

# TAC ATTACK

MAY 1977



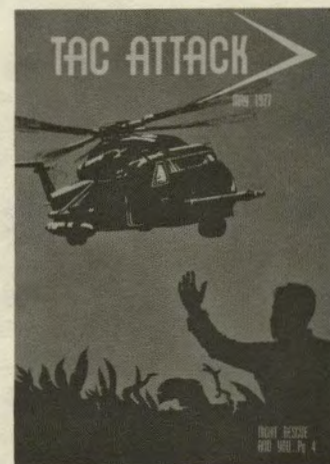
NIGHT RESCUE  
AND YOU...Pg 4

Night Rescue and you...pg 4



# MAY

FOR EFFICIENT TACTICAL AIR POWER



TACTICAL AIR COMMAND

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### TACRP 127-1

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# Angle of ATTACK

## supervised realistic training

From January 1975 through March 1977, TAC experienced 14 major aircraft accidents during ground attack missions. The cause of four accidents was undetermined and two others involved possible spatial disorientation. The 8 remaining accidents involved operations cause factors and resulted in the loss of 6 F-4s, 1 F-100, 1 A-7D, and 13 fighter crews.

In analyzing these accidents, we found marked similarities between them. Eighty-eight percent of these accidents occurred in operational units, on uncontrolled tactics ranges over flat desert terrain, from planned low-angle pop-ups in which the aircraft apexed inside of the minimum attack parameter (MAP) and resulted in aircrew fatalities. Sixty-three percent of the aircrews were inexperienced and made no attempt to eject. It also became apparent that the aircrews involved in these accidents did not understand, or failed to recognize, the dive angle versus altitude remaining relationship in time to effect a re-

covery or eject safely. Actual dive angles of accident aircraft averaged 25 degrees steeper than the preplanned dive angle.

It is clear that our inexperienced aircrews in operational units need closer supervision in low-angle pop-up training. Aircrews can be trained the way they are going to fight without overcommitment. To do so, the aircrew must understand and be proficient in basic fighter maneuvers and conventional weapons deliveries before entering the tactical air-to-ground arena. Every level of supervision must ensure our aircrew training programs incorporate the building block approach, placing more demands on abilities as greater proficiency levels are achieved.

Before-the-fact accident prevention begins with the individual aircrew member and progresses up through the supervisory chain. Each aircrew and first-line supervisor must not allow our training programs to overcommit. We must ensure everyone is ready for each mission. We must train realistically, but, at the same time, in an orderly fashion. Increased combat capability depends on it.

*George M. Sauls*  
GEORGE M. SAULS, Colonel, USAF  
Chief of Safety



# NIGHT RESCUE and YOU

By Capt Donald R. Backlund  
1551 FTS  
Kirtland AFB, NM



Late afternoon. As you hurriedly gather up your chute and harness and conceal them in some nearby underbrush, you're thinking it's not the best time to try hitching a ride home from enemy territory. It will be dark soon and even if the Rescue helicopter was on station, it would never be able to get here before nightfall.

At least you were able to nurse the bird away from that 7-level gunner who had the "golden BBs" before you bailed out, and the parachute ride provided you an opportunity to survey the surrounding terrain.

A short talk with your wingman on the radio and now you are alone, deep inside enemy territory, and a long way from home. As you struggle up the ridgeline, your mind searches for the important characteristics of the good evasion shelter that you learned in "Snake School."

Hopefully, no one saw you come down. If they did, that road means easy access for search teams. They'll be looking for you. They'll probably have dogs, and you know what that means - certain capture or worse. If only you can hide until the Search and Rescue (SAR) folks show up at daylight.



Sounds like a discouraging situation? Things might not be as bad as they seem. Crews of the Aerospace Rescue and Recovery Service (ARRS), flying H-53s modified with the Night Recovery System (NRS), have the capability to locate and recover downed aircrews on the darkest of nights. This capability was developed in response to operational requirements identified early in the Southeast Asia conflict. Some aircrews were not being recovered because Search and Rescue (SAR) efforts were limited almost entirely to daylight operations. The longer a downed aircrewman remains on the ground, the higher the probability of his capture.

To solve the night SAR problem, the frontline H-53 rescue helicopter was modified with some off-the-shelf components. A Low Light Level Television (LLLTV) system, similar to that used by the AC-130 Gunship, was installed for night navigation and survivor location. The LLLTV produces a picture, closely resembling a daylight TV picture of a selected area in front of, and below, the helicopter under even the darkest night conditions.

Approach and hover couplers, integrated with the H-53s doppler navigation system and radar altimeter, provide precise aircraft control during the actual recovery phase. Night Vision Goggles (NVGs) allow the hoist operator and pararescuemen to "see in the dark" during the recovery. (Photo 2)

Combined with the Electronic Location Finder (ELF) equipment, which utilizes the Course Deviation Indicator (CDI) to display steering and hover guidance in reference to a survival radio, the NRS gives the Rescue forces the capability to perform successful night SAR under Visual Meteorological Conditions (VMC) conditions.

The mission capability of the HH-53C, which has an unrefueled range of approximately 500 miles, can be enhanced for night SAR by utilizing air refueling from HC-130 tankers. Although the NRS system gives the HH-53C a limited capacity to terrain mask, no automatic terrain avoidance equipment is provided. So, night VMC conditions are required for successful system employment.

A typical NRS recovery might run something like this: With either a known survivor location or confirmed bailout position as its destination, the NRS-equipped helicopter navigates through enemy territory at a safe altitude (determined by the crew from intelligence reports) to evade en

route enemy weapons. Upon arrival in the survivor's area, both visual and electronic techniques can be used to pinpoint the survivor's location, which is then stored in the doppler computer.

The NRS system automatically hovers the helicopter, with pilot inputs based on LLLTV and ELF information, and positions the aircraft precisely over the survivor so the hoist operator and pararescuemen can complete the pickup.

Although the term "automatic" is attached to some of the equipment and procedures, there is nothing really automatic about an NRS pickup. Night SAR is an extremely complex operation for the helicopter crew and; perhaps even more than during daylight SAR, the survivor must play an integral part.

Should you ever be involved in a night SAR effort, there are a few things you can do to help. First, you should regularly check your survival equipment for completeness and proper operation. The distress beacon strobe light with its blue infrared cover and the survival radio are especially crucial in successful, night operations.

You should also be able to locate and operate your equipment in the dark without the aid of a light. The strobe light presents few problems (it's





# night rescue and you



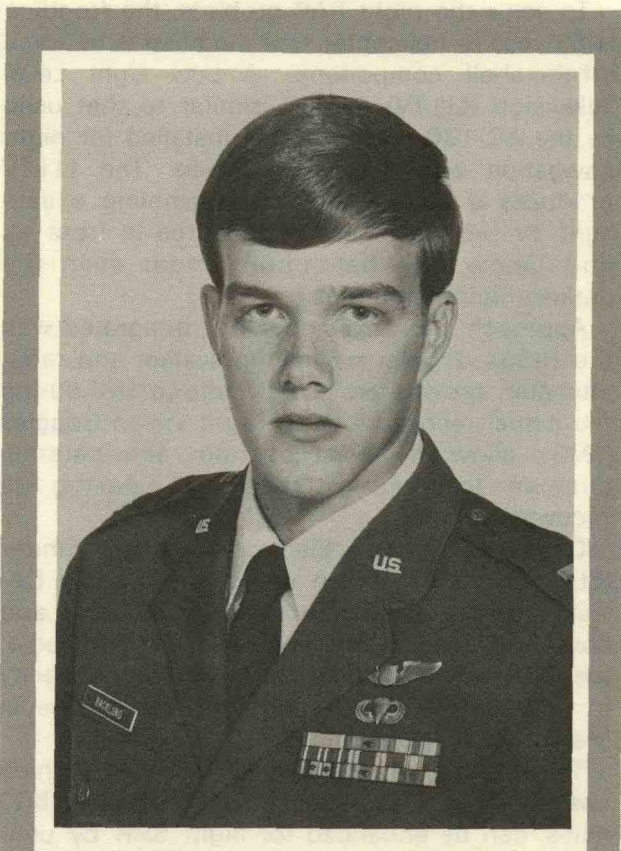
either on or off), but when was the last time you practiced changing modes or frequencies on your survival radio by feel alone?

Of course, you must also listen to the briefings and follow the instructions of the helicopter crew. They'll be asking you for information concerning your condition and surrounding terrain. Based on your responses, they will modify their tactics to expedite your recovery.

