

TAC ATTACK

JUNE 1979



SUMMER WEATHER
HAZARDS ...Pg 4

JUN

READINESS IS OUR PROFESSION



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Angle of Attack



Safety and the Supervisor

Safety and the Supervisor

Who has the responsibility for safety in your unit? The wing commander? Yes, he has the ultimate responsibility for safety. But realistically, he doesn't have direct control over all operations. How about the First Sergeant, or the safety officer, or perhaps the operators and maintainers? Let's face it, each of these people has a role in the safe, efficient operation of the unit. However, the key role in our Mishap Prevention Program belongs to one person--the line supervisor.

Sure, the individual worker must possess a sense of dedication and professionalism. The vast majority of people have that sense. I am convinced that these people would never intentionally commit an act that would compromise safety and place themselves or others in jeopardy. But, people do make mistakes. As human beings, we are all incapable of errorless performance. Most of our mistakes are harmless; some are extremely costly.

This is where the line supervisor comes in. Many of us are too close to our jobs to see the hazards of working without tech data, omitting required flight briefing items, or failing to use

protective equipment. The line supervisor is there to make sure these errors don't result in accidents--that the errors are corrected before accidents can happen.

The line supervisor has usually seen it happen before. He or she is chosen because of experience and expertise. One remembers when a new troop was installing a wheel and tire on an aircraft and the line chief failed to inspect the job before signing off the forms. The aircraft lost its wheel on takeoff. The flight commander remembers the time the lost wingman procedures were omitted from the flight briefing when a new crew was flying with the flight. The circus that resulted when the flight became separated in the weather took a lot of explaining--not to mention the close call between numbers 2 and 3. Another supervisor remembers the electrician who was working on high voltage lines without rubber gloves--and also remembers the grim results when a tool touched the wrong wire.

I challenge you as the line supervisor to take charge of your crew chiefs, aircrews, and technicians. It is your job to make certain that they are doing the job efficiently and safely. You are the key to our prevention efforts. It's up to you to make sure they are effective. ➤

RICHARD K. ELY, Colonel, USAF
Chief of Safety

SUMMER WEATHER HAZARDS



by Capt Carl L. Nelson
25 WS, Bergstrom AFB TX

It is an oft repeated fable that March comes in like a lion and goes out like a lamb. Depending on which piece of TAC real estate you are assigned to, that fable may or may not have been true in 1979. The second consecutive flood year in the Phoenix area, disastrous tornadic activity in the Texas/Oklahoma Red River Valley, and floods across the South Central US have made this spring's weather a "front page" item.

From an operational standpoint this has translated into a greater than usual number of weather cancellations. These weather phenomena also present a formidable threat to flying safely. Fortunately, the flying weather is generally more favorable during the warmer six months of the year, with the very best expected in the summer months. However, there are several weather phenomena that are particularly pesky during the summer months, namely air mass thunderstorms, increased density altitude, and thermal turbulence.

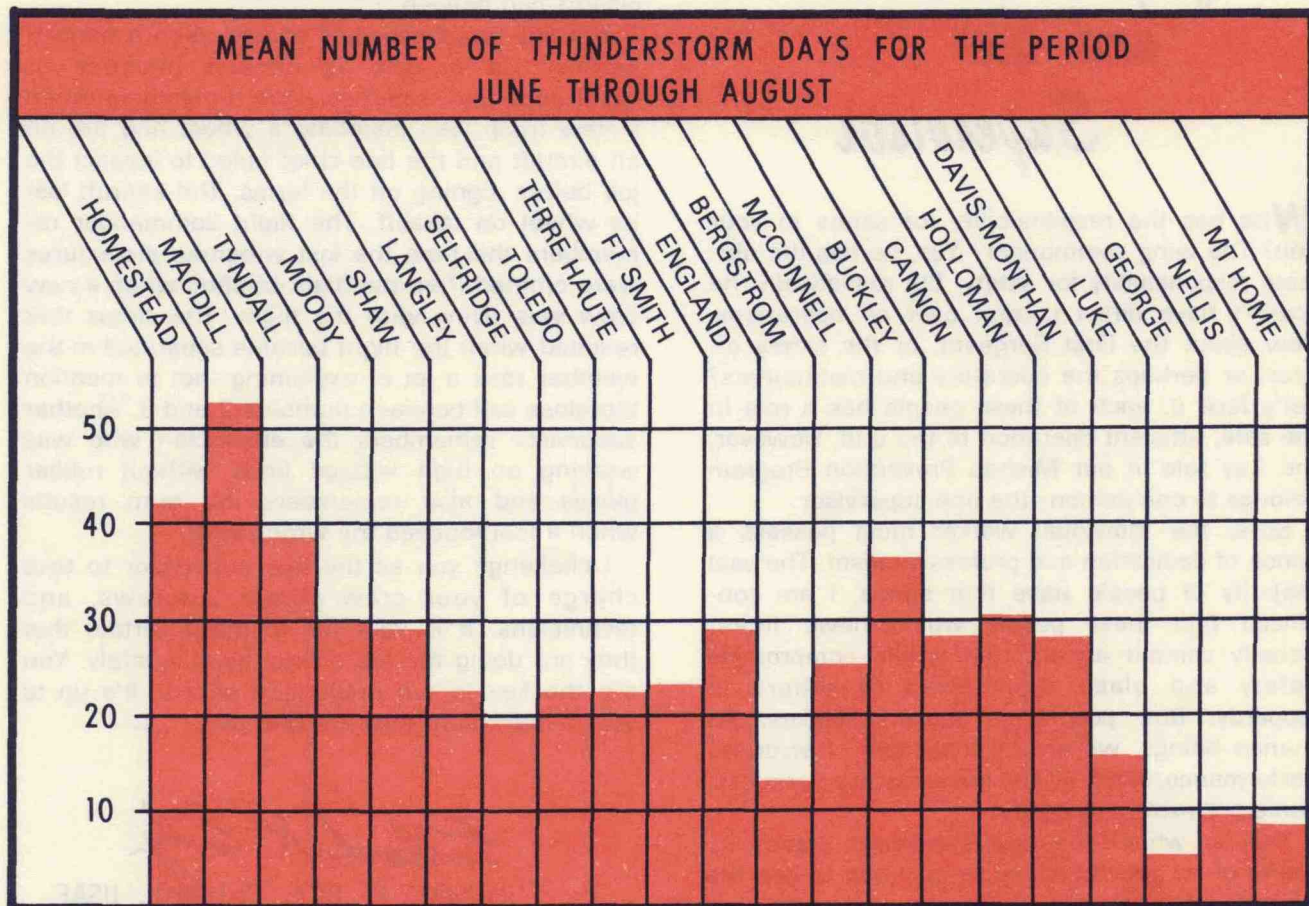


FIGURE 1.



Capt Carl L. Nelson
is this month's
Fleagle T-shirt winner

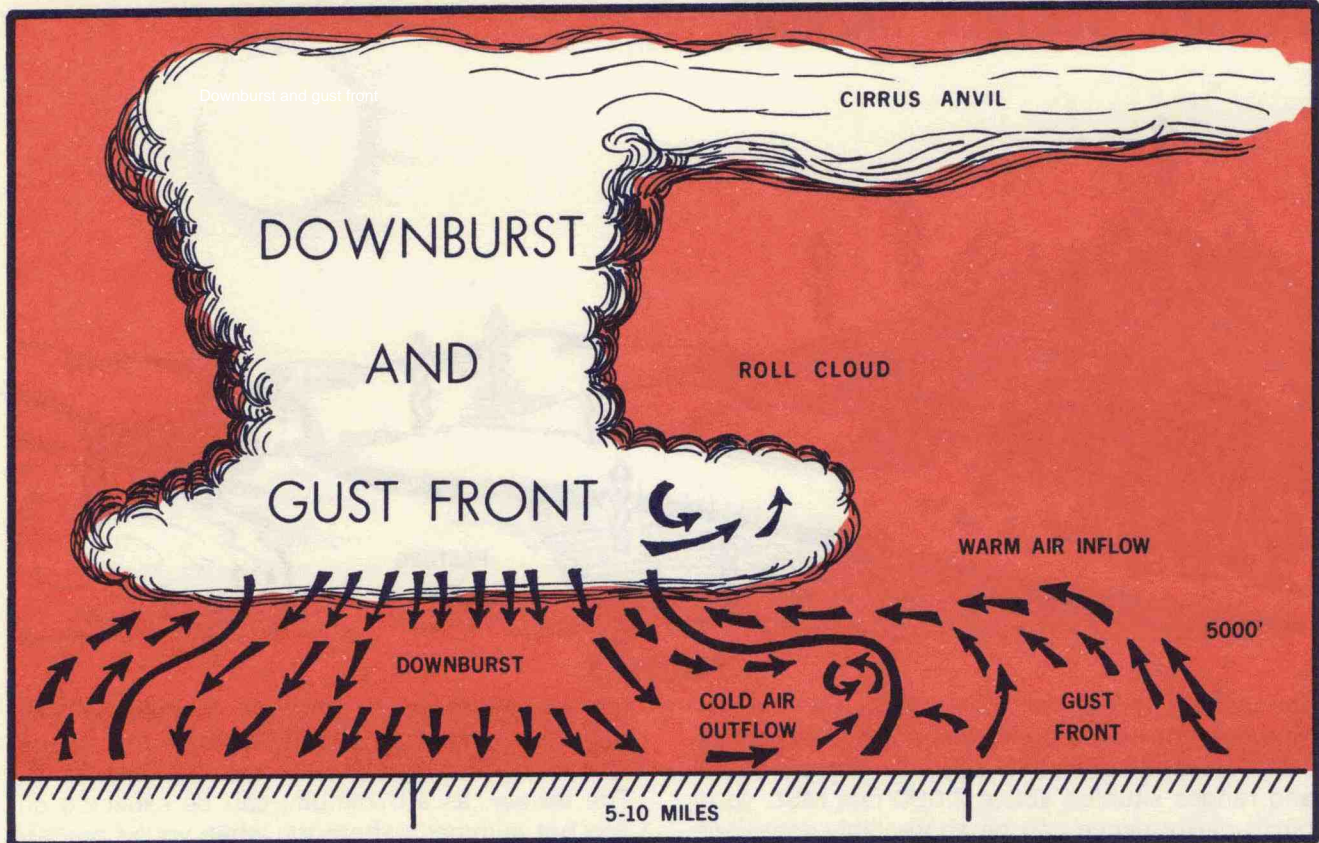


FIGURE 2.

