a leader will diminish if you don't point out mistakes, and training will suffer.

the brief, when you ask for questions, your wingmen ought to be concerned that you'll be displeased that they missed something in the brief, but they ask the question anyway, because they know if they screw it up in flight, you'll tear their face off.

In your briefing, emphasize mutual support. A four-ship employing against numerous adversaries is no place to entertain thoughts of free-for-all tactics. It's your job to make sure the wingmen understand their roles, and it's your job to use their abilities and firepower effectively. Sometimes the best form of mutual support is to reduce the number of bandits—but if it were the wingie's choice to engage, he'd be the leader, not you. Stress mutual support in the brief, and make sure its direct connection to discipline is clear.

Keep it simple. Train like you plan to fight. Anybody who tells me they're going to do some cosmic maneuver en route to their first real merge is a fool, a liar or both. If your plan is too cosmic for your wingman to understand it in the brief, it'll fall apart in the air. If aspects of the mission are standard, say so. (Make sure that you and your wingmen are operating from the same set of standards, however. If in doubt, brief it.) Take a look at what

you intend to say beforehand and get an idea of how much time you need. If it's going to take you up to step time to brief, you need to reconsider what and how much you're saying—or maybe you need to move the brief time up. Set definable objectives which relate to the scenario. Remember them or write them down to use in the debrief. Leave enough time between brief and step for each pilot to comfortably prepare, mentally and physically, for the sortie.

Heading Out To Fly

Step on time. Every facet of the mission is an opportunity to strengthen or weaken your position as the leader. If your flight's still mucking about aimlessly at step time, you've started to lose it and immediate corrective action is needed. A flight that is going to turn into a can of worms usually shows the symptoms early. The first one might be a wingman missing step time. The next might be sloppy radio check-ins. If that happens, do it over again until it sounds right. You have got to show your flight through actions as well as words that you won't tolerate any lapses. If Red Balls and aborts start to cause problems, take charge, make decisions and give directions. Don't waffle and leave your wingmen hanging, waiting for direction and wondering who's in charge.

Be A Leader

As the leader, it is your responsibility to take immediate action any time a wingman fails to perform as briefed. Don't let anyone chip away at your foundation of discipline; otherwise, the entire edifice will fall down around your ears. It is your responsibility to know where everyone is at all times. You have to know what every flight member's fuel is all the time. And you've got to be the most disciplined member of your flight. You have to know when it's time to call "Uncle" and pack it on home. And, you've got to be the hammer who makes the decision. It's the toughest part, especially when you're comfortable but you know that four is wheezin'. But, that's why you got the job—you're tough. You simply cannot stand idly by and watch things deteriorate.

Debriefing It All

The debrief is the payoff for the mission. Here's where the learning takes place. List the objectives from the brief, and compare them to the flight's performance. You don't have to relive every detail, but as a minimum, you ought to play a tape from each side to assess comm and look at each shot taken by your flight members. Any glaring errors, unusual developments or exceptionally good details of the mission must be thoroughly analyzed. Leave your own thin skin and tender sensibilities about your wingmen's feelings outside the door. It's not a time to pull your punches. Be patient with guys who made mistakes, admit them and learn from them—but show no mercy to a whiner. Respect for you as a leader will diminish if you don't point out mistakes, and training will suffer. This applies to senior wing leaders as well. If they screwed up, they know it, and they expect to be debriefed. 'Fess up to your own mistakes as well, but don't turn the debrief into a session of *True Confessions*. If you were that bad, maybe you shouldn't be up there in the first place.

Are you ready? Probably so, or your squadron commander wouldn't have put you in the upgrade program to begin with. Go in with confidence founded in your knowledge, be aggressive and demand the best from your wingman. Discipline is the key—have it yourself and demand it from your wingman. If you do, you'll do great, and our combat capability will increase as a result. ➢

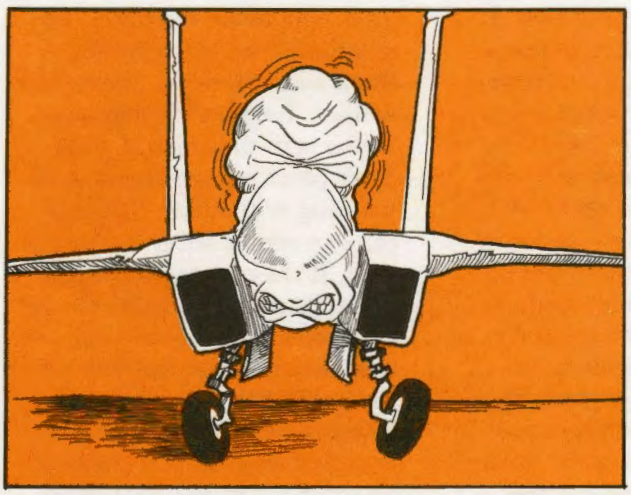
TAC tips

INTERESTING ITEMS,
MISHAPS WITH MORALS,
FOR THE TAC AIRCREWMAN

TAC Tips

Pain in the ear

The F-15 pilot closed his canopy before taxiing to the runway but noticed, after a minute at idle power, that the cabin pressure was increasing rapidly above the normal level. As he pulled back on the canopy control handle, a loud bang was accompanied by the canopy popping open about a foot before it settled back on the sill.



The cockpit pressurization problem was caused by the pressure regulator which was incorrectly safety wired in the test position. The regulator switch had mistakenly been secured in the wrong position during a recent canopy change. Both the environment control system specialist who did the test and the supervisor who signed off the work thought the switch was in the flight position. A closer examination of the switch found that the flight and test positions are color-coded and there was a 90-degree difference between the two settings. Both the specialist and the supervisor should have been able to readily detect the error if they had given the task the attention required.

Take time when you complete a job to make sure you've done everything correctly. Ask yourself if you left anything out or accomplished anything out of the prescribed order. But don't just rely on your mental double check; give your work a visual once-over again as well.

If you're responsible for inspecting someone else's work, expect mistakes. That's why you're required to inspect completed work. A healthy attitude of caution and skepticism can go a long way in ensuring that when you sign a job off, you know it's been done right. True teamwork should help us catch each other's mistakes before they become problems; not reinforce mistakes that have already been made.

Being aware is half the battle

A recent physiological incident resulted in the death of the pilot flying a USAF fighter. The pilot flew for 35 minutes with no cockpit pressurization at an altitude of 28,000 feet. He experienced symptoms of decompression sickness and landed, but died of the "chokes" several hours later despite treatment in a hyperbaric chamber.

Decompression sickness often occurs with varied severity from exposure to altitudes as low as 18,000 to 25,000 feet. Although most cases usually involve joint pains due to the "bends," any decompression sickness can become extremely serious if not treated. Awareness of cockpit pressure is an important part of every

fighter pilot's crosscheck. Remember, your day-to-day flying does not include pre-breathing with oxygen like altitude chamber training does. All that nitrogen in your body is just waiting to give you trouble if you let it. Also, don't ignore the rule about not flying within 24 hours of scuba diving. If you do, even your pressurized cockpit won't help you.

If you lost or don't have cockpit pressure, get below 25,000 feet ASAP, the lower the better. Report any symptoms of decompression sickness from any altitude to the flight surgeon. It's not worth dying for.

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 jet 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 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 "unknown 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.

SOME THOUGHTS ON FLIGHT SAFETY EXCELLENCE

Major Bill Barber
TAC Flight Safety

"What? Who me? You want me to be a safety officer? Sir, you've got to be kidding. I'm a daring, cunning, skillful fighter pilot. In fact, I'm the best pilot I know. You can't put me into safety. Only nerds work in safety."

Perhaps you or someone you know has reacted that way to being chosen as a safety officer. (I must confess; I did.) Or you might wonder what your peers would think if you became a . . . a . . . a. . . (come on, you can say it) a safety officer.

The TAC commander is determined to put our highest qualified people in flight safety, and he has put teeth into that policy.