ARRS is presently in the process of further upgrading its HH-53C NRS with the development of PAVE LOW III. Additional equipment installed on the HH-53C includes terrain following/terrain avoidance radar, a doppler-inertial navigation system, a projected map display, a Forward Looking Infrared (FLIR) electrooptical sensor, an improved ELF, and a hover coupler. All of these systems are interfaced with a central avionics computer to provide flexibility and backup capability. Operational testing and evaluation is complete on one prototype and ARRS expects PAVE LOW III to be operational in late 1979.

In the final analysis, an effective SAR mission is a team effort between the rescue forces and the downed aircrew. The fully operational night/adverse weather - rescue capability provided by

PAVE LOW III enhances our side of the equation. However, to make the system pay off, you the pilots and 'gators, must do your part by knowing your SAR procedures. Your survival depends on it.



Captain Donald R. Backlund (M.A., Indiana University) is assigned as an HH-53C flight examiner with the 1551st Flying Training Squadron, Kirtland Air Force, New Mexico. Following completion of helicopter training in 1972, Captain Backlund received transition training in the HH-53C. In 1973, he was assigned to the 40th Aerospace Rescue and Recovery Squadron, Nakhon Phanom Royal Thai Air Force Base for a 2-year tour. Captain Backlund is a 1971 graduate of the United States Air Force Academy. His decorations include the Air Force Cross, Air Medal with one Oak Leaf Cluster, and the Air Force Commendation Medal.





**Lt Col John T. Stadler**  
**Chief, Fighter Branch**  
**HQ TAC Stan Eval**

Lieutenant Colonel John T. Stadler was flying a routine RED FLAG strike mission as number three in a flight of four F-105D aircraft assigned to the 113th Tactical Fighter Wing (ANG). The aircraft was configured with four inert MK-82 general purpose bombs on the centerline MER and two 450-gallon external wing tanks. The flight had entered the range complex and split into two elements of two aircraft. Colonel Stadler's element descended to 500 feet AGL and accelerated to 600 knots.

Approximately 5 minutes later, Colonel Stadler's aircraft began to decelerate and vibrate. He immediately began a zoom maneuver to a higher altitude and turned towards the base. During the zoom, Colonel Stadler noted the EGT to be increasing steadily. After leveling off at 10,000 feet MSL, the aircraft continued to decelerate even though the throttle was set at military power. The EGT was now increasing through 700°, and the vibrations became more

pronounced. A gradual descent was initiated, and all external stores were jettisoned in an attempt to maintain airspeed. However, this had little effect, and the airspeed decreased to 250 knots. Colonel Stadler now had two options remaining: eject; or, select afterburner on a malfunctioning engine. The afterburner lit normally, and the aircraft began to accelerate. At 300 knots, the throttle was set at 92 percent RPM. Colonel Stadler maneuvered the aircraft for a straight-in approach using pitch attitude, speed brakes, and S-turns to decrease his airspeed below gear lowering speed. A successful touchdown was achieved in the first one-third of the runway, and the engine was immediately shut down.

The superior airmanship, prompt reaction to a grave inflight emergency, and professional competence demonstrated by Lieutenant Colonel Stadler resulted in the saving of a valuable tactical fighter, and averted possible injury or loss of life. His actions qualify him as the Tactical Air Command Aircrewman of Distinction.



## **AIRCREWMAN OF DISTINCTION**



# PHYZ-BIZ



## "TIRED OF LIVIN' ....."



By Lt Col Harold Andersen  
HQ TAC Physiological Training  
Coordinator

A while back, a rash of bumper stickers proclaimed that "FIGHTER PILOTS DO IT BETTER." Although it didn't say what they did better, it was obviously something desirable. Several other bumper stickers followed in quick succession. Some said they did it "deeper" (submariners), others did it "higher," "longer," ad nauseam. The point is that these groups were seeking to enhance their "image." For some, image is of paramount importance.

As a point of departure, let's look at the "fighter pilot image." It had its beginning in WW I



with the exploits of the "knights of the air" from the allied countries, who, in their Sopwith Camels, Jennys, Spads, etc., did battle with "the huns", who drove Fokkers, Albatrosses, etc. The original image had several facets: a distinctive outfit (leather jacket, white scarf, helmet and goggles) and a reputation for "fast livin', heavy lovin' and hard drinkin'." Some of that image carried over to WW II, and although the uniform has changed somewhat, the reputation for livin', lovin', and drinkin' persists in the minds of some modern-day fighter pilots. They pursue this image with a vengeance, and there is documentary evidence of its contribution to fatal aircraft accidents.

One such accident involved a young, recent UPT graduate going through RTU in a single-seat aircraft. He was enamored with the fighter pilot image; in fact, he worked at it. The consensus of those who knew him was that he "... had his Friday nights every night," and his life-style was calculated to convey the fighter pilot image. His last flight was a routine training mission - following his IP through various maneuvers. The sortie would have been a piece of cake for a real fighter jock. Unfortunately, our friend only had about 3 hours of sleep the night before and, perhaps, enough alcohol to cause a hangover. During maneuvering flight, he lost control of the aircraft and ended up in a steep dive at low altitude. At the last possible moment before impact, he attempted to eject - - out of the envelope. The real villain of this tragedy was fatigue. Much of what is known of this pilot's activities was supplied by friends and acquaintances. It is reasonably certain, however, that his adopted life-style led to what is called cumulative (chronic) fatigue - - the result of inadequate recovery from a number of successive periods of acute fatigue, or several periods of inadequate sleep.

All of us have experienced acute fatigue on a daily basis, but this is different than the cumulative variety. AFR 160-5 defines acute fatigue as "... loss of strength, coordination, or attention to details that occurs during prolonged operation or procedure. Monotony, immobility, repetition, and psychological stress are causes ...." We may notice the symptoms as they develop, and we

realize that these symptoms will disappear with proper rest. Extended continuous performance of piloting tasks will produce degradations in performance such as disruptions in timing; losses in fine motor control; increased variability in performance; and, a lowering of standards.

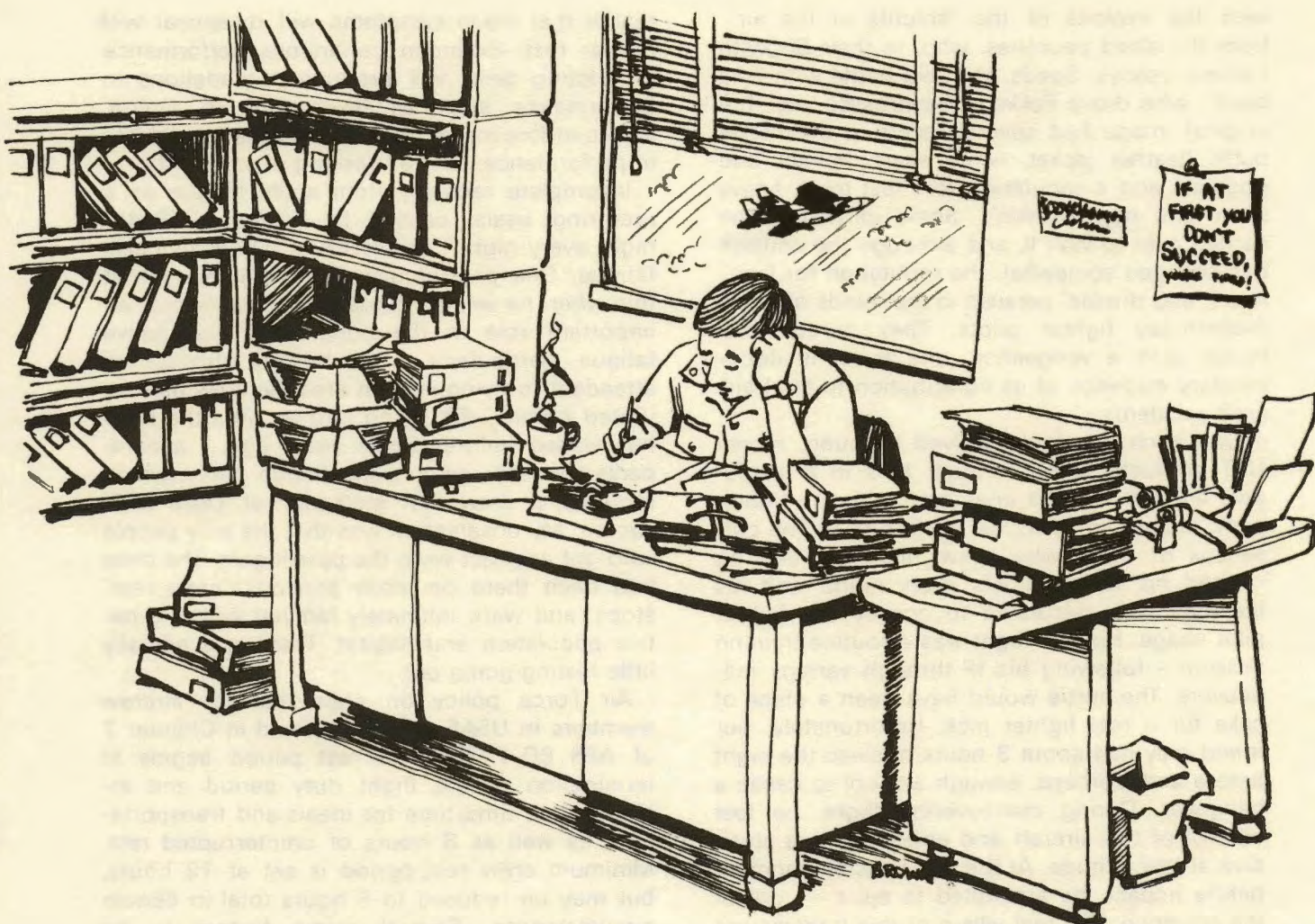
Incomplete recovery from acute fatigue on a recurring basis, caused by having a "Friday night every night," will result in cumulative skill fatigue. One physiologist (Hartman) recognized this when he wrote, "Situational factors play an important role in the build-up of cumulative fatigue, particularly ... the holiday atmosphere attendant to flying into an area the crew has not visited before." Or, flying into an area the crew has visited before. Some years ago, I accompanied a crew on a transatlantic flight which required a crew rest stop-over at Lajes AFB, Azores. My observation was that the only people who got any rest were the passengers. The crew had been there on many previous "crew rest" stops, and were intimately familiar with the native population and habitat. There was actually little resting going on!