The number of thunderstorm days at any given location in the summer is mostly a function of solar heating and presence of sufficient moisture. Figure 1 shows the average number of thunderstorm days each summer (June - August) at selected TAC and ANG bases. In case these totals look a bit weak, they reflect only days with thunderstorms recorded at the local weather station. The actual number of days with "bumpers" in your flying area may be considerably higher. More weather-related aircraft accidents and mishaps can be attributed to the thunderstorm and its products than to all other weather phenomena combined.

Remember, the thunderstorm creates a variety of severe weather hazards including turbulence, hail, icing, lightning, heavy precipitation, and low-level wind shear. The low-level wind shear is perhaps the most insidious of the hazards created by thunderstorms. The fact that a thunderstorm cell is 10 miles or more away from the base doesn't mean that you're safe.

Analyses of several major aircraft accidents over the past few years have established without a doubt that low-level wind shear associated

with thunderstorms can cause aircraft accidents. In some thunderstorms, extremely violent downdrafts, called "downbursts," plunge to the ground from the upper levels of the storm and spread out at the surface producing hurricane force winds. The leading edge of this wind field is called the gust front (Figure 2). It often precedes its parent thunderstorm by 5-10 miles, and is associated with extreme vertical and horizontal wind shears making takeoff and landing rather risky. Some gust fronts are quite extensive, but most are short-period, small-scale features (about a mile wide) and thus provide little or no warning of their existence. Since there are seldom any reliable visual indicators of the location of the gust front, you should always be extra cautious when flying at low levels in the vicinity of thunderstorms.

The effect of density altitude (DA) on our safety record is not as pronounced as other weather elements, but understanding it may help you get your machine off the ground. What is density altitude? It's the altitude (in the ICAO standard atmosphere) at which a given density will occur. For each degree Fahrenheit that your

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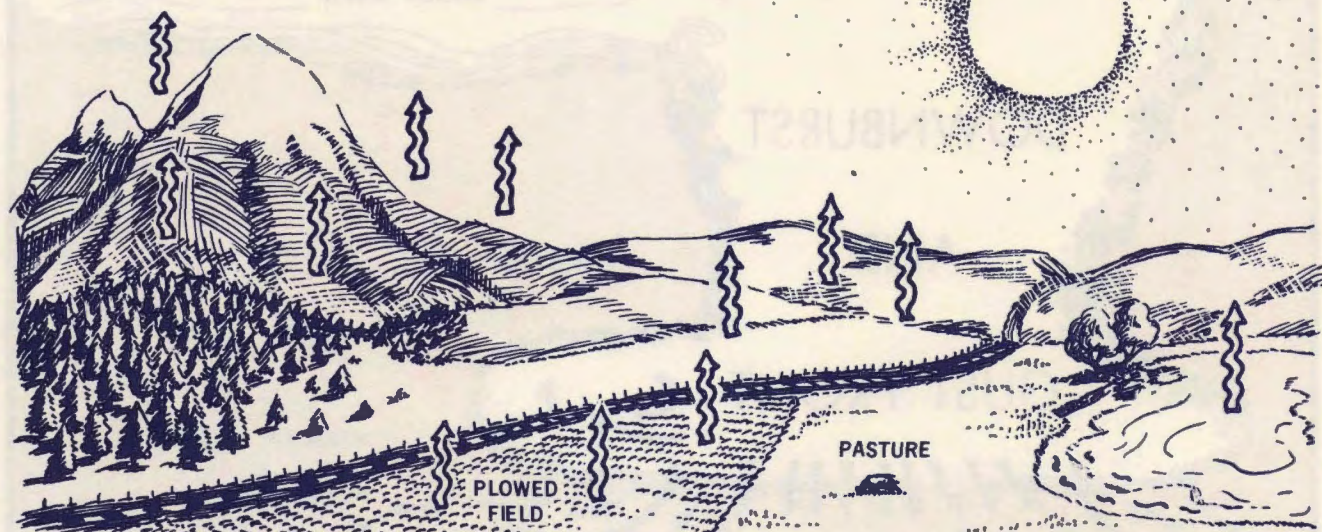


FIGURE 3.

atmosphere is warmer than ICAO's (at a given altitude), your DA increases about 67 feet; that's 1,000 feet for every 15 degrees. For air bases and ranges situated above 2,000 feet MSL, your bird's performance can be appreciably degraded when surface temps climb above 85°F... a common occurrence at several TAC bases. The surface DA, especially at western flying training ranges, can exceed the service ceiling of some rotary and light fixed-wing aircraft. An awareness of this type situation can help keep you out of trouble.

As an example, at Cannon AFB, New Mexico, the DA at the surface can exceed 8,000 feet during very hot summer days. An extreme case is sometimes noted near Denver. On hot August afternoons, some choppers have been known to fling their wings in vain trying to generate enough lift to clear the ground. Such degraded aircraft performance during high DA situations has been a cause factor in several fatal mishaps during the last two summers. Low-level, clear air turbulence, which normally comes with intense surface heating, compounds this DA-induced aircraft performance degradation.

Let's throw you another technical term -- a thermal is a relatively small-scale, rising current of air produced when the atmosphere is heated enough to produce absolute instability in its lower layers. This term is usually reserved to denote those currents too small and/or too dry to produce convective clouds. The presence of sig-

nificant thermals or thermal turbulence can produce turbulent effects across the entire spectrum from light chop to extreme turbulence. The former, as a minimum, can be expected on any hot summer's afternoon when you're operating in the turbulent layer, which normally varies in depth from 1,000-14,000 feet. However, glider pilots have found a few areas where thermally-induced updrafts exist up to 25,000 feet.

The depth of the turbulent layer, as well as turbulence intensity at a given location, are functions of the local topography and the intensity of solar radiation at the surface. Areas which have a marked contrast in surface heating, such as a white sandy beach next to blue water, will also enhance the generation of thermal turbulence. Figure 3 illustrates a situation that could easily produce moderate thermal turbulence. Subtropical desert areas, in general, receive the greatest amount of surface solar radiation anywhere on earth. It is no surprise, then, that the Southwestern US is the most affected area in TAC, since it exhibits all the aforementioned characteristics.

Your base weather forecaster can't block out the sun or stop the thunder in Florida, but he or she can tell you when conditions are ripe for summer hazards. Having these hazards in the back of your mind can prompt you to ask the right questions during your weather briefing. This preparation can make the difference between a routine flight and a hair-raiser. ➤



AIRCREW of DISTINCTION

58TTW
Luke AFB, AZ

On 15 February 1979, Hauptman (Captain) Hans-Hermann Schorling, German Air Force, and Lt Col (Doctor) Robert E. McDonald were flying target ship in an air defense alert exercise in an F-4C. At 37,000 ft, the Check Hydraulic Gauges and Master Caution lights illuminated. Upon closer investigation, the utility pressure was reading 1200 PSI and the pneumatic pressure was zero.

Hptm Schorling reduced the airspeed and began accomplishing the utility hydraulic failure procedures. When the crew attempted to lower the landing gear normally, the nose gear unlocked but failed to fully extend and the main gear remained up and locked. The emergency gear extension handle was pulled in the front cockpit, locking the nose and right main gear down. The left main gear still remained up and locked. The rear cockpit emergency handle was pulled, various Dash 1 procedures were attempted, and the McDonnell Douglas plant was contacted for assistance. All sources determined that there was no way to lower the left main gear.

While burning fuel down and waiting for the runway to be foamed, Hptm Schorling and Lt Col McDonald reviewed the procedures for landing with one main gear up and locked and discussed egress procedures in case of fire or runway departure. Hptm Schorling made an excellent landing just short of the arresting gear and held the wing off until the aircraft engaged the cable and slowed down. Despite a minor fire from the left external tank, the crew egressed safely. Only minimal damage was found on the external fuel tank and flaps.

It was later determined that the pneumatic pump had exploded, causing the utility failure. An air line from the emergency gear lowering accumulator to the right main gear had ruptured venting pressure overboard before the left main gear unlocked. This prevented the left main from lowering.

The professional airmanship of Hptm Schorling and Lt Col McDonald saved a valuable aircraft and prevented injury to themselves and others. Their actions qualify them as the TAC Aircrew of Distinction.