Well, let's set the record straight. The TAC commander is determined to put our highest quality people in flight safety, and he has put teeth into that policy. For example, chiefs of safety now come from the TAC squadron commanders' list and FSOs at fighter interceptor squadrons must have experience at the flight commander or assistant ops officer level. It may not have always been that way, but it's going to be that way in the future.

I'd like to share my thoughts on how to make this assignment an opportunity and how to achieve excellence in flight safety. I firmly believe that we can all do a better job if we share our good ideas. In addition to my own experience as a squadron assigned flight safety officer (SAFSO), my job here at TAC Flight Safety gives me an opportunity to visit with a lot of FSOs and see their programs. If you're not a flight safety officer (FSO), read on anyway. FSOs don't have a corner on detecting hazards or fixing problems. Actually, we're all in the safety business together every time we fly.

For aviators, safety is not a career field, but a temporary assignment that broadens our careers. Your turn in the flight safety barrel can be a great opportunity to learn and perform with a high degree of visibility. And,

There are three key elements to your performance as a flight safety officer: knowledge, attitude and action.

you'd better believe you'll be doing at least as much as anyone else in the squadron to increase your squadron's chances for success in combat.

There are three key elements to your performance as a flight safety officer: knowledge, attitude and action.

Knowledge. The first thing you'll want to do is learn the basics of the job. As soon as you can, get to the USAF Flight Safety Officer's Course conducted by the University of Southern California at Norton AFB, California. It's certainly one of the finest safety schools anywhere in the world. In addition to learning how to manage a safety program, you'll learn what makes our hardware fail, how to tell whether it failed in flight or on impact and how to identify the causes so it doesn't happen again.

When you get back to the home drome, there are three important

Your knowledge of your unit's aircraft needs to be deeper than those pilots who just operate it.

areas of knowledge to concern yourself with: getting to know the aircraft, the procedures and the people (both Operations and Maintenance).

Know The Aircraft: Your knowledge of your unit's aircraft needs to be deeper than those pilots who just operate it. If you really understand what makes things work, it will be a lot easier to get to root causes when something doesn't work and that can help prevent a mishap. In addition to knowing how the individual parts work, you need to know how they fit together. This can be invaluable when you're looking at an airplane spread across the desert in little pieces. Here's a good way to learn your aircraft's inner workings. Go to your local phase dock and find an aircraft with all the panels off and the engine(s) out. Take your time and really get to know the machine. After you've stared at the thing for a while, grab a maintainer and ask him a couple thousand questions. Where are the hydraulic pumps? Is this the throttle linkage? What does this accumulator do? In a word, become an expert. The result will be well worth the time you invest.

Know The Procedures: Of course, you already know the procedures for operating your aircraft, but you should start getting familiar with maintenance procedures. If you find a problem, sing out right away and make sure the proper paperwork is submitted to change it. Remember, those procedures are being used worldwide; and if they caused your outfit a problem, they may cause someone else a mishap.

There are two ways that procedures cause mishaps. Either the procedure is incorrect or it is not being properly followed. We all like to find shortcuts, and often maintainers see valid ways to do a job more efficiently before the tech order writers do. The problem is that what appears to be a good shortcut may cause problems that the maintainer doesn't see. When someone finds a "better way," you'll want to see that it's submitted formally and evaluated promptly. If the idea is valid, we'll make it available to everybody. By making the system responsive to our inputs, we avoid the temptation to disregard the written procedures.

Know The People: People are much more than mere components of the system. They are not alike and they are not interchangeable. Each person is a unique individual and each one contributes to the mission in his or her own way. Time spent getting to know individuals pays great dividends in the long run.

Attitude: Attitude is the most important element in safety because it affects everything we do. As my job takes me around the command, I find that each unit has what could be called a "unit attitude." Each person contributes to it, but the commander makes the greatest contribution. Here are my rules on attitude:

SOME THOUGHTS ON FLIGHT SAFETY EXCELLENCE

1. "A 'can-do' attitude, diligent effort, and hard work result in two important achievements – mission accomplishment and flight safety."
2. "A 'must-do' attitude, strained efforts and overwork achieve neither."
3. "If you don't see the difference, you need to take another look."

Attitudes can change in a hurry so this area deserves constant vigilance.

Unfortunately, many people in the second type of unit think they're in the first type. Both types of units work just as hard.

Attitudes can change in a hurry so this area deserves constant vigilance. The nature of this task dictates that your observations will be subjective. Look constantly for signs of dissatisfaction or boredom. People who have fallen into a routine and no longer have their minds on their work are far more likely to make mistakes. Feed your observations to your boss, the commander, often. Be an extension of his eyes and ears. His leadership is the key to keeping people highly motivated and alert.

Action: Along with knowledge and attitude, you have to do something! Of course, you'll keep up with the administrative details such as making sure meeting notes are posted and reports go in on time, but don't let those things dominate your time. There is so much else you could be doing.

The basics are laid out in applicable regulations and the inspection guide, but they intentionally leave a lot of flexibility. The key to a truly excellent safety program is in your innovative ideas. There is no way to keep interest in safety high with the same old stuff repeated over and over each month. If you want to hold people's attention, you have to keep thinking up new ideas all the time. Keep it new, interesting and exciting.

You don't have to do all this by straining your own brain. There are plenty of sources of good ideas. Other units' UEI reports and the *TIG Brief* will describe other folks' best ideas. The writeups for both individual and unit safety awards in *TAC ATTACK* are also full of gems.

The briefing of mishap reports can be a dull, boring routine or an important part of mishap prevention. It's up to you which ones you brief, so pick those that are most applicable. Be sure you always emphasize the most important thing: the "lessons learned" for your troops.

The most vulnerable time for your unit is when there is a change.

The most vulnerable time for your unit is when there is a change. The bigger the change, the greater the potential for trouble. You'll do your commander a great service if you'll thoroughly think through all the implications of the change and help him anticipate the potential problems.

How good a safety officer you become is up to you. Your unique contribution to your unit's combat capability is to preserve the people and machines that will perform the mission through mishap prevention. How well you do that will depend on your knowledge, attitude and actions.

OUTSTANDING ACHIEVEMENT IN SAFETY AWARD

TSgt Richard M. Thornton
23 CRS, 23 TFW
England AFB, LA

SSgt Randall F. Money
116 CAMS, 116 TFW
Dobbins AFB, GA

TSgt Richard M. Thornton was notified that a liquid oxygen (LOX) cart was leaking on the flightline. Arriving on the flightline, he discovered the cart was sitting next to an A-10 aircraft and the build-up valve had worked loose and would not shut off. The cart still had about 35 gallons of LOX in it. Realizing the potential danger, he immediately instructed another individual to notify the fire department, evacuate the area and stand by in case of fire or explosion.

While the fire department and primary crash net were notified of the situation, TSgt Thornton worked around the leaking LOX cart, trying to hand tighten the build-up shaft nut in order to slow the leak and minimize the danger of explosion. To do this, he had to manually regulate the vent valve between the open and closed positions to prevent an explosive pressure build-up while simultaneously making several minute hand adjustments to slow the leakage enough to tighten the nut with a wrench. He finally succeeded in stopping the overflow, relieved the

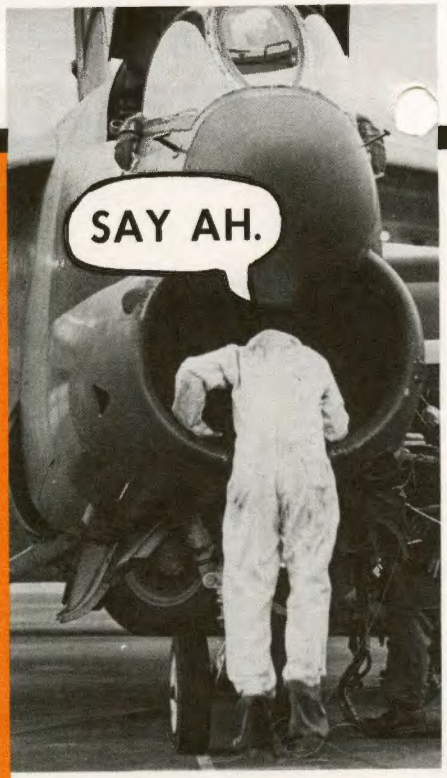
pressure and alleviated the danger to aircraft, personnel and equipment. Had the LOX come in contact with petroleum, hot tar on the ramp or the aircraft, it could have resulted in a catastrophic explosion.