Air Force policy on crew rest for aircrew members in USAF aircraft is found in Chapter 7 of AFR 60-1. The crew rest period begins at termination of the flight duty period and includes free time, time for meals and transportation, as well as 8 hours of uninterrupted rest. Minimum crew rest period is set at 12 hours, but may be reduced to 8 hours total in certain circumstances. Several prime factors to be considered in determining the time period for "adequate rest" include: total duty period, amount of sleep before the day's activity, and the number of hours flown during the current month. Additional factors are the number and type of additional duties and the adequacy of crew rest facilities.

The old adage says that "there are old pilots and there are bold pilots, but there are no old, bold pilots." Inadequate crew rest and the pursuance of the fighter pilot "image" to extremes will also affect your longevity. Don't wind up dead tired - adequate rest is the only way to combat fatigue. Uncle Sam gives you the opportunity to get adequate crew rest and sleep. Don't cheat yourself.



# A PARTING SHOT



**By Maj Martin A. Noel, Jr.**  
**Chief, USAF/GAF Fighter Weapons School**  
**Luke AFB, AZ**

As the old saying goes, "All good things must come to an end." For me, a very rich and rewarding 13 years of cockpit duty is about to terminate ... hopefully, only temporarily. As I look forward to staff college, followed by an assignment to the LSD (large steel desk), I wonder if I can "kick the habit" of walking out to a fighter every day and blasting off into the wild blue.

Nostalgia, however, is not my subject. What I would like to do is share some of my experiences "up front" with those who will replace me and my contemporaries. By relating our own experiences, we can better prepare our replacements, i.e., those who will suffer the good fortune of remaining in active fighter operations. By now, the reader may have detected a hidden accident prevention message. If



so, you're right. I hope that the message will be a little different than the usual because it comes, not from a safety weenie or commander, but from "one of the guys."

Being convinced of the value of his work, and the need for it, makes the fighter pilot (or 'gator) care about his airplane and his comrades; and makes him aware of the need to protect them from loss or damage. In an attempt to do so, I will take a short look at our history to place perspective on the present. From this, and my own personal experiences, I will derive a hypothesis about the future. Since my conclusions are based on some theory, not all facts, I am open to criticism ... but nobody said it would be easy.

### **SOME OBSERVATIONS**

Because of their mission, tactical fighter pilots and aircraft have always been susceptible to accidents during peacetime and high attrition rates during war. Having spent over 3,000 hours and 12 years in fighters, I have observed these losses first hand. There is nothing more saddening than to lose a good friend in combat or in a peacetime training accident. In a less personal vein, the loss of either life or equipment represents an expenditure of resources which is unbelievably expensive and, at times, impossible to replace. For this reason, I'm convinced that we must do our utmost to see that our fighters are not destroyed or damaged, and that our friends do not lose their lives. By we, I refer to the fighter pilot, the IP, the flight commander, the operations officer, and the commander. The years have convinced me that the real business of safe flying is in our hands ... not in those of the safety types, higher headquarters, or any of the other mythical "thems" that inhabit the world outside our squadrons. We are "where it's at" and in the best possible position to influence the guy who is pulling on the pole. They can only "Monday morning quarterback" ... we actually get to play the game.

Flying fighter aircraft is a serious business. A cursory look at accident rates in fighter commands versus the other commands, or an educated guess at the type of defenses that fighters will be pitted against in the next fracas, should convince the nonbeliever.

### **SOME HISTORY**

In years past, we lost many pilots and aircraft because of undesirable flight characteristics

resulting from design deficiencies. Pitch-up, adverse yaw, high sink rate, and frequent compressor stalls contributed to our past losses ... and still plague us today. Incomplete systems design and testing have not revealed ahead of time those materiel and parts problems which could lead to an accident.

Maintenance error has also cost us. Transition to the jet engine, continual modification of the aircraft and its systems, and a great number of other factors have provided our maintenance people with numerous opportunities for mistakes. Sometimes pure human errors were made with grave consequences. More often, we have made the mistakes because we actually operate the equipment and, therefore, have the greatest opportunity for error.

Great strides have been made in recent years in aircraft and systems design. None of us will miss the 8,000'+ takeoff rolls or the routine 200K+ final approach speeds. ACT instructors will never miss departures, nose slices, or snap rolls. These problems, and many others, are slowly disappearing with the advent of well-designed aircraft like the F-15 and F-16.

Systems engineers have helped us to overcome some of the problems associated with component design and reliability. Hydraulic lines do not all run along the skin of the aircraft like they used to, and the fuel tanks are better protected from exposure to fire and explosion. Strength and fatigue testing are more demanding, and the wonderful ability of the computer can now be used to predict failures before they can occur.

We have made aircraft more effective, reliable, and safe to fly; and it's getting better all the time. Unfortunately, our pilots are not "Six Million Dollar Men" and cannot be mechanically programmed for improvement at the same rate as the equipment which they fly. It seems to me that the pilot is the weakest link in the accident prevention chain. Unfortunately, no such ability to eliminate error has been discovered for him. Because of this, we need to concentrate our efforts on seeing that the fighter pilot is made aware of his personal responsibility for safe and effective operations.

### **IN THE INTEREST OF ACCIDENT PREVENTION**

But what about the accident prevention function? Isn't that their job? This feeling of "that's his problem, not mine," is a result of overspecialization ... and one which we can ill afford in



# a parting shot



the fighter game. Specifically, we the fighter pilots and operators, cannot afford to leave the prevention of airplane crashes and the loss of our friends' lives to someone whose job title includes the word "safety." The safety types should be our investigators, analysts, and record keepers. They should advise us of the lessons learned from our past mistakes. They should make these lessons available to us, but we must use the information in an attempt to make our operations more effective.

At times, it may seem that, "in the interest of safety," our commanders and supervisors are preventing us from doing what we feel is necessary. Don't fool yourself ... most safety people and our commanders are truly concerned with accomplishing the mission without losses and damage. Their methods have not always been perfect ... but whose are? Let's stick to improving ourselves first, before we go to work on anyone else.

Someone who has never had to answer for an aircraft accident probably does not understand how difficult it is to find a reasonable, rational method of preventing it from happening again.

The key words here are reasonable and rational. Great pressures (real or imagined) calling for immediate results are the aftermath of an accident. In the rush to correct the deficiencies and prevent a similar accident, we are not always rational; i.e., we have a tendency to overreact.