TAC ATTACK



Hptm Hans-Hermann Schorling



Lt Col Robert E. McDonald

TAC TIPS

..interest items, mishaps with morals, for the TAC aircrewman.

New opinions are always suspected, and usually opposed, without any other reason, but because they are not already common.

Locke

WHERE DID THE RUNWAY GO ?

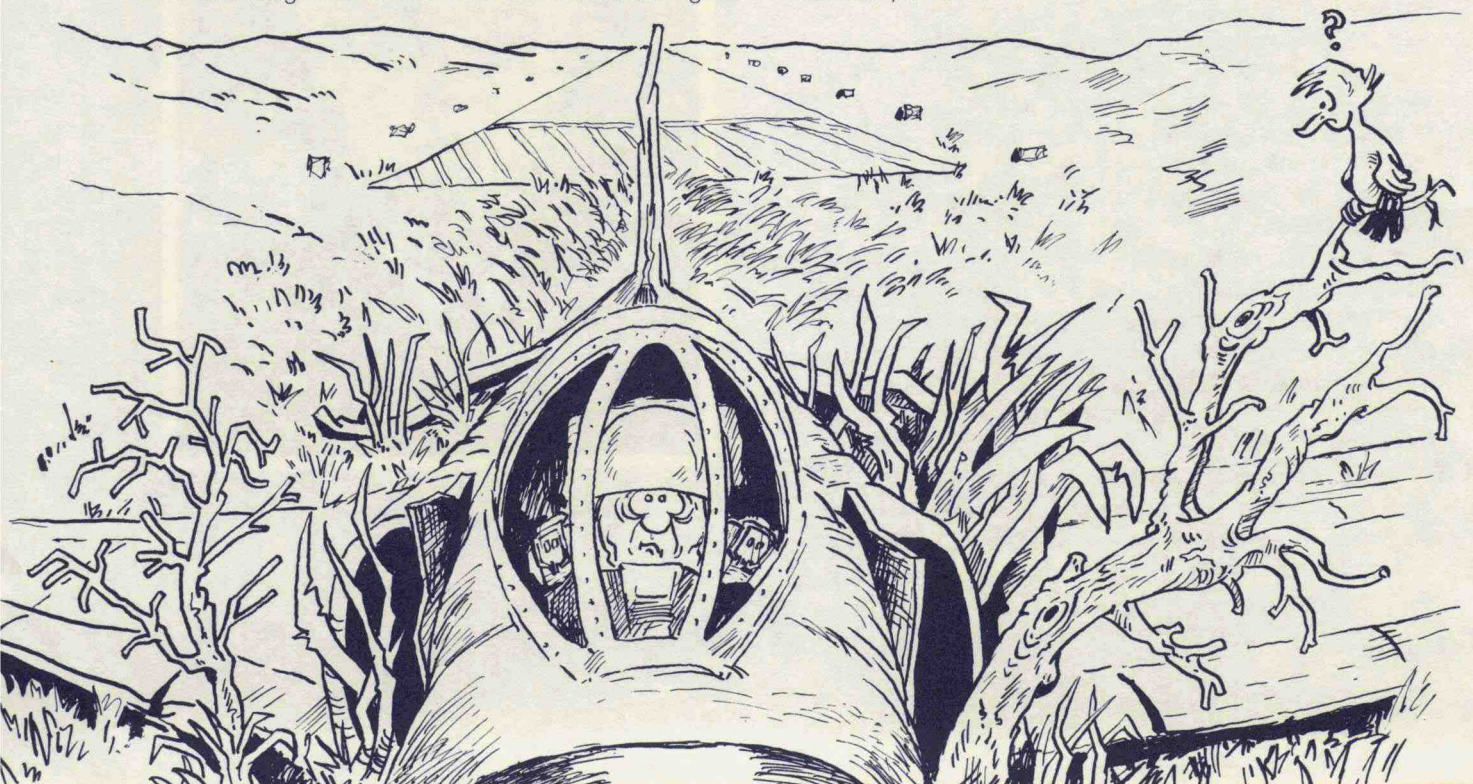
The Phantom went through all of its paces on a night air refueling/ground attack mission with no problems. During RTB, on base leg for PAR full stop, the anti-skid light remained on when the gear was lowered--the anti-skid switch was checked on. The switch was cycled and the light went out.

Touchdown was on speed about 300' down the runway and the chute deployed. About halfway down the runway, the pilot attempted to stop a right drift with left brake -- but the brake had no effect. He corrected the drift using nose wheel steering and noted that the anti-skid light

was on again and that he had no braking.

The WSO pulled the emergency brake handle at 2000' remaining and called for "hook down". The pilot felt no braking with emergency brakes and put the hook down at 1000' remaining -- just as the aircraft passed the BAK-12 barrier. The aircraft left the runway at the departure end. The crew egressed normally with minor damage to the aircraft.

Investigation of the brake problem is still in progress so no word on that now. The real lessons of the incident are obvious. When the brakes don't work--the only procedures to use are the dash 1 corrective actions; and arresting cables are like runways--no good when they're behind you...



EMERGENCY PROCEDURES

Section III of all aircraft's Dash Ones contains most of the information on what to do when the darn thing won't work. The procedures are step-by-step operations which are specifically designed to aid the aircrew in coping with abnormal operations -- case in point . . .

The F-4 training mission was uneventful until landing. Initial deceleration appeared normal until about 4,000ft and at 115 KIAS braking failed to give any response. The backseater then attempted to use the brakes with no results. The hook was lowered but just missed the BAK-12 with 1,500 ft of runway left. Only then did the pilot use the paddle switch to turn off the anti-skid -- normal braking returned, but it was too late to keep the bird out of the overrun MA1A.

The decision to let the backseater try the brakes cost time -- time which they couldn't spare at 4,000 ft remaining and 115 kts. Troubleshooting is fine if you have the expertise, responsibility, and the time to do it. Timely accomplishment of emergency procedures is the only way to go.

TO SEE OR NOT TO SEE

The front seat pilot in the recce bird was participating in a test of Chemical Defense (CD) equipment and was wearing it during flight. This helmet and face mask causes some restriction to peripheral vision.

While on PAR final approach, the aircraft had a near midair collision with a Cessna. The Cessna was in the wrong place, but that would not have changed the results of the midair.

The pilot felt he would have seen the bug-smasher in time to take evasive action if he had not had on the CD equipment. If you are testing or using any equipment of this type, be aware of your vision limitations and make adjustments wherever required to keep yourself clear of all other aircraft.

THE HIGH PRICED SPREAD

A flight of two F-4s was returning to home station. They were descending from FL 200 to 10,000' in tactical formation when the wingman called for his leader to pull up. The leader leveled off and rolled up on a wing, noting a civilian twin aircraft passing 500 feet below him.

TAC ATTACK

The lead aircraft didn't see the civilian aircraft because the nose of his airplane masked the bugsmasher perfectly. If they hadn't been in spread formation, the wingman might not have seen the other aircraft in time---if at all. Tactical formation was instrumental in preventing this highly probable midair collision. Maybe lookout formations aren't so difficult to fly after all. . .

P.S. What ever happened to clearing below with some gentle turns or an occasional check turn when descending in VMC? Didn't we all do that in those VFR on top days of yesteryear?

DART ATTACKS TIGER

Many units require a chase aircraft whenever a dart tow ship deploys the dart. The following incident is one of those good reasons for this requirement.

The F-5 released the dart and all appeared normal. Shortly after release, the dart entered a rolling maneuver and the chase immediately called for dart cut. The dart was cut free, but not before the cable struck the rudder.

A reel malfunction caused the dart to stop 150 feet behind the aircraft. The dart stopped, climbed, and entered the aircraft's wake causing it to become unstable. The quick reaction of the chase and tow pilot prevented serious damage.

Best treat the dart with respect. It's no fun to fly with a bunch of tow cable wrapped around your tail.



PREFLIGHTING IS



**By Major Lyle Samuels
9 AF/DOOT**

Well, the flight briefing was average. You managed to keep awake, wrote down some of your favorite mil settings, and had a coke and candy bar for lunch. The duty hog's got the tail numbers, but your bird doesn't have a WRCS. OK, so now you can't do an integrated LADD. No sweat, a straight radar LADD will hack it. A quick run to your locker for an old line-up card with your "secret" settings and you're in business. Gotta hurry now--'spose to be at the airplane in five minutes.

So it's out the door to your aircraft. Boy, it's a

long walk out to the plane---if I don't hurry I'll be late for check-in. You make a few cursory greetings to the maintenance folks. The WSO pre-flights the stores while you check the forms, and off to a quick walk-around while the crew chief is blowing out the Dash 60 and pulling the downlocks.

"Chief, what's this oil under here?"

"Overserviced sir, no problem."

"Yea, that happens all the time, no sweat."

"Looks like a good bird. Did they fix the generator problem from the previous sortie?" (You already forgot what was in the 781.)

"Yes sir, the electrician said all it needed was a minor adjustment."

"Good, we're really running late. Hope there aren't any more delays."



ONLY THE BEGINNING

Sound like your typical mission? Let's hope not, but the briefing, last minute changes, and diversions when you get to the airplane all rob us of time---time we could use for the important details of a good preflight.