TSgt Thornton's decisive action and timely efforts to prevent a serious explosion earned him the TAC Outstanding Achievement in Safety Award.

Staff Sergeant Randall F. Money was performing end-of-runway inspections on several F-15s scheduled for a BFM mission when he detected a small hole punctured in the engine augmentor nozzle support assembly on one aircraft. Further investigation revealed major damage to the engine augmentor area. A slider bracket had broken on a divergent nozzle segment causing the control linkage to bind and jam on the convergent nozzle segments with the resulting puncture damage. Had this damage gone undetected, the aircraft could have experienced an engine stall/stagnation, augmentor blowout or an augmentor "burnthrough" with some serious damage to the aircraft.

SSgt Money's discovery of this discrepancy was noteworthy because the damage was in an area not highly visible and was discovered during a brief inspection which does not allow time for an in-depth inspection. His alertness and attention to detail have earned him the Outstanding Achievement in Safety Award.


PRESS
FUNNY FOTOS


SAY AH.

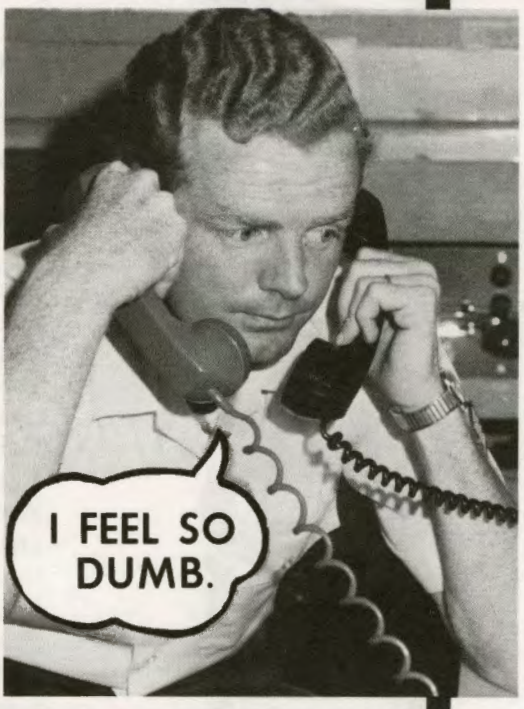

THIS IS A HATCH.
NO NO, HATCH. NOT HACH.
CAN YOU SPELL NERD ?


I'LL SURE BE GLAD WHEN HIS WIFE STOPS KNITTING THESE DUMB JACKETS FOR THE TROOPS.

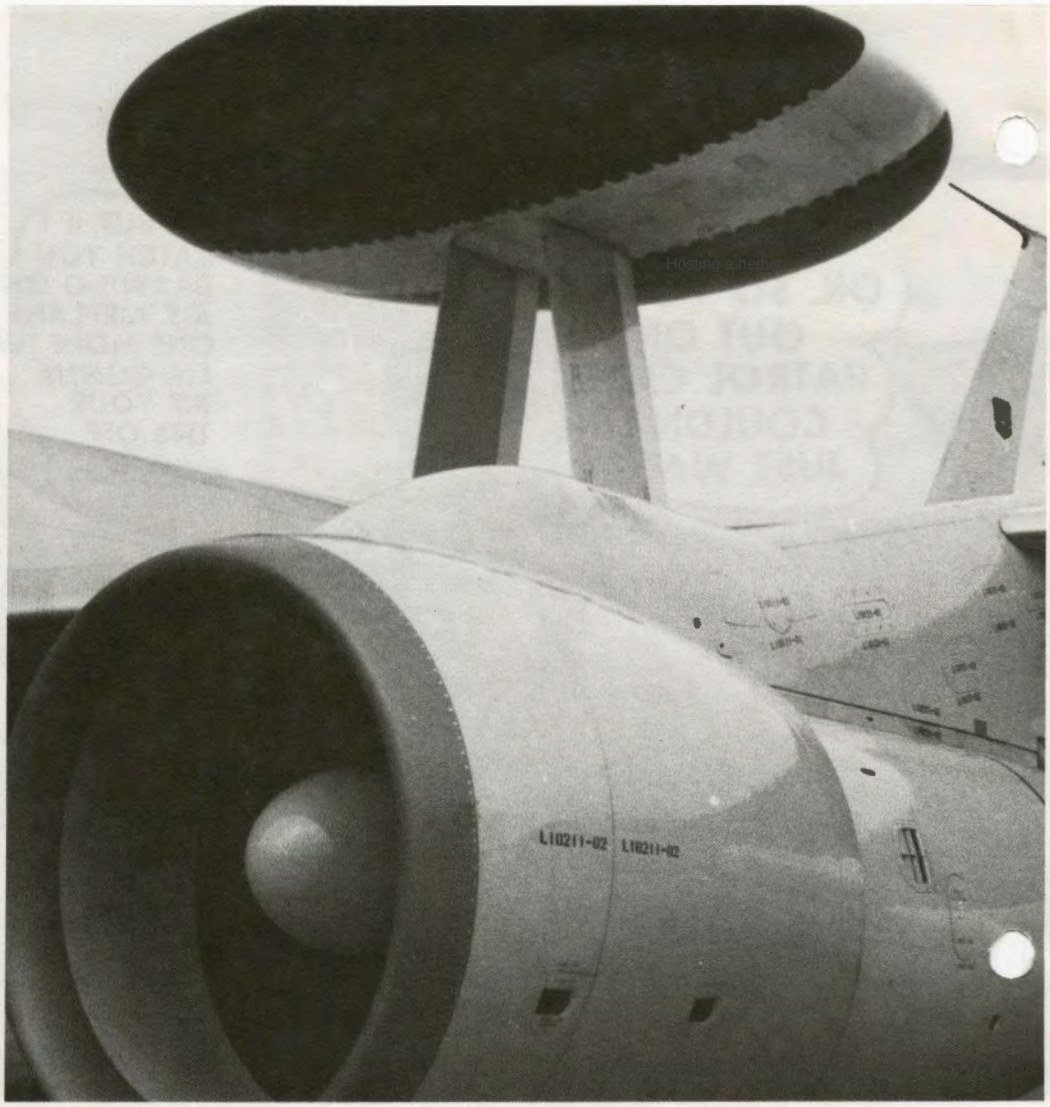

OK, SO YOU'RE OUT OF PATROL CARS. COULDN'T I JUST WALK ?


OK BUT, IF I CATCH YOU DRAWING ON MY AIRPLANE ONE MORE TIME, I'M GONNA RIP YOUR LIPS OFF.


I'LL SURE BE GLAD TO GET OFF THIS MESS HALL BOLOGNA RUN.


I FEEL SO DUMB.

HOSTING A HEAVY



Lt Col Rich Favela
Maj Charlie Suther
552 AWACW/DOV
Tinker AFB, OK

The E-3 Sentry (AWACS) has just celebrated its 10th anniversary of flying operations. Many of you are familiar with the E-3 and its distinctive rotodome. Perhaps you've seen it flying around your base in the radar pattern or parked out on the ramp. Like the rest of TAC, E-3 crews spend a lot of time TDY because one of our primary goals is to effectively train with all of TAC's fighter pilots. To do that, we often fly an E-3 into a base for two to four days of scheduled training or to participate in a locally sponsored exercise. Recent experience has shown that interjecting our big airplane into your "turf" presents some differences that you may not be used to. We would like to take this opportunity to pass along some information that could make our next visit to your base easier for both you and us. The point is, we want to maximize safety and training, and minimize our impact on your flying and support activities.