In the past, after an accident, the trend was to eliminate the maneuver which the aircraft was performing or to modify the operation in an attempt to prevent a similar occurrence. On the surface, this seems sensible; and this approach should be considered. However, the insidious effect that time impacts on this method is not always recognized. When a maneuver has been modified again and again, it may become unrecognizable, and, therefore, unusable. Also, when enough maneuvers have been eliminated, the fighter pilot's bag of tricks may be so limited as to be worthless when the real shooting begins. The pilot and people who are tasked with meeting operational commitments usually find it difficult to accomplish the mission when added restrictions are placed on them. The plethora of paperwork which must be completed in order to fly a mission is one visible example of



the evolution resulting from this approach to accident prevention. Grade slip documentation, signing the FCIF, and a myriad of other such documentation sometimes plague the operator who just wants to get on with the job. Is this good or bad?

If it prevents an accident, it is good. If it prevents us from doing the job, it is bad. But who makes the decision when there is a conflict? Who decides what incremental reduction in operational effectiveness is acceptable in an attempt to prevent an accident? Notice I emphasize attempt because there is no guarantee that these measures will be successful. For example, we still have gear-up landings in spite of gear checks, gear warning systems, mobile control, etc.

### **GUIDANCE VERSUS JUDGMENT**

Let's return to my last question, "Who makes the decision?" Perhaps more important is the question of how to balance the restrictions with the individual judgment of the operators. The tendency to centralize decision making, and command and control at ever higher levels has resulted in a proliferation of written guidance for managers at all levels. Much of this control has become necessary today because of the more far-reaching effects an action has. There is little likelihood of any change in this area. But some of it has come about because of poor judgment demonstrated at lower levels. Those in key positions cannot trust to luck that everything in their area of responsibility will be done correctly. It is the exercise of good judgment to provide guidance when it is deemed necessary, but how much guidance is enough and how much is too much? Since some guidance is necessary, let's consider once again the deleterious effect of time.

Does the ever increasing amount of management guidance in the form of regulations, policy statements, etc., erode the need for judgment and decision making at the lower levels? Will we see the day when most people at the highest levels are the only ones authorized to act? If so, where and how, will those at the top have gotten their training in operational decision making? Shall they be qualified only by virtue of position rather than by experience? In other words, experience at the pilot, IP, flight commander, etc., level is required if the high-level policy maker is to be truly qualified to make the correct decisions. If this be the case, and we wish to operate on our terms, we fighter pilots (and 'ga-

tors) must exercise good judgment consistently. The more mistakes we make, the more guidance we will receive, and the less we will have the opportunity to make future decisions.

### **SOME TOUGH QUESTIONS**

To get the job done in the flight and squadron requires long hours and hard work each day. How much of each day is devoted to the basic mission of flying and supervising the flying, and how much of it is spent on other duties? My experience indicates that it is becoming more difficult to get back to the real business of flying. Recent cutbacks in personnel have reduced our flexibility when it comes to many of the additional and special duties which have to be taken care of in any military unit. Extra duties are still with us, and I believe some of them always will be. We are in a quandry - we can't ignore the extra duties at the expense of flying, but if we devote too much time to these areas, there is a chance that we may overlook something which could have serious repercussions in the air. Where is the answer, then? How are we to do the impossible - everything right - all the time?

For the flying supervisor, the answer is to rid himself of those concerns which do not directly impact on the traditional missions of any unit - getting the job done and taking care of the people. The supervisor is probably overtasked today because he is not only expected to see the unit's mission accomplished, but is expected to anticipate all errors which could be committed by those in his unit, and to take steps ahead of time to prevent those errors. If all his subordinates were error free, or if he only had a very few to supervise, this goal might be attainable. Neither of these cases is very realistic. If the supervisor can't do it all, then who can?

### **SOME THEORIES**

My theory goes something like this: Every fighter pilot is responsible for his own actions, and he should be held accountable for them. Because of the serious responsibility for accomplishing a fighter mission and returning the aircraft so that it can be used again, only the highest quality pilots should be selected for this job. This might be a start toward a better safety record.

Raising the training standards (or at least refusing to lower them) might be another. Quality control is just as important in flying



# a parting shot

training as it is on the factory production line. We should retain the courage to "call it as it is" when we encounter substandard performance. Then we need to take the necessary steps to insure that those without the aptitude or maturity for this demanding work are eliminated.

Whether it be a combat-ready or a combat-crew training unit, the fighter pilots who actually man the aircraft must ultimately bear the responsibility for accident prevention. If the pilot truly understands, he will be aware and concerned. Therefore, an essential task of the supervisor should be to motivate his subordinates in this direction. He is in a much better position to do so than is the safety officer, higher headquarters, MAJCOM, or anyone else. I believe that how he creates this motivation, and controls performance is the essence of leadership.

Dr. Fredrick Herzberg, a noted behavioral scientist, suggested in 1968\* that one key to increasing personal motivation is to make the individual accountable for his work. His theory is that the individual will feel more responsible for his efforts, and will sense the opportunity for recognition in what he has done. Over the years, I have seen many attempts by the Air Force to create this motivation. However, I feel that motivation at the unit flying level, from the very lowest level flying supervisor, can be more effective than all these put together. The Air Force seems to agree, as is evidenced by a statement made in TIG BRIEF #23:\*\*

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"Sound selection, training, and motivational programs can substantially reduce the magnitude of the problem. But these programs require reinforcement and emphasis by commanders, supervisors, and managers.

"The USAF weapons systems are man-machine systems in the classic sense - that is, they are systems in which one of the elements is a human being who interacts with the operation of machine components. We have made great strides in improving the reliability, maintainability, and safety record of the hardware or machine subsystem. We must strive to achieve a similar record with the human side of the equipment."

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The obvious question, then, is how?

I may be saying something which has been said before, but if so, I feel it is still valid. It is this: (1) know every nook and cranny of your job; (2) know your people without question; and (3) pay strict attention to detail. Those who have been supervisors should know this already, and those who don't should discover it before they become accountable for the actions of others. Thinking about these three items long enough may help surface the specifics of your own situation.

## SOME SPECIFICS

If the experience level of the individual is low, special attention must be paid to seeing that he has the chance to walk before learning to run. Exactly how this will be done is as much a matter of leadership and management as is "filling the squares." There is no substitute for attention to detail when it comes to training a new pilot or monitoring the progress of the ones who have reached the operational level. Having all the squares filled does not necessarily equate to readiness. The supervisors at the lowest levels are the ones who should know whether or not an individual pilot is ready (and safe). Being unable to answer this question will leave you extremely uncomfortable when the ORI or MEI inspector comes to talk, or when the accident board president calls you in to testify.

Reviewing grade slips and stan/eval comments are not the only ways of assessing readiness. There is no substitute for flying with, and observing, your subordinates at their work on a daily basis. Intimate knowledge can only come from close observation. To allow your attention to be diverted from this important function is to court disaster. You must be able to answer the crucial question - who can hack it and who cannot? This is a judgment call, but if you are ever asked this after an accident, you will wish you had asked yourself before.

## CONCLUSION

The loss of aircraft and lives are inseparable from operations. There are many qualified

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\* "One More Time: How Do You Motivate Employees?" HOWARD BUSINESS REVIEW, January - February 1968.

\*\* Vol XXVIII, 3 Dec 76.



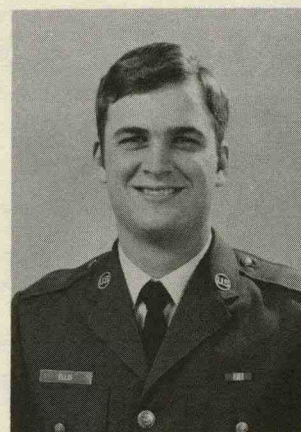


# TAC

## SAFETY AWARDS

### MAINTENANCE SAFETY AWARD

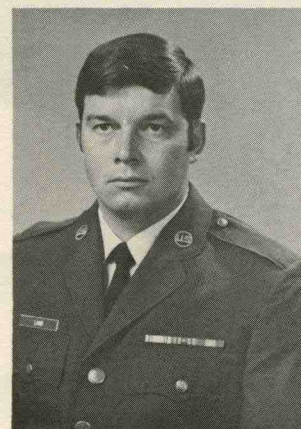
Sergeant Karl R. Ellis, Jr., 355th Munitions Maintenance Squadron, 355th Tactical Fighter Wing, Davis-Monthan Air Force Base, Arizona, has been selected to receive the Tactical Air Command Maintenance Safety Award for this month. Sergeant Ellis will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.