Now, I'd like to start by saying that I'm not going to tell you how to preflight an aircraft. Everybody knows how to do a preflight anyway, don't they? Well, yes and no. The truth is that a lot of folks don't really preflight their aircraft--they do a walk-around. Believe me, it's not the same thing. As a wing FCF pilot for three years, I've learned a lot about the aircraft. After all, that is one of the selling points of the job. I won't even go so far as to say that the preflight is the most important part of a mission. I will say that the majority of discrepancies on an aircraft can be found on the ground. No, I can't back that up with strictly factual evidence. That's just been my experience.

So how do I go about doing a good preflight? First, you have to have enough time. An FCF pilot preflighting an aircraft that had uncommanded roll inputs on two successive flights, with no known cause, might devote 20-30 minutes to just looking. That's after a thorough review of all parts of the 781. You have to get to the plane early enough to look it over properly and read all the forms. So your flight lead briefed up to station time? Well, you're going to have to bite the bullet and tell him he's got to move the check-in time back far enough to give you time to preflight. Sure, he'll probably give you some grief. I'll also bet he leaves more time after his next flight briefing.

Next, let's do the preflight. We all know that the Dash One is designed to hit the highlights (safety of flight). How many of the little unpublished things are really important? I think

a good starting point for any aircraft is to pick up and review a Dash Six maintenance manual. See for yourself what the maintenance personnel are doing for you each flight. The crew chief checks things like the AB louvers, spray bars, and flame holders for molten metal, cracks, and



PREFLIGHTING IS ONLY THE BEGINNING

proper pin installation. They also look for cracks, distortion, or leaking fuel on and around the V-band couplings. Do you ever check those things?

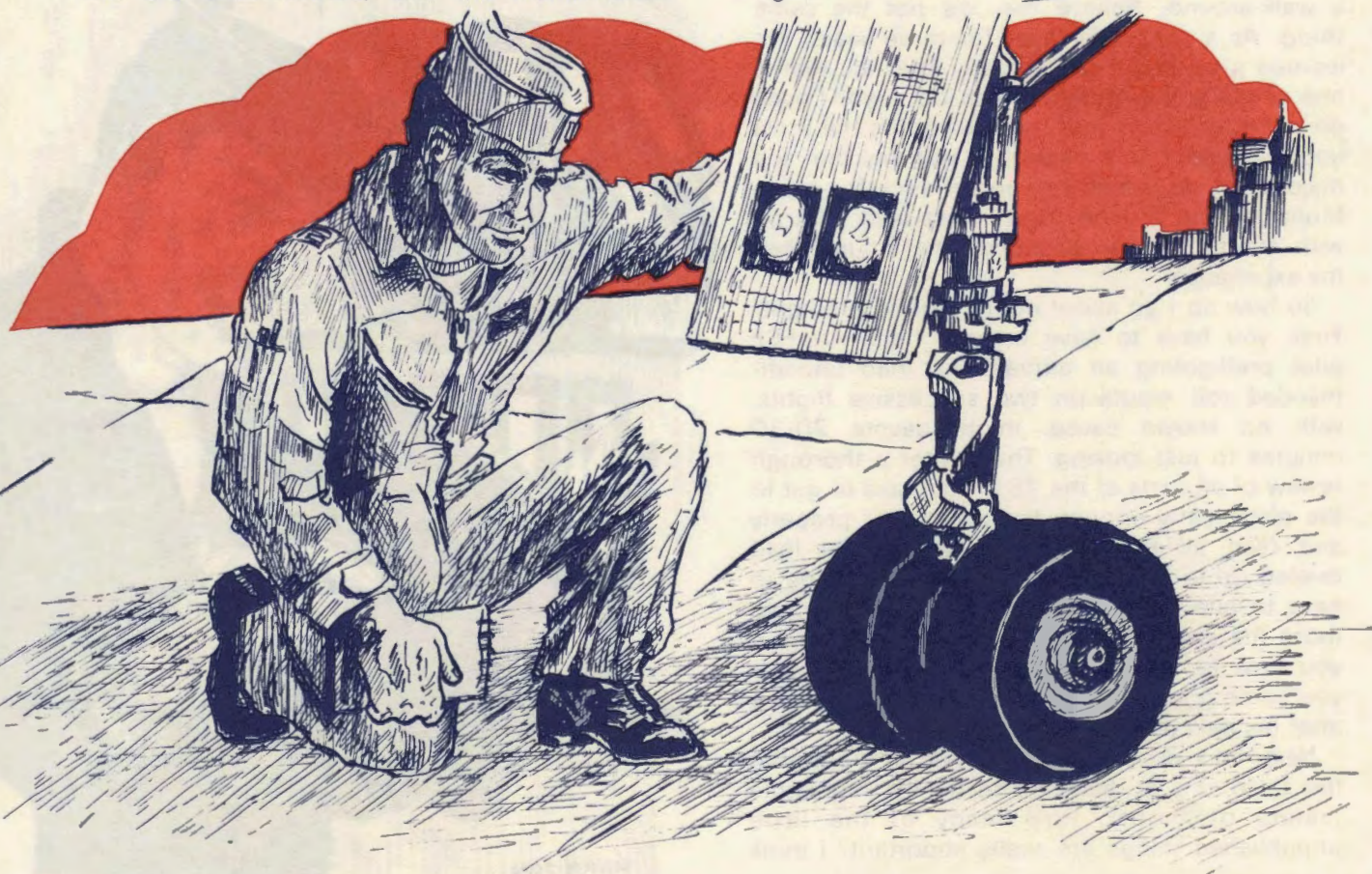
How often do you take for granted the little things like draining the pitot-static lines? Do you even know where the drains are for your aircraft? How about the wear limit on the tires? Is a 10-inch flat spot OK? What about a 12-inch one with red cord showing? There are plenty of other examples from one end of the plane to the other. I am saying that if you know what the crew chief is supposed to be looking for, you'll be able to tell if the preflight was done properly. If the pitot-static lines haven't been drained, the tires are underinflated, and the maintenance

preflight was signed off an hour ago, something's wrong.

I'm not saying that you should pick up an additional AFSC and start doing maintenance's job either. But you should get involved!! Let the crew chief know you care---that you care enough to learn enough about your aircraft to demand a professional product when you fly. You'd be surprised at the effort put into a single sortie---up to 50 hours of preparation for the F-4. It's a shame to waste that effort by aborting a mission because of something you should have noticed on the preflight.

Next time you fly, get out to the airplane with enough time to really talk to the crew chief and to do a thorough preflight. If you're running behind, it's better to slip everything 10 minutes than to bust your neck (literally) trying to get it all done on time. If the guy on the line knows that you care about the planes you fly, you'll get a lot more attention and cooperation. The more the flyers and maintainers understand each other's jobs, the better the combined results.

Remember, preflighting is only the beginning...





TAC SAFETY AWARDS

Crew Chief Safety Award

Airman First Class Darrel G. Whiteman, 363d Aircraft Generation Squadron, 363d Tactical Reconnaissance Wing, Shaw Air Force Base, South Carolina, is the recipient of the Tactical Air Command Crew Chief Safety Award for June 1979. Airman Whiteman's aircraft was selected to participate in the first stateside recce competition because it flew more O/R sorties, had a lower fail rate on all aircraft systems, and was the best maintained aircraft in the fleet.



A1C Darrel G. Whiteman

Individual Safety Award

Airman First Class Ricky P. Mider, 56th Equipment Maintenance Squadron, 56th Tactical Fighter Wing, MacDill Air Force Base, Florida, is the recipient of the Tactical Air Command Individual Safety Award for June 1979. Airman Mider has made numerous improvements in the work procedures and equipment servicing in the Aerospace Ground Equipment (AGE) shop. The improvements he has implemented have resulted in a safer, more efficient operation.



A1C Ricky P. Mider

Ground Safety Award of the Quarter

Staff Sergeant Calvin E. Brethold, Jr., 388th Aircraft Generation Squadron, 388th Tactical Fighter Wing, Hill Air Force Base, Utah, is the recipient of the Ground Safety Award for 1st Quarter 1979. Sergeant Brethold developed safety briefings on Hydrazine and CORKER materials. The briefings on these potentially hazardous materials and the conscientious performance of his other duties have raised the safety consciousness of Sergeant Brethold's unit.



SSgt Calvin E. Brethold, Jr.

chock talk

*...incidents and incidentals
with a maintenance slant.*

Murphy Is Waiting

The F-4 was on a normal air-to-ground gunnery mission. Once on the range, the pilot discovered that the gunsight was not depressing correctly, so he was forced to RTB. During RTB, the pilot cycled the select switch from AGM-45 to Bombs Single and back to AGM-45 to see if he could get the sight back. When the switch hit the AGM-45 position for the second time, the centerline gun was jettisoned from the aircraft.



The gun had functioned correctly on 2 hot passes on the range, and all switches had been safed prior to departing the range. The initial investigation did not reveal any discrepancies. The aircraft was then placed on jacks with the switches in postflight positions and the gear was raised. After the gear was retracted, there was constant 28 volt DC voltage to the centerline breech leads. Any movement by maintenance personnel in cockpit also caused intermittent voltage to the breech leads. Investigation revealed the pins P and M of Cannon Plug 52J571 (Multiple Weapons Disconnect Plug) were shorted. The short was located 5 inches from the plug where it had been spliced to the wire bundle. The heat shrink tubing had shrunk away from the wires allowing them to touch when vibrations were occurring. Voltage to the gun was diverted to the jettison breech leads through the short---even though all switches were safe, no station was selected, and no jettison switches were activated. (Two other conditions were necessary also. The auto-clear/non-clear switch had to be in non-clear, and the weapons select knob had to be in guns or the guns and stores switch had to be in guns and stores.)