Let's take it from the top. An E-3 is inbound to your airfield for a full stop landing. Our procedures call for en route descents to maintain a nominal descent rate of 2000 to 2500 feet per minute. Most high altitude approach procedures require higher descent rates to

We would like to take this opportunity to pass along some information that could make our next visit to your base easier for both you and us.

arrive at mandatory altitudes at designated points. If we are to fly penetrations, we have two options: fly at higher airspeeds which cause difficulty in configuring the E-3 due to flap limits or fly with flaps extended at a slower speed which may disrupt your fighter flow spacing, thus interrupting your training. That's why it's better for us to be radar vectored to intercept final outside the final approach fix (FAF) for an ILS or PAR pickup. Once past the FAF, we'll be maintaining 125–140 KIAS on final, depending on gross weight. The minimum runway length/ width we can accept is 7,000 x 135 feet but we prefer a longer runway. While some fighter bases routinely recover aircraft with tailwinds due to barrier setups or noise abatement constraints, we prefer headwind landings. High pressure altitude locations like Holloman, Nellis, Hill, etc., can sometimes make us wonder if we will get that heavy stopped in time without overheating the brakes. (You guessed it – no thrust reversers.)

Okay, we're down, off the active runway and cleared to taxi to the parking ramp. If we follow your taxi lines, we'll need 100 feet either side of the taxi line to clear any obstacles or parked aircraft without a marshaller; 85 feet with a marshaller. Visibility aft of the wing tip is restricted, and we are always relieved to see marshallers waiting to help. The E-3 is 16 feet wider and 18 feet longer than a KC-135 so what was adequate parking space for a tanker can be a tight fit for us. Moreover, your flight line vehicle drivers often think in terms of fighter wing spans and, unknowingly, become obstacles to a taxiing E-3. Parking us over a refueling pit will simplify the refueling process as we can easily tie up all of the available fuel trucks (100,000 pounds is a normal refuel). As a Priority B security resource, we'll need to have the aircraft roped off with a 24-hour security guard posted. Because of the large crew we have on-board, a big 45-passenger bus is requested as we can easily "cube out" a standard 29-pax bus with 30-plus crewmembers, overnight bags, and so forth.

Departure day is another area where "heavies" often encounter problems. Our missions usually require takeoffs at or near maximum takeoff gross weight which means using the longest runway available and taking off into the wind. Again, because of barrier setups, ATC constraints or noise abatement procedures, some fighter bases will maintain a primary runway direction with a tailwind. There are some limited conditions under which an E-3 can take off with up to 10 knots of tailwind (light gross weight, no obstacles); however, our Dash One recommends against it. So, please bear with us when we insist on taking off into the wind; to us, it's a matter of safety.

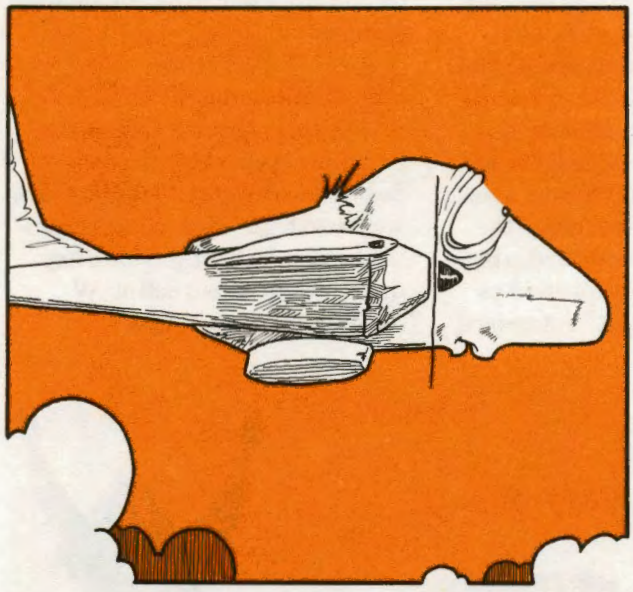
So, that's our pitch. We look forward to paying you a visit as the benefits of being able to conduct face-to-face briefs and debriefs are well worth the extra effort of coming to your base. If you have any questions, give us a call at AV 339-2200/2326.

CHOCK TALK

Incidents and Incidentals with a Maintenance Slant

Don't get in my way

During climbout following a normal takeoff, an OV-10 pilot noticed that he could only move his rudder pedals in either direction with great difficulty. Everything had checked out fine on the ground, but now something serious was wrong. An inflight controllability check was performed, and everything seemed OK except for the jammed rudder pedals. The pilot brought the Bronco back for an uneventful straight-in landing.



The problem turned out to be a wiring bundle that ran along the fuselage near the top of the right rudder pedal. When the rudder pedals were at an intermediate position, the right one snagged on the wiring bundle. The wire bundle was hanging in the way because the string ties that it was secured with had loosened with age. The wiring bundle was subsequently retied with plastic ties and a restraining clamp was repositioned to prevent future problems.

Have you been working around wire bundles that aren't neatly secured like they should be? Next time you get around some, take a few extra minutes to make sure everything's tucked away and not likely to conflict with any moving parts.

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.

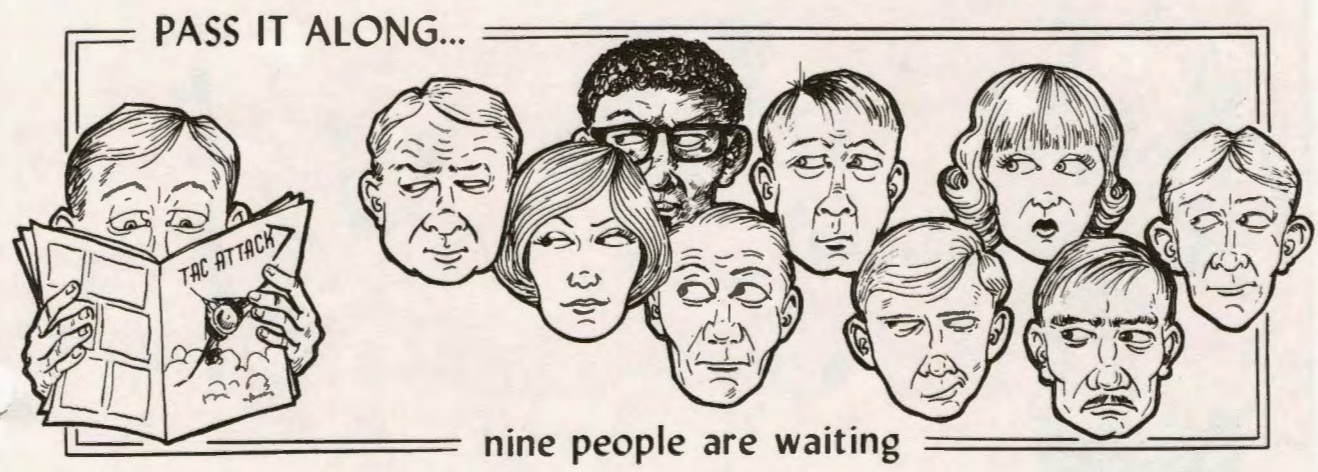
The intake of any running jet engine should be treated with utmost respect. The F-16 engine is particularly noteworthy for the amount of suction created, but every jet engine is just like a giant vacuum cleaner. In this instance, the warning for the F-4 engine was to remain a minimum of five feet away from the intake; the weapon loader was within three 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.

Bent out of shape

An F-4 was being placed on alert status, and all of the Aero 7 rack and rocket motor safety pins were in place. About 50 seconds into the missile tuning process, the crew chief notified the aircrew that smoke and hydraulic fluid were coming from the left forward AIM-7 guidance and control unit. They immediately shut the aircraft down and hopped out.

Inspection of both the missile and the aircraft after the incident revealed that some bad connections had caused the problem. Following maintenance on the aircraft radar system, the radar set control box was removed and replaced. When it was reconnected, several connector pins were bent, allowing incorrect voltages to be present in the system.

Electronic connecting devices don't take kindly to brute force treatment. When a plug doesn't seem to fit, ask yourself why. Is a part of the connection out of proper alignment or are you trying to put a "square peg into a round hole?" If you succeed in forcing the plug or part into place, you may end up with more serious results later on.