Sgt Karl R. Ellis, Jr.

### CREW CHIEF SAFETY AWARD

Staff Sergeant Jerry L. Lamb, 355th Organizational Maintenance Squadron, 355th Tactical Fighter Wing, Davis-Monthan Air Force Base, Arizona, has been selected to receive the Tactical Air Command Crew Chief Safety Award for this month. Sergeant Lamb will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.



SSgt Jerry L. Lamb



# The Facts





# of LIFE

**By Capt Joseph A. McGrath, Jr., USAF  
Defense Intelligence School  
Anacostia Annex, Washington DC**

**T**he nature of any future conflict is impossible to foretell. However, there are geographical areas, such as Europe or Korea, where conflict would take on the more or less traditional form, and a frontline or Forward Edge of the Battle Area (FEBA) would be the point of most conflict and casualties. In the European area, the SAM/AAA threat will produce aircraft losses over and behind the FEBA. The enemy will capture a large percentage of the survivors, since evasion in the immediate rear of a combat area would be difficult given the number of enemy troops to be avoided, and the fact that the crewmember will certainly be observed descending by parachute.

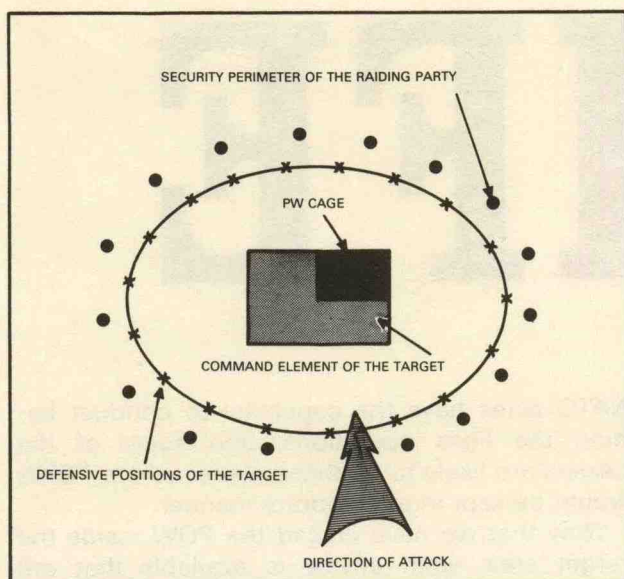
Assuming that he is captured, what circumstances will the airman find himself in for the first day or so? What can we say about the security conditions that restrain him? An educated guess is that once in enemy hands, he will be moved quickly to an interrogation center for tactical exploitation. But since we are dealing with war-time situations, we must assume that the confusion and chaos of the battlefield will preclude direct transfers to the rear in all the cases. This means that some men will be kept in temporary locations at the rear of the FEBA until transport can be arranged to a more permanent camp. These Prisoner of War (POW) collection points may be within supply dumps, field unit headquarters, or any type of temporary military facility. The fact that some POWs are fortunate enough to be held in these facilities, rather than being moved directly to the rear, might be the factor responsible for their eventual return to friendly hands. Simply stated, the US and its

NATO allies have the capability to conduct behind the lines operations, and some of the targets are likely to be those places where POWs would be kept in a temporary manner.

Now that we have placed the POW inside the target area, what advice is available that will keep him alive after the friendly ground troops arrive and the shooting starts? First, he must realize that if, for example, a US Army Ranger element attacks the location where he is being held, there will be a large volume of fire exchanged by both sides. This is doubly dangerous for him because he has no prepared position to give him cover, and the POW cage will probably be near the center of the target. Second, he will be guarded by soldiers who will probably try to kill him as soon as the shooting starts. With the prisoners out of the way, the guards can direct full attention to repelling the attacking force. The POW must know this fact of life, and make a mental note of the positions of automatic weapons and guard posts when he is placed in the POW cage. He must also develop a contingency plan that will make it difficult for the guards to hit him in the few seconds they have before the attacking force is upon them. One factor in the POW's favor is that most assaults will be at night, and this will compound the guards' problems. For the skeptics who don't believe that the guards would kill them in cold blood, note that the Russians committed the mass murder of 11,000 Polish officers in the Katyn Forest in 1939, after they had surrendered. Once the POW has some cover against the small arms fire, he must remain hidden there, even when the friendly forces sweep over the area. Calling out or moving could evoke a response from both sides. He must not despair as he hears the friendlies move on because a small element will return after the raiding party has consolidated its security perimeter 360 degrees around the objective.



# the facts of life



Attacks such as the above have two purposes: inflict damage on the enemy, and collect intelligence. The collection takes the form of noting the uniforms, equipment, weapons, and nationality of the enemy soldiers killed in the attack, and collecting letters, documents, and assorted equipment. To do this means that a search team has to return after the initial sweep through the objective. It is at this point that the POW makes his contact with the return element. Exactly how depends on the circumstances, but search teams will be on the lookout for POWs even if no advance notice had been given that they might be in the target area. In those cases where there is an indication that POWs are being held within the objective, a special team would be organized to search for them. Once linked up with the raiding party, the POW must follow their instructions to the letter. A careless act could jeopardize the entire group.

If, for some reason, a search team does not return within five minutes (the approximate length of time the raiding party can remain on the objective), and the small arms fire has died down, the POW should realize that he is on his own and attempt to escape from the compound.

Once the airman is in the hands of friendly forces, there are so many possible circumstances that might arise that it's impossible to cover them all. Will he stay with the unit until it finishes its mission? Can he be exfiltrated by helicopter? If wounded or injured, will he be carried by the group, or left at a helicopter extraction zone? Will Air Force Pararescue personnel be dispatched to pick him up? There

are no pat answers to these questions. There is one fact to remember - an injured man who must be carried will slow down the group.

Remember, friendly forces can operate behind the enemy lines and will be attacking locations where downed crewmen may be held in a transient state. If the POW is aware of this, he can take cover, keep quiet, stay cool, and be ready to contact the search team when it returns to collect intelligence or liberate POWs. Nobody wants to think of himself as captured and looking at Comrade through the barbed wire of a POW cage. Store this little bit of knowledge in the back of your head, and someday it might give you your freedom and your life. ➔



Captain Joseph A. McGrath, Jr., (B.S. St Joseph's College) is a student at the Postgraduate Intelligence Course, Defense Intelligence School. His previous assignments have been as an instructor and escape and evasion specialist at the USAF Special Operations School (TAC) and in the intelligence field with duty at a direct air support center in Vietnam, an all source information center and tactical fighter wing on Okinawa, and Special Operations duty in the CONUS. Additionally, he is the Sub-Saharan Africa specialist at USAFSOS. Captain McGrath is a graduate of Squadron Officer School.



# TWISTER TIPS

**By SSgt Darrell Beeson  
5th Weather Wing  
Langley AFB, VA**

Tornadoes occur in many parts of the world and in all 50 states. The most favorable area for their formation is the continental plains of North America, and no season is free of them. The lowest number of tornadoes occur during December and January, and the worst during May. The majority of tornadoes occur during April, May, and June.

Tornadoes occur at all hours of the day. However, they spawn most frequently during the warmest parts of the day - late afternoon and early evening. In fact, the largest single concentration - 23% of total tornado activity - occurs between 4 and 6 PM.

We are now in the heart of the tornado season. Since many TAC bases are located in an area which produces many tornadoes each year, you should be aware of the immediate actions which can save your life if a tornado approaches:

- In a severe thunderstorm or tornado emergency, listen for radio or television broadcasts of the latest National Weather Service bulletins. Two key phrases to listen for are: "Tornado Watch" and "Tornado Warning." A "Tornado Watch" means that meteorological conditions indicate tornadoes may develop, while a "Warning" means tornadoes have been detected, and to take shelter.

- If you are at home, open windows to allow the pressure inside the house to equalize with the outside atmospheric pressure. Tornadoes cause a rapid drop in atmospheric pressure - so rapid, houses have exploded because the interior pressure was much above the exterior.

- Take shelter in the basement of your house or under heavy furniture in the center area of your house. If you are fortunate enough to have a tornado shelter, get everyone inside it.

- Mobile homes are particularly vulnerable to overturning during strong winds and should be evacuated when strong winds are forecast. Damage can be minimized by securing trailers with strong cables anchored in concrete footings. If there is no shelter nearby, leave the trailer park for low, protected ground.