Sounds awfully complicated, doesn't it? The last work done on the wire bundle in question occurred eight or more years ago, before the aircraft had arrived at its present unit. One thing about Murphy, he can wait a long time before he decides to make an appearance.

The maintenance troops did a heck of a fine job just finding out how this one happened. Hopefully we won't come up with too many more headscratchers.



Don't Strain Yourself

Two F-15 aircraft technicians were in the process of installing a piece of electronic equipment in Bay 5. One NCO was on the aircraft boarding ladder and his fellow worker was on the ground. The airman on the ground handed a Radio Frequency Amplifier weighing 60 pounds to the NCO on the ladder. The NCO twisted himself on the ladder and tried to grab the handles on the amplifier with first his left, and then his right hand. When he reached with his right hand, he lost his balance.

He instinctively let go with his right hand and grabbed the ladder. The amplifier twisted in his left hand and broke a finger. The NCO then dropped the amplifier.

A maintenance stand was not available, nor was one requested. It has been common practice to use the aircrew boarding ladder to install this type of equipment. Due to the weight of the equipment and the need to shift body weight, this has now proven to be an unacceptable and hazardous procedure. Next time....

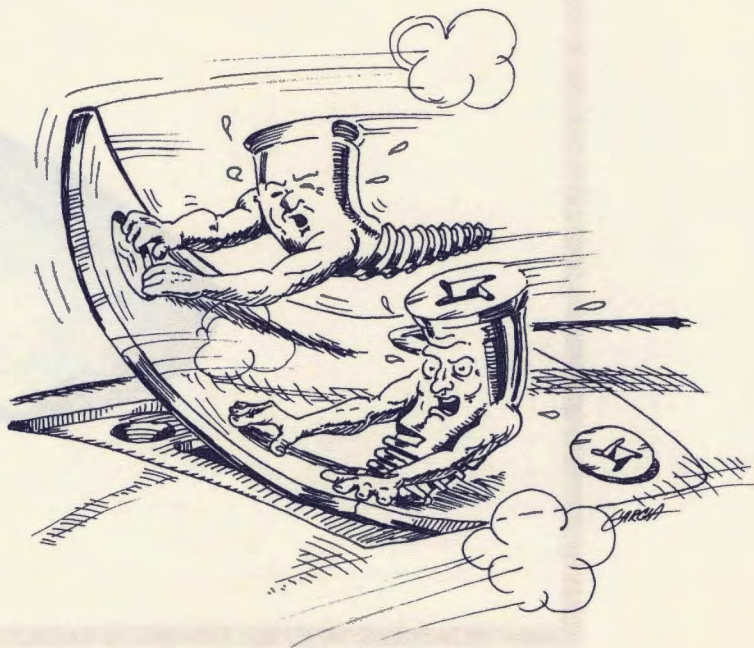
Fasteners Are Meant To Be....

The F-5 was returning to home station following a deployment to the east coast. Shortly after takeoff, while accelerating through 300 knots, the pilot heard several popping noises which he thought were coming from the airconditioning. No problems were encountered during flight. However, after landing at an enroute refueling stop, panel 531, the fuel cell cover panel on the top of the fuselage was discovered missing.

The F-5 had experienced fuel indication problems while at its deployed location. Panel 531 was removed for inspection of the fuel probe. The cover panel was replaced and secured with the four corner screws while further testing was completed. Due to lack of proper equipment, the testing was delayed several days. The fact the panel had been removed was never entered in the 781.

After the aircraft was prepared for flight, neither the pilot nor the crew chief noticed that the panel was only partially secured. Since the panel is located on top of the fuselage, it would be difficult to insure it was fully secured without climbing up to examine it closely. Since there were no entries in the 781 indicating the panel had been removed, there were no clues that a closer examination was needed.

The lessons contained in this incident are obvious. Go back and count them: there are seven of them...



Mitsubishi A6M-2 Zero



DAVID GARCIA '79

DOWN TO EARTH

DRINK UP

The peak of U.S. hot weather comes in mid to late summer and early fall when the oceans and air have been warmed by the sun's direct rays. The ancient Greeks called this oppressive period "dog days" because it coincided with the appearance of the dog star Sirius.

But even if this year's summer and early autumn temperatures aren't breaking any records, it's wise to know how to cope with the heat. An important tip is to drink plenty of water -- even before feeling thirsty.

Thirst is a bad index of when to get a drink. By the time we feel thirsty, we are already a quart low. Reactions to heat are often precipitated by a lack of water in the body.

A lot of old sergeants and football coaches used to preach "water discipline." They told the men that going without water doesn't make a person stronger, it makes him weaker.

The time-honored practice of swallowing salt tablets to replenish the body's supply has also been thrown out for people on normal diets. Salt has been found to slow the body's adjustment to heat and also can cause gastric disorders.

So, make sure you drink more water than you think you need this summer. You'll be surprised how much better you feel and how the heat doesn't seem so oppressive.

DOWN, DOWN, DOWN

We fall a lot! Sometimes it's on purpose. Especially if a big guy is about to plant a "haymaker" on your face or you don't want to go off a cliff while learning how to ski! More often though, a fall is an accident. Old people fall, young people fall, everybody falls. Falls account for the most deaths in home accidents. Other than automobile accidents, falls make up the second largest accidental death toll in the United States.

There's no doubt, falls hurt. We fall from telephone poles, maintenance stands, ladders, chairs, trees, buildings, aircraft, vehicles, and makeshift stands. We fall over bricks, door jambs, railroad ties, rugs, toys, shoes, etc. You name it and someone has probably fallen from or over it!

Most of the time falls result from carelessness! Materials are left on floors, stairways or ladders or we don't pay attention to where we're walking. There's not too many things more embarrassing than to be "star gazing" or "girl/boy watching" and fall up a stair or over a curb!

Falls can be prevented. The injury need not occur and self-pride can remain, if we all follow a few basic rules.

- Keep work areas and climbing surfaces clear of obstructions.
- Good Housekeeping means putting tools and materials away.
- Stairs, ladders, and other climbing or walking surfaces must be kept in good condition.
- Clean up spills to prevent anyone from slipping and falling.
- Pay attention to what you're doing and where you're going.
- Walk carefully and use stair handrails.
- Be courteous to others.
- Walking can be hazardous to your health.

TIME WASTED

One of our most needed resources is time. There is usually not enough time to do what we need to, on or off the job. "Where did the time go?" is a very common expression. Accidents waste time. Not only the time of the people directly involved, but the time of supervisors, commanders, investigators, specialists, and bystanders. This loss of time and work can often result in hurried actions to "catch up." Thus, the stage is set for another time waster. Personnel and materiel are not the only resources affected by mishaps.

In 1978, TAC had 1,554 reportable ground mishaps. This total doesn't include the "fender bender" vehicle mishaps or the cut fingers. We wasted a great deal of time in 1978. Mishap prevention is time conservation which results in greater job performance and home activities. Time saving is each person working correctly and protecting the welfare of others. Time is critical.

In the words of Mr. Peter Drucker, management consultant: "You might get more men and you might get more money, but you cannot get more time." There is no way of getting time out of a congressional committee. No matter how great the demand, the supply is totally inflexible. On top of that, is the fact that time is totally perishable. It cannot be stored, cannot be recalled, cannot be played back, and cannot be increased. It's the resource in shortest supply.



MOTORCYCLISTS NEED TO TAKE EXTRA PRECAUTIONS

As you read the following, keep in mind that nine out of nineteen crashes involving motorcycles result in injury or death. Or on a mileage basis, a cyclist's chances of being killed are twenty times greater than those of an automobile driver.

Assume that auto drivers don't see you.

Wear your head and eye protection at all times.

Avoid startling auto drivers by suddenly cutting in close.

Think ahead. Allow enough space to brake safely in an emergency. At 50 MPH you need about 175 feet to stop. A car needs 243! Beware of the car behind you.

Brake from back to front. Rear brake first is the rule. Then ease down gently on the front. Brake smoothly on slippery surfaces. Brake before entering curves, not after.

Watch the road surfaces. Be alert for puddles, chuckholes, oil, grease, wet leaves, gravel, rocks, etc. Items which would not affect an auto could be disastrous to the cyclist.

Keep yourself covered. NEVER ride with bare arms or legs. Experienced cyclists wear heavy footgear and durable types of clothing to protect themselves against cuts and scrapes.