THE UNIVERSITY OF HAR

Mr. Cal Faile
TAC/SEG

The approach of winter brings back memories of times long forgotten. Some were good and some were bad, but all were received from the University of Hard Knocks which has the best educators in the world.

I am a firm believer that experience is the best teacher. For instance, take the time I was stationed at one of our northern bases in the cold of winter. How cold was it? It was so cold, icicles had to be brought inside the house so they could form properly. One evening as the temperature plunged below the 32-degree mark, I pushed the thermostat higher, sat back in my easy chair and awaited a corresponding rise in the temperature. Nothing happened. I checked the furnace and found, to my dismay, that it had quit working.

After several frantic telephone calls, I found a repairman who was willing to venture out in the cold through a blizzard that was developing outside. He was the last repairman listed in the bright yellow pages of the phone book, so I thought my luck wasn't too bad. As we waited for him to arrive, the temperature inside the house dropped considerably and we wondered where it was colder – inside or out. John, our oldest son, quipped that we could save electricity by unplugging the refrigerator and just opening the doors. At that point, I didn't think he was very funny.

Several hours passed and still no repairman. At least we had been able to finish our evening meal before it froze. Thinking ahead, my wife dressed the kids in their snow suits just in case we had to vacate the premises.

A little after 10:30 at night, the repairman arrived with a look on his face that sent a chill up my spine, breaking off what little perspiration had frozen in that area. He explained that he had gotten stuck in the snow three different times. All I could think to say was that I didn't think it was that bad out. He mumbled something about "I should take a look outside." I did

D KNOCKS

and then I knew what a "whiteout" meant. It was like looking at a white bedsheet held in front of your face, resulting in zero visibility. I was amazed that he actually made it to our house.

The repairman examined the furnace and, peering over his shoulder at me, asked, "When was the last time you had this furnace checked, boy?" This guy was six feet, four inches and weighed around two hundred pounds so I wasn't about to question him calling me "boy." I responded with a weak excuse that we had only moved in two months before. He replied that that was plenty of time to have it checked before cold weather set in. Continuing to seek ways to justify my procrastination, I thought to myself that the landlord should have seen to that.

As he removed more parts from the furnace and shook his head, I got the feeling we were in for more than I had expected. He continued to mumble something indiscernible, but I got the message and sent the kids back to the living room in case he decided to air his thoughts in plainer English.

About an hour later, he lowered the boom with "I can't fix the furnace until I get a new safety valve assembly." This valve regulated the flow of fuel to the burner assembly and was sensitive to temperature. Things could have been real serious had the valve failed in the full open position. It cost twelve dollars. "Great," I thought, "this shouldn't cost too much after all." Then he turned the screw a little more with, "It will take about two weeks to get the part because it has to be ordered from the manufacturer." Dollar signs started to rise before my eyes.

The sad fact was that the part would not have failed when it did if it had been maintained properly, i.e., a minor adjustment during a preseason check that would have prevented its failure from burnout. In addition to the twelve dollar part, we had to spend over six hundred dollars for lodging and food. The service call was fifty bucks so the twelve dollar part ended up costing me roughly $700. I got stuck with the full bill because I failed to properly read the fine print in the rental contract which placed responsibility for maintaining furnished appliances and equipment on me. This was an expensive, but very valuable, lesson for a "three-striper" with three kids.

The moral of this story is – be prepared. Plan for all contingencies before the winter season arrives. This applies not only to heating systems, but to other equipment you use as well. When was the last time you had your car tuned up and your tires, brakes, fluid levels, battery and windshield wipers checked? Going hunting this season? Have you maintained your weapon properly? If not, have a qualified weapon repair specialist check it out. Where do you store the gasoline and oil for the lawnmower? If they're in close proximity to the furnace, a leak could give you a very enlightening experience.

Remember, the lack of proper planning, preventive maintenance and reading the fine print has resulted in the needless loss of many hard-earned dollars. I couldn't afford it back then and I couldn't afford it now. Even more important, I cannot and will not place my life or anyone else's in jeopardy. I've learned many lessons from the University of Hard Knocks. This was one of the most valuable.

Looks ain't everything

The F-16 Falcon was cruising away from base at 400 knots and 5000 feet when a BDU-33 just fell off the left TER. No switches had been thrown. No pickle button depressed. Another dropped object. The bomb exploded when it hit the ground but nothing was damaged.

Back on the ground, maintenance troops started taking the armament system apart to determine the problem. The ejector cartridge hadn't been fired, so an electrical malfunction was ruled out. When the TER was bench checked in the armament shop, the culprit came to light: some rivets used to secure the breech retainer clip to the rack housing were too long. They hadn't been installed according to tech data and prevented the breech from seating fully. The breech, in turn, prevented the lock/unlock linkage from seating properly. Despite all of the pieces that didn't correctly fall into place, the safety pin could be installed which indicated a locked condition. Regardless, the forward hook was not fully engaged and allowed the bomb to drop off at the wrong time.

Tech data works every time—but we must use it properly first.

Good news?/Bad news?

SMSgt Ed Hartman
Chief of Explosives Safety
HQ TAC/SEW

We've all heard the comedy routine that asks the question, "Which do you want to hear first – the good news or the bad news?" The good news and bad news are jokingly linked to an object in the comparison, and the end result is usually an amusing anecdote. Sometimes in the safety field we use the good news/bad news routine to show appreciation for a job well done that prevented a mishap (good news) or to highlight lessons learned from an actual mishap (bad news). The reader usually applies the good news/bad news labels unconsciously to the stories.

In the following passage about A-10 weapons maintenance and load crew actions, I have taken the liberty to assign the labels to each step of the mishap sequence. Interpret the "good news" items as favorable conditions or actions that could have stopped the mishap chain of events. The "bad news" entries are unfavorable conditions or actions which lended themselves to or were causes of the mishap.

GOOD NEWS: Aircraft returned from phase inspection due for a 36-round check of the gun by weapons maintenance before ammo uploading.
BAD NEWS: When the load crew arrived to upload ammo into the aircraft, the AFTO Forms 781 were missing.
GOOD NEWS: They contacted the shift supervisor.
BAD NEWS: The shift supervisor, after being briefed on the 36-round check by the preceding shift, failed to check the forms but informed the load crew that the aircraft was safe for loading.
GOOD NEWS: Realizing his error halfway through the upload, the supervisor informed the load crew to download the ammo, allowing the maintenance crew to perform the 36-round check.
BAD NEWS: When the maintenance crew chief arrived, he informed the weapons load crew that the 36-round check could be performed without downloading the ammo.
GOOD NEWS: The maintenance crew backed approximately ten rounds out of the gun, pulled the gun safing pin and disconnected hydraulic power to check the gun safing solenoid operation. The solenoid did not operate.
BAD NEWS: Reapplying hydraulic power, the maintenance crew reinstalled the gun safing pin, cycled the

ammo into the gun, backed approximately 10 rounds out again, then checked the circuit breakers.

GOOD NEWS: The maintenance crew discovered the GAU-8 circuit breaker pulled.

BAD NEWS: The maintenance crew reset the circuit breaker.

BAD NEWS: Forgetting that the hydraulic power was applied, the maintenance crew pulled the gun saf-ing pin.

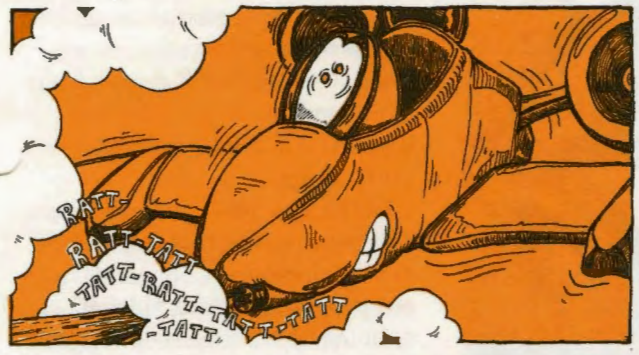
BAD NEWS: The maintenance crew depressed the trigger to check the gun safing solenoid operation.