- If you are at work, go to an interior hallway on the lowest floor of the building or to a designated shelter area. If it can be done safely, post a lookout to warn of an approaching tornado.

- Should you be in your automobile when a tornado approaches - stop, get out, and go to a designated shelter. In open country, move away from the tornado's path at a right angle. If there is no time, lie flat in the nearest depression with your hands shielding your head.

Remember, tornadoes are spawned by severe thunderstorms and are only one of the thunderstorm's hazards. The biggest killer is lightning. Make sure you stay indoors, and out of the bathtub, while the storm is overhead. Listen to the radio or TV for tornado information, and take shelter early. Let's make it through this tornado season safely.



# TAC **TAC TIPS**

Many receive advice, few profit by it.  
Publilius Syrus

interest items,  
mishaps  
with morals,  
for the  
TAC aircrewman

## SUPER JOLLY'S FOLLIES



Recently, a TAC helicopter was making a confined area approach to a designated helicopter landing zone (HLZ) when it sustained damage to two main rotor blade tips. Potential for an accident was there and, had there not been an alert co-pilot, an accident would have resulted.

The CH-53C was on an upgrade flight check for the number two flight mechanic. A high and

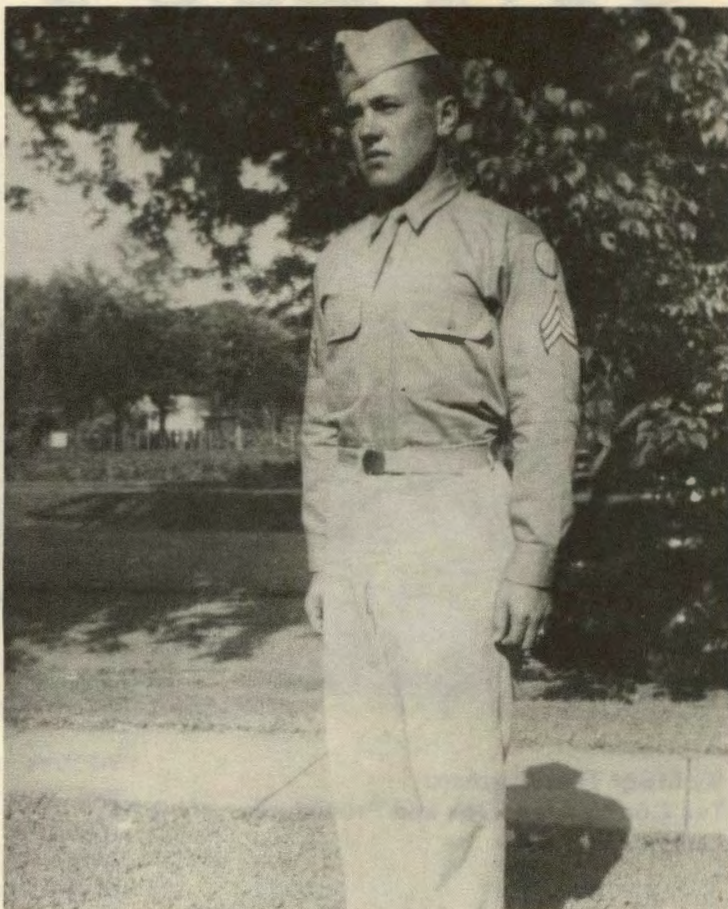
low recon was performed and an approach to a hover in the center of the zone was made. The number two flight mechanic was talking the pilot into the HLZ from his position at the personnel door. He then directed the pilot to the left and down, to allow additional clearance on the right side. As the aircraft moved to the left and down, the co-pilot checked his 8 o'clock position and saw the main rotor blades contacting some small tree branches. He immediately directed the aircraft commander to "stop down, and up ten." After getting clear of the trees, the aircraft was returned to base without further difficulty.

The number one flight mechanic had been scanning the left side, directing his attention to clearing trees at the rear of the aircraft and did not observe the impending tree branch strike. He failed to scan the full area of his responsibility. To complicate the situation, the trees were bare of foliage causing the branches to blend with the background. The co-pilot's immediate actions prevented serious damage and possible catastrophe from occurring.

Confined area approaches always involve a certain amount of risk. It's a team effort which demands strict crew discipline and coordination. Pride ... professionalism ... whatever you want to call it; it boils down to the same thing - doing the job right the first time. Accept the challenge - meet it.



# PLACE THE FACE



After serving in the Army during WW II, this Army Sergeant entered the United States Military Academy.

Our March "Place the Face" tested everyone's power of recall. Over 50 percent of the responses failed to correctly identify the pictured personality. But don't give up - nobody said it would be easy!

The winner of our March contest was Master Sergeant Paul O. Rogalski, Command Post NCOIC, 35th Tactical Fighter Wing, George Air Force Base, California. He correctly identified the F-80 "Shooting Star" pilot as Brigadier General Robert W. Clement, Vice Commander, Twelfth Air Force. Sergeant Rogalski will receive the prestigious "Fleagle Fanny Feather of Fate Award"

emblazoned with one of our hero's own tail feathers.

This month we bring you the photo of another well-known TAC personality - can you "Place the Face"? Send all responses to:

TAC/SEPP

Langley AFB VA 23665

Be sure to include your name, rank, duty title, etc., and date your letter. Also, if you have any vintage photos of people in TAC and would like to enter them in our contest, send them to TAC/SEPP. We will need a signed release from the individual pictured. Good luck. ➔



# CONFLICT ALERT



**By MSgt Tom Maynard  
Tac Comm Area/Ops and Procedures  
Langley AFB VA**

As most of us know, the FAA Air Route Traffic Control Centers (ARTCCs) have implemented a conflict alert system in the United States. This system can be an invaluable aid in the prevention of midair collisions, but it is not the ultimate answer. This article is not intended to lead anyone down the primrose path. However, it is intended to provide you with some insight into the system as well as the benefits you can receive from it.

Before I discuss protected airspace, let me explain the altitude base of the system and who can receive the service. The ARTCC computer allows the base to vary by Sectors within the Center. Most Sectors start conflict alert service at ground level, while some start at 8,000 feet. (Check with your respective Center to determine where the service starts in your home base area.) Who can get conflict alert service? All radar-identified IFR aircraft automatically receive conflict alert service. VFR flights which have been radar-identified and request VFR radar ad-

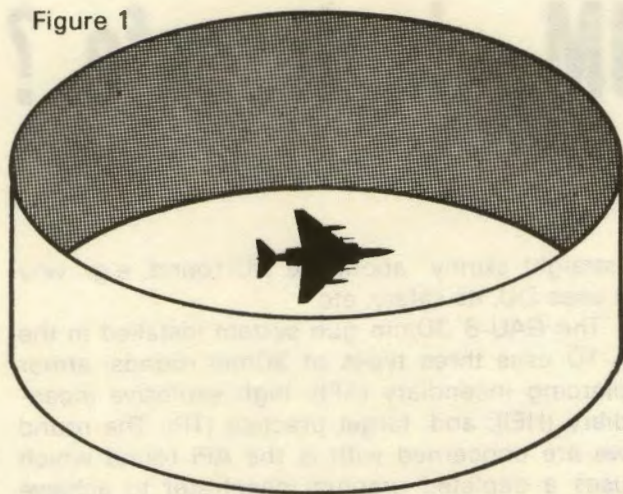
visories are also provided the service. There's just one catch - radar advisories are an additional service and are provided on a workload-permitting basis. In addition, if you fall into one of the above categories, you are also protected from aircraft not participating in the advisories program when that aircraft has an operating altitude readout transponder. The Center computer will take the altitude information obtained from the VFR aircraft and apply it to your protected airspace. One point to ponder - when you cancel IFR without requesting VFR radar advisories, the Center will remove all of the flight data information on your flight plan from the computer. You then become one of those non-participating aircraft that will not benefit from any conflict alert service. (For your own protection, whenever possible, stay with the system.)

Since you, the pilot, are our primary concern, let's explain the protected airspace the computer gives you. First, it considers the airspace 500 feet above and below your aircraft for protection purposes when you are below flight level two nine zero (plus or minus 1,000 feet is considered when you are at flight level two nine zero and above). It also protects 5 miles laterally around your aircraft.