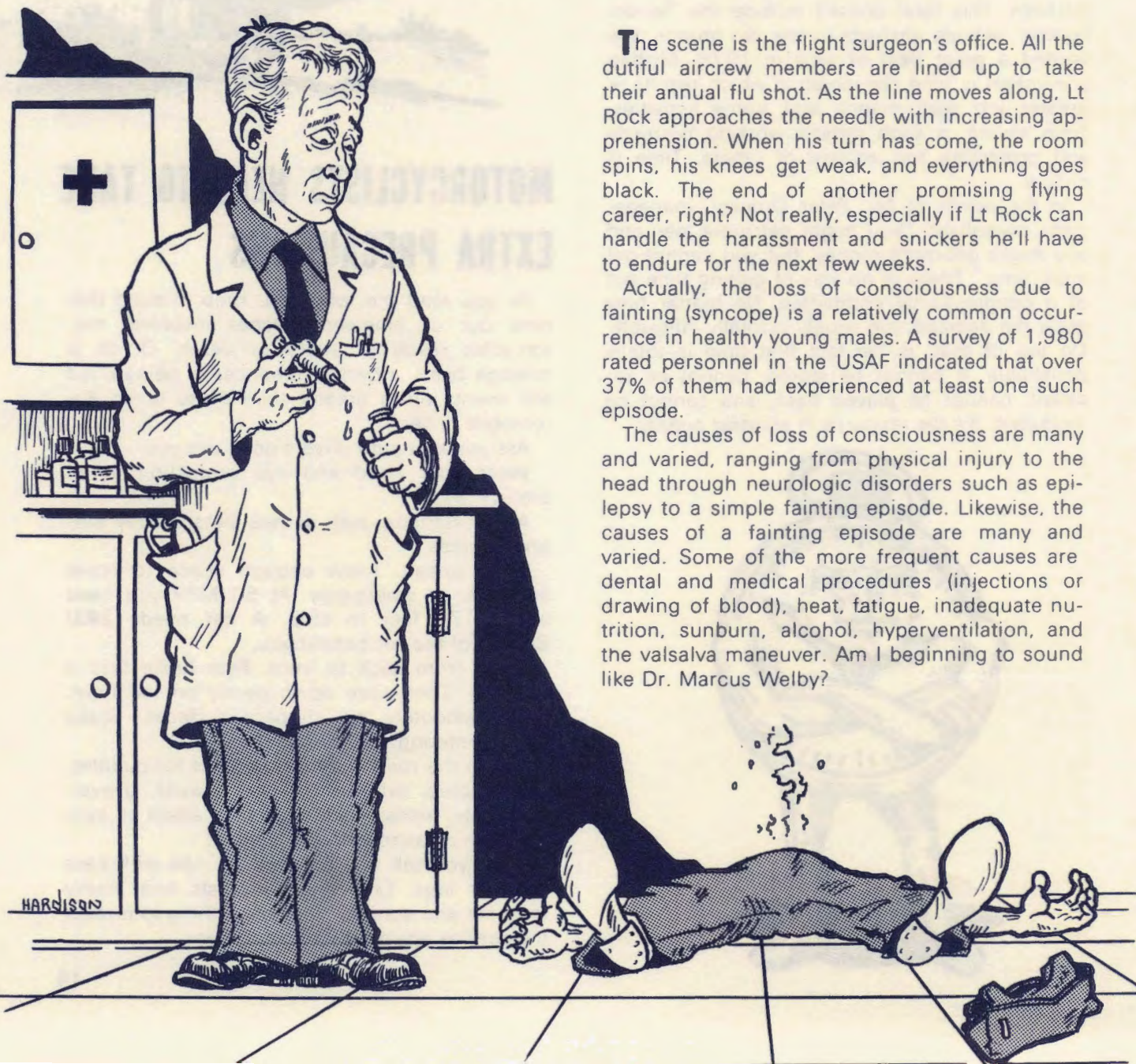
SYNCOPAL EPISODES

By Wing Commander Michael D. Miller, RAAF,
MC, FS,
HQ TAC/SGPA

The scene is the flight surgeon's office. All the dutiful aircrew members are lined up to take their annual flu shot. As the line moves along, Lt Rock approaches the needle with increasing apprehension. When his turn has come, the room spins, his knees get weak, and everything goes black. The end of another promising flying career, right? Not really, especially if Lt Rock can handle the harassment and snickers he'll have to endure for the next few weeks.

Actually, the loss of consciousness due to fainting (syncope) is a relatively common occurrence in healthy young males. A survey of 1,980 rated personnel in the USAF indicated that over 37% of them had experienced at least one such episode.

The causes of loss of consciousness are many and varied, ranging from physical injury to the head through neurologic disorders such as epilepsy to a simple fainting episode. Likewise, the causes of a fainting episode are many and varied. Some of the more frequent causes are dental and medical procedures (injections or drawing of blood), heat, fatigue, inadequate nutrition, sunburn, alcohol, hyperventilation, and the valsalva maneuver. Am I beginning to sound like Dr. Marcus Welby?



FAINTING IN AIRCREWS

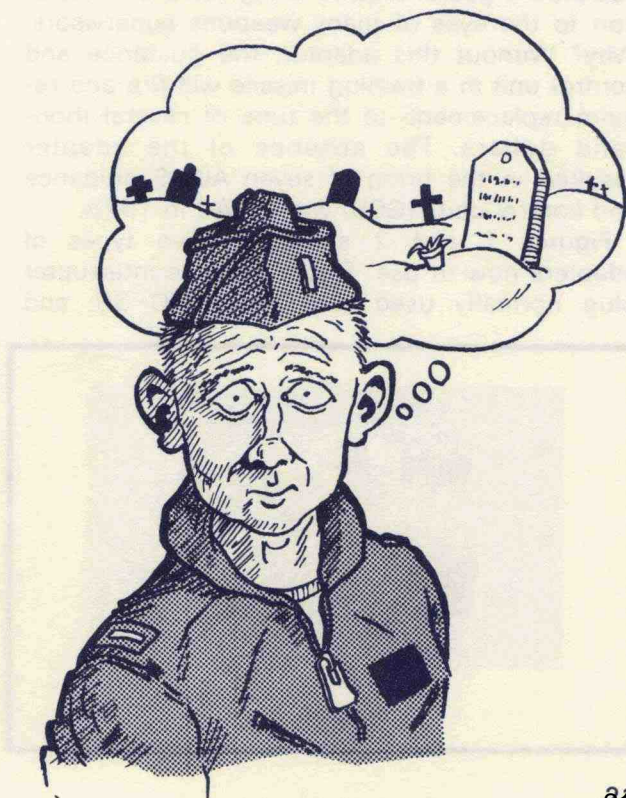
Naturally, whenever an aircrewmember experiences a loss of consciousness, it is necessary to determine the underlying cause due to the potentially disastrous consequences of loss of consciousness in flight. The diagnosis of fainting (syncope) as the cause is usually accomplished by the exclusion of other serious causes.

During the period of investigation, the aircrewmember must be removed from flying status. There appears to be the opinion among flying personnel that such removal is likely to be more permanent than temporary. This attitude has undoubtedly resulted in many unreported episodes of loss of consciousness. The potential for disaster as a result of the failure to report a fainting spell is obvious.

This attitude is not unjustified. In the past, it was very difficult, if not impossible to get back on flying status following a reported fainting episode. A recent survey is evidence that the success rate has definitely changed. The table below shows the evolution of this change.

PERIOD	PERCENTAGE RETURNED TO STATUS
1955	6.5%
1961	10.5%
1965	22.8%
1979	47.6%
1977	70.5%

It's obvious that the attitude within medical circles has changed significantly and that your chances of returning to status are excellent. Stop for a moment and think of the danger you're creating for yourself and the rest of your flight members if you have a problem that could cause your incapacitation in the air. Remember, you have the right to do what you want with your own body---as long as it doesn't endanger someone else. When you step over that line, you've gone too far. Better let the doctors take care of you instead of the mortician.



WEAPONS WORDS

THE AIM-9 CAPTIVE ADAPTER

By Maj Fred Higaki
TAC/SEW

The captive adapter plug is a small item of equipment guaranteed to bring tears of frustration to the eyes of many weapons supervisors. Why? Without this adapter, the guidance and control unit in a training missile will fire and require replacement--to the tune of several thousand dollars. The absence of the adapter resulted in the firing of seven AIM-9 guidance and control units (GCU) within TAC in 1978.

Figures 1 and 2 show the two types of adapters now in use. Figure 1 is the interrupter plug normally used with the AERO-3B, and



figure 2 is the adapter connector used with the LAU-114. This is the little devil causing all the problems. The captive adapter plug is normally installed on the umbilical by the missile shop before delivery to the flightline. However, after the missile leaves the shop, these adapters have been disconnected for reasons unknown resulting in fired GCUs.

The first fix, initiated in January 1978, was to put a bead of RTV sealant between the plug and umbilical connector to make a semipermanent seal. It was apparent that this procedure wasn't

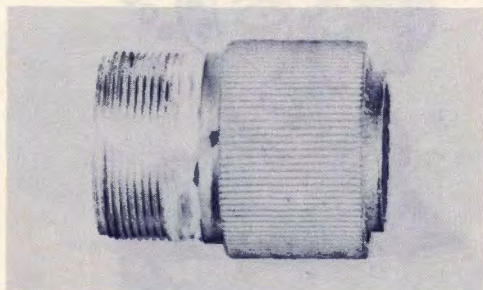


FIGURE 1.

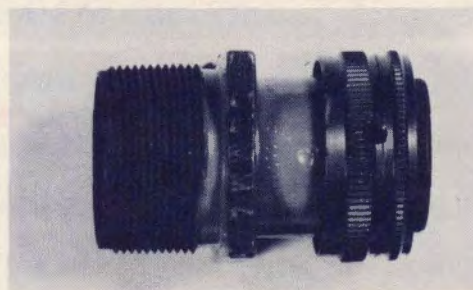


FIGURE 2.

going to hack it, since four GCUs were blown by June 1978. Several other recommendations were proposed including: limiting the changing of captive adapters to a designated group of personnel; requiring a series of people to check the installation; painting the adapter a distinctive color; or numerous combinations of the above. Many TAC units also devised their own local procedures:

- a. An AFTO Form 781 entry requiring an inspection after captive AIM-9 load and a 7-level technician sign off.
- b. Requiring loading supervisor inspection of each captive AIM-9 load.
- c. Aircrew inspection of the AIM-9 to insure captive adapter is installed.
- d. Highlighting AIM-9 captive adapter installation as a special interest item during AFM 50-15 training.