BAD NEWS: With the trigger depressed, the gun rotated, cycling the ten empty elements and firing three live rounds before the trigger was released.

GOOD NEWS: The bullets impacted in a grassy area approximately 140 feet in front of the parking spot.

BAD NEWS: The bullets ricocheted into a *relatively* unpopulated area.

GOOD NEWS: No one was injured and no property was damaged.



There is no amusing anecdote here. A serious potential for a catastrophic mishap existed. One other "good news" item that could be added was that the aircraft was parked so it was pointed in a *relatively* safe direction for its forward-firing ordnance. (Probably the result of a previously assigned, safety-minded manager.)

There were several opportunities for this scenario to end as a routine operational check and loading of ammunition. Each of the "bad news' conditions should have alerted someone that something was wrong. Why didn't they? Some of the reasons include: lack of communication between shifts and individuals; complacency about the job at hand and poor supervision. The big culprit, however, was the "proverbial" **FAILURE TO FOLLOW TECHNICAL DATA.** Don't ever assume that your years of experience can replace the need for a T.O. The maintenance technician in this mishap had over eight years experience working on the 30mm gun system of the A-10 aircraft. May all *your* news be *good news.*

Lines everywhere

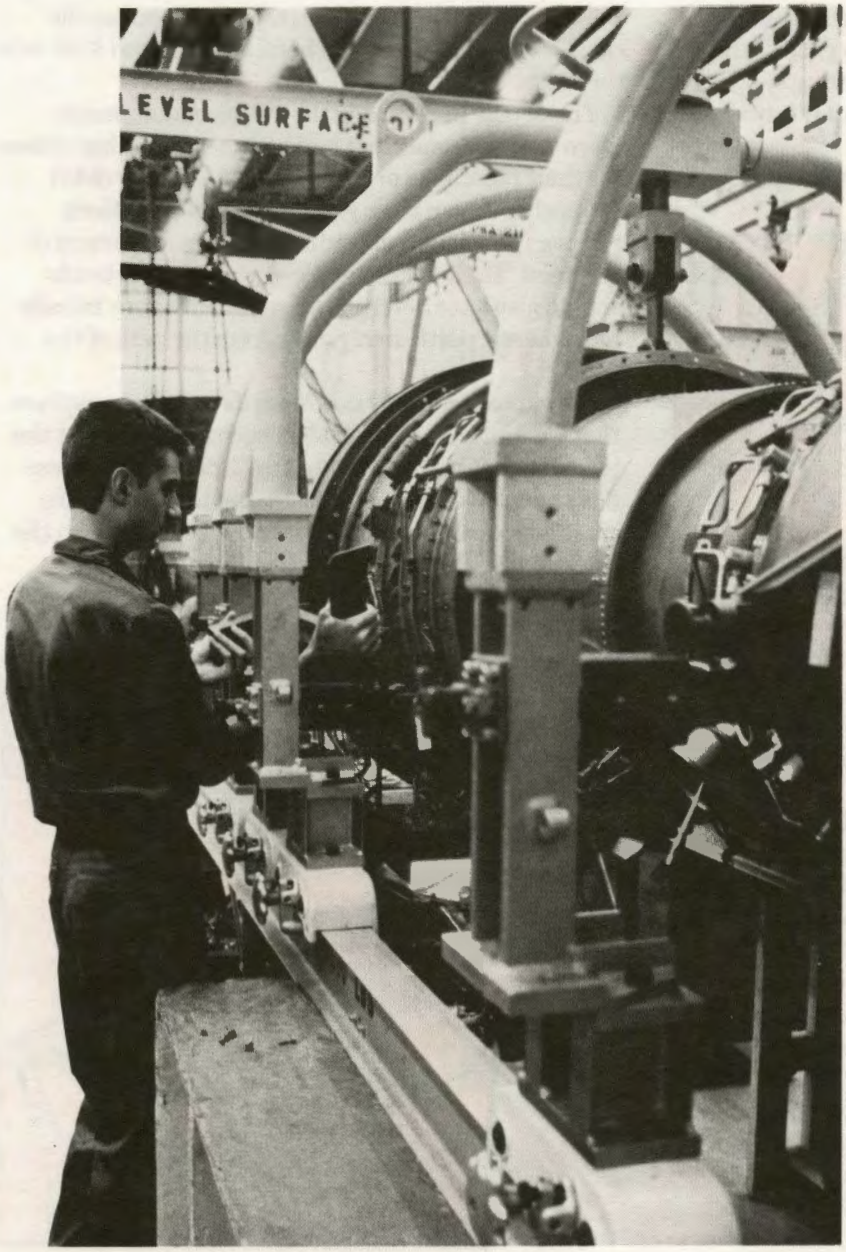
A missile maintenance crew was just completing periodic inspections and required paint touchup on a group of AIM-7F missiles. The fifth missile was finished, and the crew was placing it back into the storage container with the assistance of a 2½-ton hoist. While they took the missile across the bay, the crew didn't notice a grounding cable that was attached to a warhead lying some distance away. The warhead was drying after being painted, and the grounding wire was strung across the bay in the path of the hoist.

As the maintenance crew concentrated on aligning the missile into its container, they didn't notice the cable as it snagged the warhead and dragged it off onto the floor.

The people performing the missile maintenance were the same ones that had laid the grounding cables for their painting work. Unfortunately, they didn't properly preplan their grounding cable positions, placing them in direct conflict with the movement of the hoist. The workbench for drying the warheads should also have been placed well clear of any missile movements, particularly away from the path of the hoist.

Do you have any obvious hazards in your workplace that you put there? Don't be in such a hurry to get the job done that you set yourself up for a mishap. These folks may have maneuvered around that grounding cable successfully on the first four missiles but on the last one just forgot that it was in their way. Then, instead of the job being finished, they had a broken warhead to send back to the depot for repairs.

4 LEVEL TRAINING:



SMSgt Gongaware
TAC/LGQT

Limited or insufficient maintenance training is a key area that has the potential for leading to mistakes and possibly a mishap. The only way to guarantee against that is to ensure we make no mistakes. Unrealistic? It doesn't have to be, and one way we can work towards that goal is through better training.

In October 1987, a new program will come on-line that will change how Air Training Command trains our people. Known as "4-level" training, this initiative is designed to graduate students from USAF technical schools who are more proficient and better able to perform necessary maintenance tasks when they reach your unit in the field. The jet engine maintenance course at Chanute AFB, Illinois, has been selected as the "test bed" for this new training concept.

"Four-level" students will spend about four extra weeks at Chanute and get more experience in the following areas: engine installation, troubleshooting, working with test equipment, jet fuel starters (not currently taught), engine teardown and systems training. The goal of the training is to give your unit a technical school graduate who is more immediately productive when he or she arrives in