Figure 1 illustrates your protected airspace. Now, do the same thing for the other guy, and you have the minimum en route separation - 1,000 feet vertically and 10 miles laterally. This should provide adequate separation in optimum situations. Since all of our situations are not optimum, the computer also projects the protected airspace for two minutes into the future. This additional projection should be sufficient to handle anyone's reaction time. There are some situations, however, where you will not get the full two-minute projection, i.e., another aircraft making an abrupt turn or descent into your protected airspace. But even then, the controller should have time to correct the situation before you lose minimum separation.

Figure 1



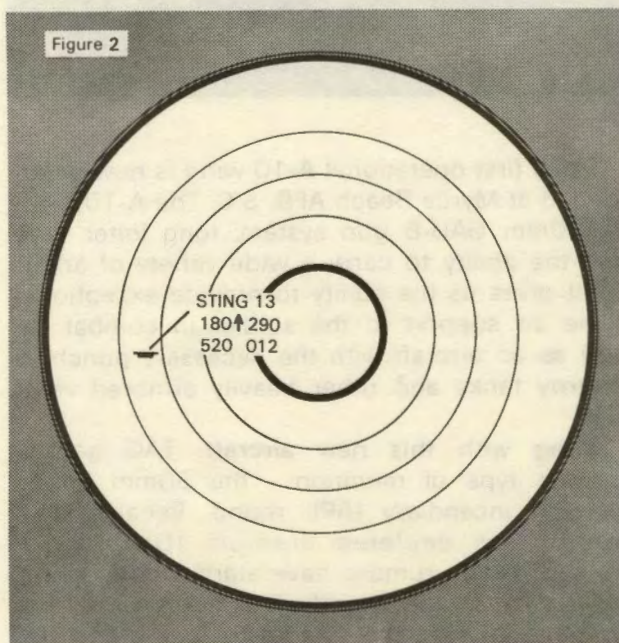
How is the information displayed to the controller? For those of you who haven't had the opportunity to visit an Air Route Traffic Control Center (and I suggest you do so if at all possible), I'll start with the computer-generated presentation the controller receives.

The data block (fig-2) is associated with every radar-identified target. Information is fed into the computer via flight plan data and Mode "C" information. Let's say you are going out single ship in an F-4, Call Sign, "STING 13," requesting flight level two nine zero on a cross country. Shortly after takeoff, the computer will automatically present on the display, the data block shown above. The controller can see the call sign, current altitude and that you are climbing to your assigned altitude, flight level two nine zero. The numbers on the third line represent your current ground speed and your computer identification number. (This is used by the con-

troller to make inputs into the computer on your flight plan.) There is a data block associated with every identified target, and whenever a conflict develops, both aircraft's data blocks will flash at approximately five to six times per second. (Unfortunately, the controller's heart attempts to keep up with the data block.) This really gets the controller's attention. This is the first warning. Supplemental information follows in the form of a conflict alert list that appears in a selected area on the scope. The list will provide both aircrafts' call signs. Due to the possibility that two adjacent Sectors and/or Centers may be involved, the list will also provide information on adjacent Sectors or the adjacent Center and its Sector that are also involved. This will provide the controller with instant information so that he can coordinate to resolve the conflict. Once the conflict is resolved, the list disappears and data blocks quit flashing.

That about sums up how the conflict alert system works. As you can see, every situation cannot be protected. However, you are being afforded added protection never before available to the flying community - if you choose to use it. This system cannot prevent all midair collisions. But, if it prevents one, the time, energy, and money spent to develop the conflict alert program will have been well spent. Who knows - the one prevented midair collision may have been yours.

Figure 2

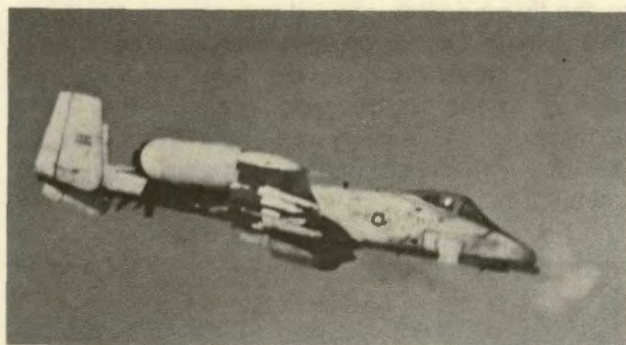






# DEPLETED URANIUM... is it safe ?

By Capt Marty Steere



TAC's first operational A-10 wing is now being formed at Myrtle Beach AFB, S.C. The A-10, with its 30mm GAU-8 gun system, long loiter time and the ability to carry a wide variety of armament gives us the ability to provide exceptional close air support to the soldier in combat, as well as an aircraft with the necessary punch to destroy tanks and other heavily armored vehicles.

Along with this new aircraft, TAC gained another type of munition - the 30mm armor piercing incendiary (API) round. Because this round uses depleted uranium (DU) for its "punch" many rumors have started concerning the safety of the round. The purpose of this article is to stop the rumors by giving you the

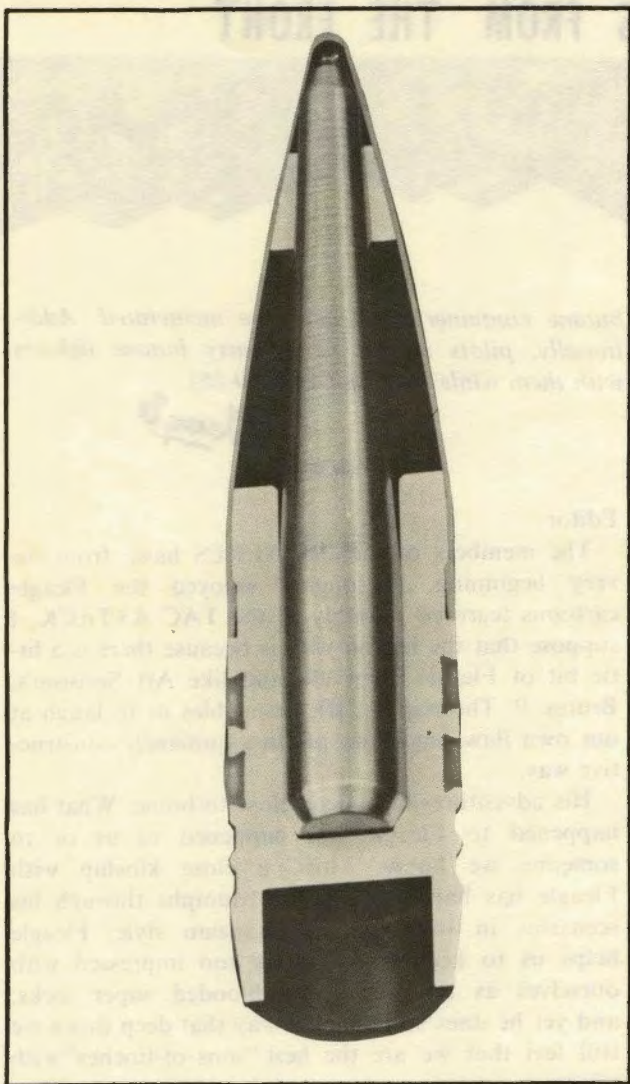
"straight skinny" about the DU round, e.g., why it uses DU, its safety, etc.

The GAU-8 30mm gun system installed in the A-10 uses three types of 30mm rounds: armor piercing incendiary (API); high explosive incendiary (HEI); and, target practice (TP). The round we are concerned with is the API round which uses a depleted uranium penetrator to achieve the penetration necessary to defeat heavily armored targets such as tanks and armored personnel carriers.

Depleted uranium is a benign by-product of the uranium ore separation process. It is the residue left from natural uranium after the enrichment process when the majority of the fissionable isotope, U235, is removed. Not to be confused with "spent" uranium which must be stored and protected after use, depleted uranium is considered safe in an inert state. DU is usually shielded with aluminum casings when it is used for commercial or military purposes; such as counterweights in the wing structure of commercial and military aircraft or as a shielding material for medical and power-production radioactive materials.

Depleted uranium is one of the few materials which can be used in the construction of an armor-piercing projectile. Another such material is tungsten. Tungsten, however, is somewhat





### GAU-8/A 30MM API AMMUNITION

less effective, more expensive (\$12 to \$16 per pound vs \$1.50 per pound) and less available. The reason depleted uranium is so effective is its high density. This enhances penetration and spalling because a significant amount of weight impacts a small target area. Additionally, the DU munition will burn through self-ignition on impact which can cause secondary damage if the penetrator pierces a fuel tank or ammunition bay. DU penetrators also offer distinct ballistic advantages in their ability to penetrate a target at significantly greater ranges.