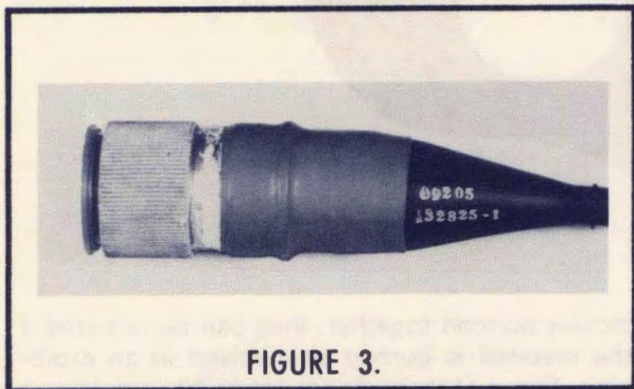


FIGURE 3.

For some units the procedures worked; for others they did not. We still need a better fix---perhaps a way to mate the captive adapter to the umbilical cable and make it almost impossible to remove, or totally eliminate the need for personnel to remove or change the captive adapter on the flightline.

Two such fixes have been authorized within TAC since January 1979:

- a. For AERO-3B launcher equipped units---use of a two-inch length of shrink tubing insulation sleeving over the umbilical connector cannon plug leaving only part of the adapter cannon plug exposed. A heat gun is used to shrink the tubing. (See figure 3)
- b. For LAU-7/LAU-114 launcher equipped units---drilling holes in the corner flange of the

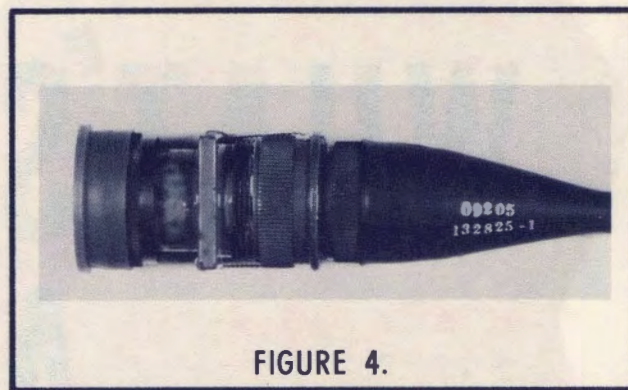


FIGURE 4.

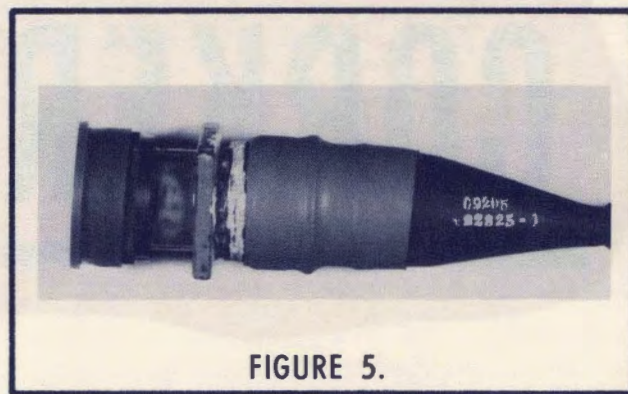


FIGURE 5.

34-pin adapter and then using appropriately sized safety wire or applying shrink tubing to secure the captive adapter to the umbilical so it cannot be easily disconnected. (See figures 4 & 5)

- c. Units with both types of launchers can use both methods and dedicate the missiles to the appropriate aircraft.

Gas grain generators have been fired infrequently due to moisture induced arcing. The possibility of a moisture problem dictates a need to remove the adapter during GCU functional testing to inspect the electrical connections. This will require removal and replacement of the shrink tubing or safety wire after inspection.

By following the above procedures, we should be able to totally eliminate accidental firings of AIM-9 gas grain generators due to missing captive adapters. If you have any better ideas on how to eliminate this problem, we'd be glad to hear from you.

WHAT'S A CORKER

What's a corker?

by **SMSGt Ron Christiansen**
TAC/SEG

New lightweight composite materials are being used to replace steel and aluminum throughout the world in consumer goods, automobiles and aircraft. These composite materials are actually made of carbon, graphite and boron fibers. The resulting material is lightweight and extremely strong and also quite versatile. Composite materials are used in tennis rackets, golf clubs, and many aircraft panels. New uses for these materials are being discovered almost daily.

While composite materials are extremely useful, they can also create some problems. The materials are made up of many thousands of individual filaments. The larger the panel or structure made of composite materials, the more fiber material it contains. While these fibers are

closely bonded together, they can be released if the material is burned or involved in an explosion. Some of these fibers are highly conductive and could cause problems in electrical equipment.

When an aircraft containing composite materials is involved in a mishap, the occurrence is termed a CORKER. To help you better understand the USAF interest in composite materials and CORKER, the following questions and answers are provided:

a. *What's a CORKER?* A mishap involving an aircraft with boron or graphite composite materials.

b. *Which aircraft contain boron or graphite composites?*

(1) In the operational fleet, the F-16s, F-15s, F-111s, seven A-7Ds, two C-130s contain either boron or graphite composites.

(2) In the prototype fleet, the B-1 uses significant amounts of boron and graphite.

c. *Why are CORKERS of interest?* This is a tough question, and a simple answer is even tougher; but it goes something like this: "...CORKERS are of interest because during the burn/explode sequence of a typical aircraft mishap, individual or groups of conductive fibers can be liberated in the smoke and debris of the plume."

d. *What's the problem with the fibers?* If these conductive fibers settle on/across electrical equipment, problems may occur.

e. *What kind of problems?* The gamut--shorting, arcing, or burnout.

f. *Can these fibers only be liberated during the burn/explode sequence of an aircraft mishap?* No! They can also be liberated in the following ways:

(1) During the crash rescue sequence, fibers can settle on the garments of the disaster response force. Once there, if not collected, they are free to move about.

(2) During the various wreckage removal processes, individual fibers can be liberated if special precautions are not observed prior to wreckage towing, storing, and shipment.

(3) During routine maintenance work, fibers can be liberated if a composite structure is broken, cut, or dismantled.

g. *Why are composite materials used in aircraft structures?* Because they offer strength at light weight; and in these days of energy conservation, that quality--strength with no weight penalty--is an extremely desirable characteristic in aircraft design.

h. *Are there differences between the boron and graphite materials?* An emphatic yes! Graphite presents a more significant problem for the following reasons:

(1) Size and Weight: Individual graphite fibers are so small they can't be seen. Boron fibers are much larger and easier to see.

(2) Electrical Properties: Boron fibers don't create electrical problems until they come into contact with equipment in the 110 to 120 volt range; graphite fibers can cause problems in low-voltage circuits...as low as 3-10 volts.

(3) Aerodynamics: Because they're so light, graphite fibers float in air like dust. Boron fibers, on the other hand, have a much faster fall rate.

i. *What are secondary problems?* Secondary problems are those problems created when conductive fibers--liberated as debris during the burn/explode sequence or during subsequent disaster response actions--reach electrical equipment and cause problems.

j. *What factors affect the likelihood that secondary problems will occur?* This one's too tough for a definitive, precise answer. A number of factors affect the probability that secondary problems will be created including:

(1) Proximity of mishap to potential targets, i.e., how close was the accident to electrical equipment/installations?

(2) Weather conditions during/after the mishap, i.e., what were the winds? Was it raining? etc., etc.,

(3) Extent of burning/explosion, i.e., how much of the composite structure was burned or exploded? While we have little or no control over factors 1, 2, and 3 above, we do have control over the subsequent fire fighting, crash rescue, EOD, wreckage treatment, moving, and disposal actions. Remember that inaction or misdirected action during these phases of a mishap can lead to secondary problems.

k. *Is there a health hazard associated with "free fibers"?* Nothing to date indicates that carbon/graphite fibers in moderate to heavy concentrations can cause physical problems. However, until we know more about this problem, dust masks and eye protection should be used by personnel exposed to high fibrous concentrations.

Preliminary study and testing information indicates that the hazards to electrical facilities from an accident involving composite material equipped aircraft may not be as severe as originally believed. There are continuing studies being conducted by the USAF and NASA to determine the full effects of liberating composite materials into the air.

Have we overreacted to the hazard of composite materials? No, because we don't fully know what problems can be caused; the best approach is the conservative one. Your local disaster control plans contain the necessary information on reacting to a CORKER mishap and the procedures to follow in containing the fibers. Information on composite materials and CORKER mishaps is disseminated to all TAC units as soon as it becomes available.

If you have any other questions on composite materials, contact your friendly safety office or this headquarters. We will be happy to provide you with any information we have. You are now fully prepared for the next time someone comes up to you at a party and says, "Hey, what's a CORKER?"