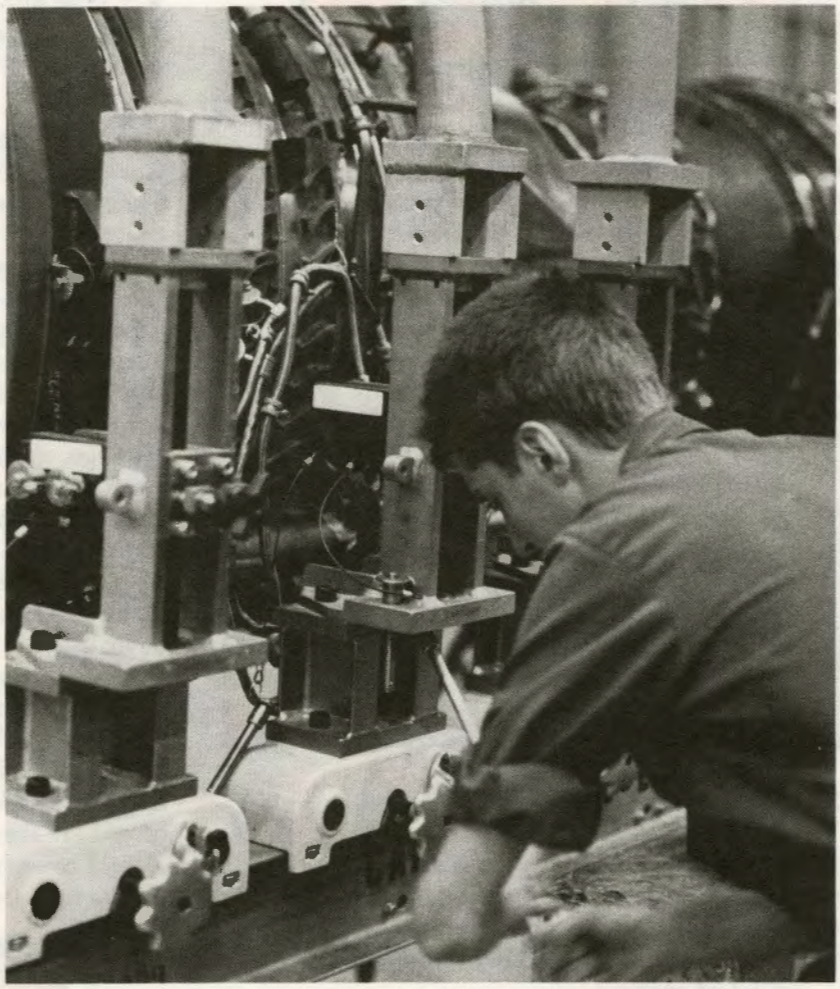
on the horizon

the shop or on the flightline.

As the 30-year old technology of the J57 engine is rapidly being replaced by the high technology of the F100 engine and an F100-220 derivative found in the F-15 and F-16, "four-level" students will have the training necessary to keep the Air Force flying into the 21st century. They will be able to do far more than just identify arts; they will be able to tear an engine down with minimum supervision.

The "4-level" initiative will be funded by the reinvestment strategy, where information processing skills training is converted in whole or part to computer-based training. The resulting savings in decreased student and instructor man-years will be reinvested in weapons specific training which can be provided when and where it is most needed – the school house, the field training detachment or the work center.

If you have any questions or need more information about this initiative, please give me a call at AV 574-2102/3688.



Good Poison News. During the past 25 years, the number of children younger than 5 who died from swallowing medicines or household chemicals declined 88 percent, according to the U.S. Consumer Product Safety Commission. The major factor attributed to this decline is the child-resistant cap. Next time you cuss at those caps, remember that they've saved some kids' lives.

Six rules for proper lifting:

1) Get comfortable.
2) Bend your knees, not your back.
3) Keep the load close to your body.
4) Lift steadily and smoothly, don't jerk.
5) Avoid twisting your body as you lift, move your feet instead.
6) Get help with a load that weighs more than a third of your body weight.

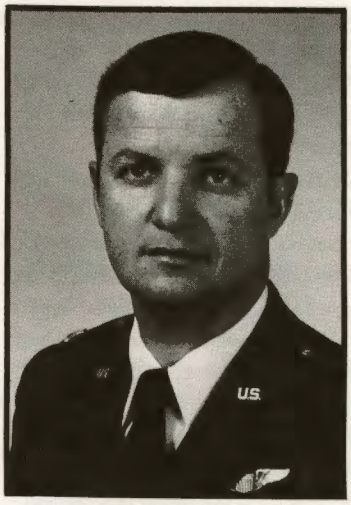
Even if you don't like to eat them, keep a bag of **frozen peas** in the freezer because it makes a great ice pack. Not only is it cold, but a bag of frozen peas can be easily molded around a strain or sprain.

Next time you shop for a new car, ask about these **safety features.** They're available, but not always standard equipment.

- Airbags.
- Antilacerative windshields.
- Electronic antiskid brake control.
- Special side-door reinforcements.
- Lap belts for center front and center rear positions.
- Rear shoulder belts.
- Third-generation energy absorbing steering column.
- Fully padded instrument panel.
- 5 mph bumpers.
- Audible wear indicators for brake disc linings.
- Childproof rear-door locks.

Read any good tires lately? The Federal Government has brought treadwear ratings back. They were discontinued for a while because of controversy over accuracy. But so far, consumer groups seem happy with the new ratings, which have been in effect since September 1985. Treadwear ratings are intended for use as comparisons. For example, a treadwear rating of 200 can be expected to last twice as long as a tire with a rating of 100. To estimate expected tire mileage, multiply treadwear rating by 200. Here's how to read your tire: from left to right, the first rating, an A, B or C, is for traction resistance. An A tire will stop on wet pavement in a straight-ahead braking position in a shorter distance than a B or C tire—something to consider if you live in a rainy climate. The next rating, represented again by an A, B or C, is temperature resistance and tells how hot a tire will get. An A tire stays cooler than a B or C tire which is good for hot climates or long-distance drivers. The last is treadwear rating, a number anywhere from 90 to 330. Experts say that you should consider your individual needs; it might not be necessary for you to have an A A 330 tire.

AIRCREW OF DISTINCTION



Major Billy J. Gracy, Sr.
61 TFTS, 56 TTW
MacDill AFB, FL

Major Billy J. Gracy, Sr., was leading a flight of two F-16s on a surface attack tactics sortie. While orbiting over the low- level entry point, a large bird suddenly appeared in front of his aircraft, leaving no time to maneuver or take evasive action. The bird was ingested into the engine, which immediately developed a loud whine and filled the cockpit with smoke.

At low altitude and over 50 miles from any suitable recovery field, Maj Gracy immediately jettisoned his external tanks, left the throttle at its current setting and began to climb. Next he directed the rear cockpit pilot (flying only as an observer) to select 100% oxygen, placed the environmental control system to RAM to clear the smoke and declared an emergency with the controlling agency. Shortly thereafter, the hydraulic/oil pressure warning light illuminated and the oil pressure decreased to zero.

Major Gracy left the throttle set at mid-range and continued his climb toward home. Approaching 18,500 feet MSL, the engine experienced several severe compressor stalls. Major Gracy retarded the throttle slightly and the compressor stalls stopped with RPM set at 75%. Shortly thereafter, the engine compressor stalled again and finally seized.

Still over 32 miles from MacDill at 18,000 feet, Major Gracy realized he would be unable to glide to a landing there. With Tampa International Airport approximately seven miles closer, he advised Tampa Approach his only hope would be to make a straight-in approach at TIA. Even then, he would be operating at the edge of the F-16 glide performance envelope. At best, he was faced with a straight-in, flameout approach over a densely populated area.

Competing with inbound civil traffic, Major Gracy forcefully communicated the seriousness of his emergency and the necessity to have sole use of the approach frequency. With the airport obscured by low clouds, he requested Tampa Approach provide vectors to and distance out from the runway. The FAA Sector Controller skillfully supplied Major Gracy with accurate bearing and distance information.

Major Gracy continued his glide and broke out of a low cloud deck at 3500 feet MSL. Slightly lower than desired, he delayed blowing down the gear until a safe landing was assured. He then lowered the landing gear with the alternate extension system and gradually slowed the aircraft for touchdown. With no arresting cables or barriers at the airport, his decision not to activate the jet fuel starter with the engine seized preserved brake accumulator hydraulic pressure and allowed the backup braking system to stop the aircraft on the available runway.

Major Gracy's time-critical decision making and superb airmanship were responsible for the safe recovery of a valuable combat resource and have earned him recognition as the TAC Aircrew of Distinction.