Now we know what DU is and why it is used - but is it safe? The International Committee on Radiation Protection does not consider depleted uranium to be a radiation hazard. The Depart-

ment of Defense, during medical and environmental studies directed by the U.S. Nuclear Regulatory Commission, determined that the environmental hazards of DU are no greater than those in the manufacture and use of lead. As an example of the low radiation level of DU, a load crew could hold a DU 30mm round against his body seven hours a day, forever, and not be exposed to any harmful radiation.

When depleted uranium is used as a munitions material, a limited amount of oxide is aerosolized when the round impacts a target. If inhaled, these particles could prove harmful to humans - much the same as inhaling lead dust particles would cause lead poisoning. However, the scattered particles from the DU round settle in a matter of minutes, presenting a small hazard in comparison to other combat hazards in a target area.

The Air Force has obtained a license from the Nuclear Regulatory Commission to test fire DU rounds and is in the process of obtaining a storage license. Although these rounds are safe, they will not be used routinely by the A-10. The aircraft will be loaded with target practice rounds for training missions and will carry DU rounds only when directed to support a wartime deployment or in combat.

As you have seen, the depleted uranium 30mm API round is safe to manufacture, load, and fire. As with any munition, there are some safety precautions. However, DU munitions present a very small hazard in comparison to other combat hazards in a target area, and their toxicity is less than that caused by lead projectiles. The DU 30mm API round gives the A-10 the necessary "punch" to defeat heavily armored vehicles and is a safe, welcome addition to the tactical munitions inventory. ➔







# FLEAGLEGRAM

## RESPONSES FROM THE FRONT

Fleagle

Is this program still in effect? Could you send our Safety Office any material that would be of assistance to our Safety program? Thank you for your cooperation.

SMSgt Thomas F. Fisher  
Ground Safety NCO  
281 CMBTCG/SE  
Coventry ANG, RI

*Dear Sarge*

*You bet your bird this program is still in effect! Only problem is I'm not hearing from you guys enough. Your unit is on our distribution list for all material.*

*Fleagle*

Fleagle

An airman filled his butane lighter. Unknown to him, some of the fluid spilled on his arm. When he lit his cigarette, his arm ignited from the butane and he suffered second degree burns over 30 percent of his forearm. Personnel must insure that the butane filler can is well seated in the lighter filler socket.

SMS H. C. Williams  
363d AMS/SE  
Shaw AFB, SC

*Dear Sarge -*

*Thanks for the input. Smoking can be hazardous to your health in more than one way. Everyone who uses a butane lighter should also be aware that the*

*butane container must never be incinerated. Additionally, pilots should never carry butane lighters with them while they fly (AFR 60-16).*

*Fleagle*

...

Editor

The members of the 191 AFRES have, from the very beginning, thoroughly enjoyed the Fleagle cartoons featured monthly in the TAC ATTACK. I suppose that the reason why is because there is a little bit of Fleagle in us all; and like Art Sonsom's, Brutus P. Thornapple, III, he enables us to laugh at our own flaws and faux pas in a humanely constructive way.

His adventures have been close-to-home. What has happened to Fleagle has happened to us or to someone we know. Thus, a close kinship with Fleagle has happened. As he triumphs through his scenarios in Inspector Clouseau style, Fleagle helps us to keep from getting too impressed with ourselves as steely-eyed, red-blooded super jocks; and yet he does so in such a way that deep down we still feel that we are the best "sons-of-finches" with wings.

Without injuring our good self-images - which are in fact very important - Fleagle gives us perspective which makes us safer, more highly professional, and better able to accomplish our mission. Hence, our self-images are matured and our fondness of Fleagle enhanced with each issue of TAC ATTACK.

In his own inimitable way, Fleagle is, to all of us, a hero.

Lt Col John M. Hafen, Utah ANG  
191 AFRES CC  
Salt Lake City, UT

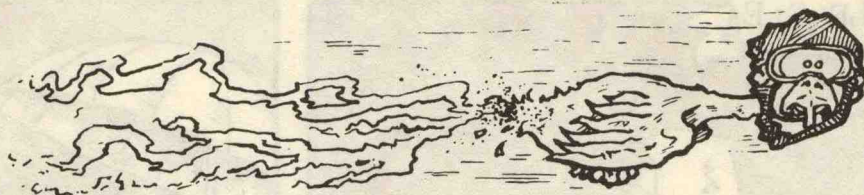
*Dear John*

*We're all glad you enjoy our friend, Fleag, and his antics. Hopefully, we can all learn from his mistakes, so we don't have to learn from our own. Thanks.*

*ED*



# TAC TALLY



MAJOR ACFT ACCIDENTS ➡
AIRCREW FATALITIES ➡
TOTAL EJECTIONS ➡
SUCCESSFUL EJECTIONS ➡
RATE COMPARISON ➡

TAC		
MAR	thru MAR	
	1977	1976
3	7	10
0	2	3
5	6	6
5	6	6
	6.1	9.0

ANG		
MAR	thru MAR	
	1977	1976
0	1	4
0	0	2
0	1	1
0	1	1
	2.2	6.5

AFR		
MAR	thru MAR	
	1977	1976
1	1	1
0	0	1
1	1	1
1	1	0
	10.8	11.3

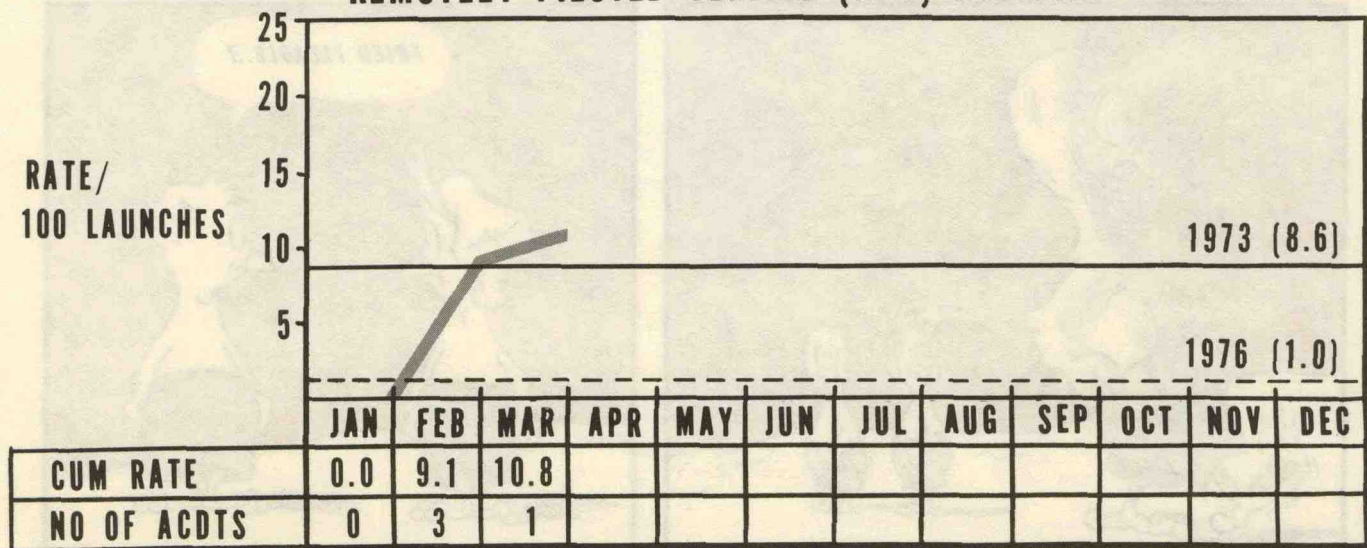
## TAC's TOP "5" thru MAR

TAC FTR/RECCE	
accident free months	
17	4 TFW
12	366 TFW
11	474 TFW
9	56 TFW
7	33 TFW

TAC GAINED FTR/RECCE		
accident free months		
60	127 TFW	ANG
28	132 TFW	ANG
26	156 TFG	ANG
21	122 TFW	ANG
21	117 TFW	ANG

TAC/GAINED Other Units		
accident free months		
116	182 TASG	ANG
96	135 TASG	ANG
88	507 TAIRCW	TAC
85	193 TEWG	ANG
83	602 TAIRCW	TAC

## REMOTELY PILOTED VEHICLE (RPV) ACCIDENT EXPERIENCE





FLEAGLE



HARDISON



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