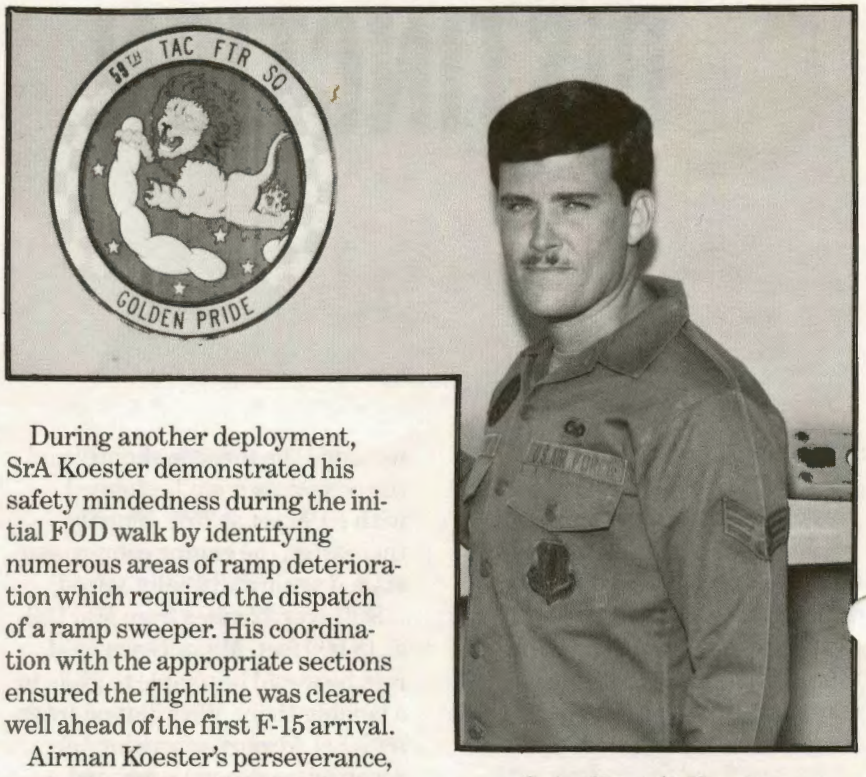
TAC CREW CHIEF SAFETY AWARD

Senior Airman Albert A. Koester's safety consciousness and dedication as an F-15 assistant crew chief have contributed to the overall safety awareness of the 59th Aircraft Maintenance Unit (AMU) and the 33d Aircraft Generation Squadron.

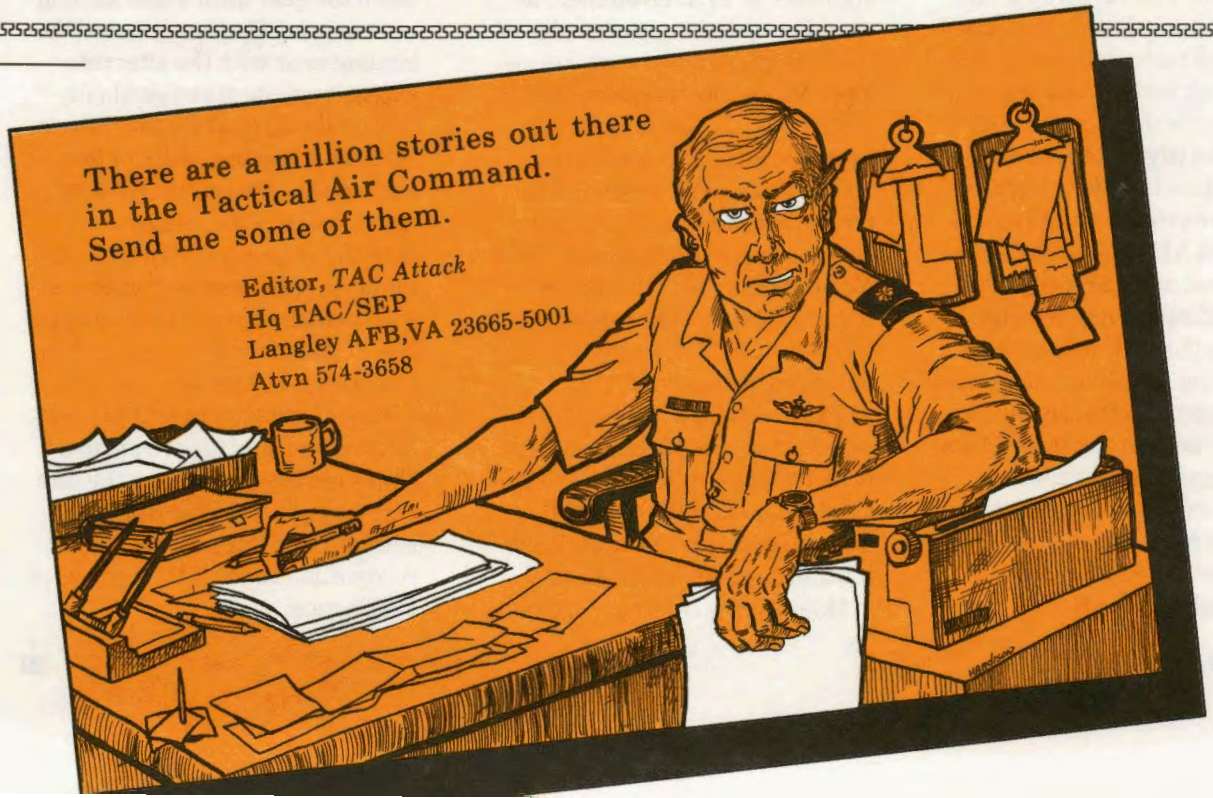
During a deployment to Carswell AFB, TX, an F-15 pilot noticed a knob drop from the UHF radio panel inside his cockpit during a DACT sortie. When the aircraft returned from the mission, SrA Koester scoured the cockpit in search of the knob for an extended period of time, mostly during darkness, to no avail. The following morning he returned, determined to locate the knob before it became necessary to dispatch an egress crew to the TDY location. Through his persistence and determination, he was able to locate the knob as well as a washer which might also have lodged in the aircraft's flight controls.

During another deployment, SrA Koester demonstrated his safety mindedness during the initial FOD walk by identifying numerous areas of ramp deterioration which required the dispatch of a ramp sweeper. His coordination with the appropriate sections ensured the flightline was cleared well ahead of the first F-15 arrival.

Airman Koester's perseverance, professionalism and dedication to safety have earned him the TAC Crew Chief Safety Award.



SrA Albert A. Koester
33 AGS, 33 TFW
Eglin AFB, FL



TAC TALLY

	TAC			ANG			AFR		
	AUG	thru Aug		AUG	thru Aug		AUG	thru Aug	
		1987	1986		1987	1986		1987	1986
CLASS A MISHAPS	0	10	16	0	4	4	0	3	0
AIRCREW FATALITIES	0	11	7	0	5	0	0	4	0
TOTAL EJECTIONS	0	8	11	0	2	6	0	2	0
SUCCESSFUL EJECTIONS	0	6	11	0	2	6	0	0	0

TAC'S TOP 5 thru AUG 1987

1st AF	
class A mishap-free months	
84	318 FIS
31	325 TTW
19	57 FIS
19	5 FIS
10	48 FIS

9th AF	
class A mishap-free months	
54	33 TFW
27	507 TAIRCW
18	31 TFW
13	354 TFW
11	4. TFW

12th AF	
class A mishap-free months	
76	USAFSO
52	366 TFW
36	355 TTW
34	27 TFW
30	58 TTW

ANG	
class A mishap-free months	
217	182 TASG
201	110 TASG
176	138 TFG
158	177 FIG
153	114 TFG

AFR	
class A mishap-free months	
84	482 TFW
74	924 TFG
62	906 TFG
36	507 TFG
23	917 TFG

DRU's	
class A mishap-free months	
131	28 AD
1	USAFTAWC
1	USAFTFWC

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	1987	3.5	2.7	2.2	2.0	1.6	1.9	2.3	2.0				
	1986	4.8	6.8	5.4	4.4	4.1	3.7	3.6	3.2	3.4	3.9	3.9	3.8
ANG	1987	0.0	0.0	4.4	3.2	2.6	2.8	2.4	2.1				
	1986	4.3	2.4	3.1	2.3	2.7	3.0	2.5	2.2	2.4	2.6	3.2	3.0
AFR	1987	23.1	12.7	8.1	6.0	14.2	11.9	10.2	8.9				
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	4.6	4.2	3.9

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FLEAGLE
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THERE IS SUM THINGS THAT IS HARD TO XSPLAIN, ROB.
I KNOW. ASK SUM OF TH' JOCKS THAT HAS LIVED THRU A MID-AIR.
HARRISON