Portions of this article were extracted from the USAF Safety Study Kit.

too late to hide

too late to hide

By Capt Robert W. Kirkwood
HQ ATC Flight Safety

Having spent six years as a Flight Safety Officer, I've had the dubious opportunity of either participating in or observing quite a few accident boards. "Safety Mishap Investigation Board" is the term currently in vogue. I'll use the term "Accident" since (1) almost everyone else does, and (2) it's easier to write.) During the last three years, I've often ended up as advisor to an accident board and the only board person who has "done it before." The scene goes something like this: after arriving at Base X, I find my way to a conference room (recently borrowed "for the duration") and meet a room full of people who have a lot in common:

- (1) They would rather be somewhere else (anywhere).
- (2) They have never worked together before.
- (3) Most of them have had annual accident board training.
- (4) None of them remember much from the annual training.
- (5) They were unsuccessful in hiding when the unexpected call came from their friendly local Safety office.
- (6) They have a lot of questions about how to really go about the business of accident investigation.

To answer these questions I have a mental list of things to say. Some of these items are unwritten laws, some are mentioned in regs or training material, all represent areas where previous boards have had problems. I thought it might be helpful to put this list on paper. Maybe the local Safety offices can use the list as a handout for those who are "too late to hide." Here goes:

(1) Resist the temptation to rush, as a group or individually, to the crash site. The interim board and local safety types have secured the site, obtained "fleeting evidence" such as on-scene testimony, oil samples, etc. If they haven't, it's either too late or the item will still be there when you arrive. Inventory what the interim board has done. Gather any documentation they missed (aircrew and maintenance records, tape recordings from tower, etc.), and request anything else you think you may need from the Safety Office.

(2) Get your other obligations cancelled. You will be doing nothing but working on the board, eating, and sleeping for the first week. After that, the Board President may let you out once in a while but don't count on it. Don't wait till your presence is required by the President to cancel your dinner date or oh-dark-thirty takeoff.

(3) The entire board should sit down and get organized before going to the scene. Review the available data and decide who will do what. This saves a time-consuming "gee whizz" trip. If all of

the explosive devices have not been found, get your life support or EOD type to show the board members what they look like. You don't need someone walking up to you with a damaged gizmo in hand that could go boom.

(4) Brief everyone to "write it down." Impressions, ideas, and questions will come to mind in quantity. These will be rapidly followed by other impressions, ideas, and questions. There is no way you will remember all these and most will be useful later. Don't throw any of these notes away. Review them daily. These notes are valuable in directing your part of the investigation and will help in writing the report. If you had a question on day two of the investigation, someone else will undoubtedly have the same question when reading the report two months from then.

(5) Don't talk about the investigation where anyone not on the board can hear you. You not only can compromise the privileged status of some evidence but can create problems for the board. A board member once commented to another board member, "that engine doesn't seem to show much evidence of rotation." The comment was made near a nonboard member at the scene. In three days, the Board President was wasting a lot of time answering telephone calls about the "suspect" engine. The engine was supposed to be in idle at impact, but the rumor mill got things a bit twisted. Beware of the "O" Club. Board members often eat and deaden the pain together. The club is no place to talk shop.



too late to hide

(6) Daily board meetings are essential to coordinate and direct the effort. It's easy for everyone to get too busy for a meeting. It's also easy to get everyone going in different directions, leaving gaps and duplicating work.

(7) The Board Recorder is usually the most junior member, but the job is critical. Get him/her additional help if needed. Three files and a dummy report are usually needed. The files should each have the same tabs as the report. One has the working drafts and initial data (photo proofs, unedited transcripts, etc. -- no, you don't carry these around with you). The second has final drafts for final coordination (yes, you all should read each other's stuff) and approval by the President. The third has copies of the final reproduced pages for the actual reports. A dummy report that is updated daily with the most recent version of each tab allows board members to get the big picture, cross reference, and see some progress. Make copies of EVERYTHING and NEVER let all your copies of an item get out of the board room simultaneously.

(8) The formal report is your only product. Field investigation is fun. Your mental work will be taxing. Your ideas may be inspired. If the formal report doesn't support your case fully, all your work and inspiration are wasted. The problem is the really hard work -- the writing -- comes at the end when you're tired of the work, the paper, and each other. If you don't maintain your drive, attention to detail, and your cool to the bitter end -- you lose. Remember, a lot of people far removed from the investigation, and sometimes from the particular aircraft and problem you're working on, will have to read the report and implement your recommendations. Find your notes and make sure the report answers all of your forgotten questions.

(9) The findings and recommendations are the last part of the narrative section of the report. Don't wait till the end to start formulating findings and recommendations. By the time the reader finishes with your analysis, he should have a good idea what your findings and recommendations will be. If not, they are not adequately supported and will be shot down in the review process. By thinking and talking about these key items from the end of the first week, you prevent having either a weak report or having to give your voluminous writings a major

overhaul. Even if you do all this, expect to have to "beef up" portions of your analysis after the recommendations are written.

(10) Don't forget the purpose of the whole mess. You are trying to find out what happened and make supportable recommendations to keep a similar accident from happening in the future. Don't try to solve all the ills of the Air Force with one report. A few solid recommendations are better than a dozen "shotgun style" ones.

(11) Don't spend days trying to analyze the pfluglesnatch function of a widget when the Air Force probably has a full-time expert widget analyzer. There is an unbelievable resource of experts available to the board. They would rather get to their respective widget early and before you dismantle it. Don't hesitate to call NAF/TAC Safety for advice and technical assistance.

(12) Work schedules can work for or against you. There is no way to avoid long hours in the early stages of the investigation. After this, many boards fall into the trap of trying to "wrap it up" by continuing a seven day-per-week, fourteen hour-per-day schedule. These boards usually finish late and produce shaky reports. A tired, punchy, board does not think or write clearly and frequently loses sight of the forest because all those trees are in the way. As soon as possible, put the board on a normal work schedule.

BOARD SCHEDULE			
WED	THU	FRI	SAT

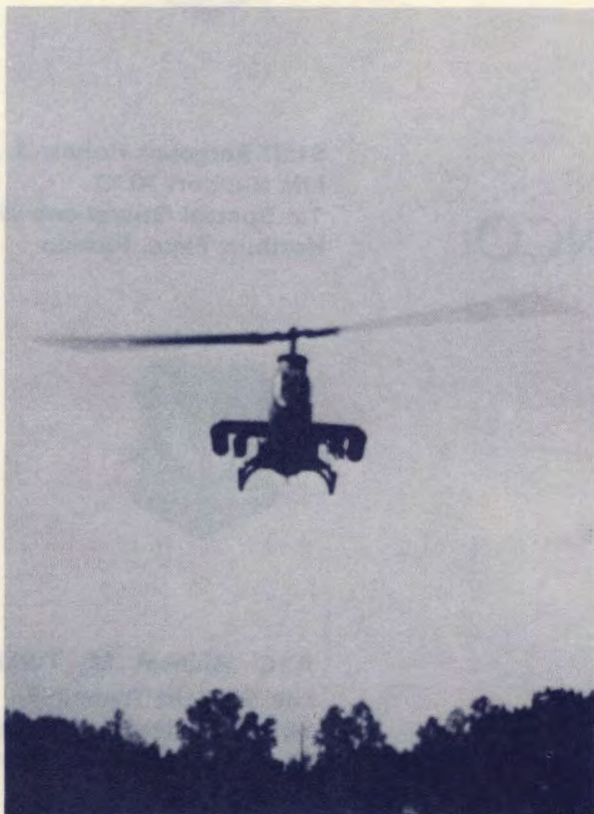


There you have it! One dozen lessons learned the hard way by previous accident boards. If you are about to begin an investigation, good luck. If you are reading this because you are a potential board member, good luck hiding when the call finally comes. I used to request emergency leave because my grandfather died. After I killed off 16 grandfathers, my boss got suspicious. ➤

SKY HAZARDS




WHEN FLYING CLOSE AIR SUPPORT,
 BETTER CHECK STARBOARD AND PORT,
 AS WELL AS AHEAD AND BEHIND,
 FOR A FRIEND YOU MAY UNEXPECTEDLY FIND.



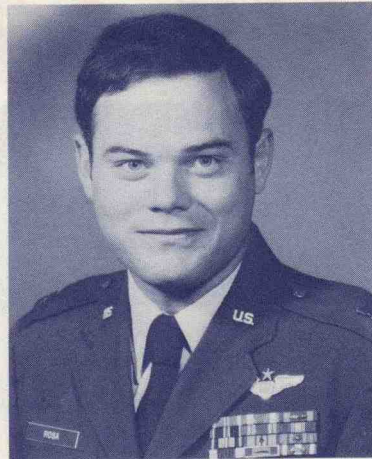
TACTICAL AIR COMMAND LIFE SUPPORT AWARDS

UNIT:

The 1st Special Operations Wing, Hurlburt Field, Florida is the winner of the Outstanding Life Support Unit Award for 1978. Their selection was based upon the unit's outstanding contributions to life support programs during the year.

OFFICER:

Captain Frank L. Rosa
Life Support Officer
388th Tactical Fighter Wing
Hill Air Force Base, Utah



Captain Rosa



Staff Sergeant Robert J. McGill
Life Support NCO
1st Special Operations Wing
Hurlburt Field, Florida

NCO:



SSgt McGill



A1C Michael M. Turkington
Life Support Technician
355th Tactical Fighter Wing
Davis-Monthan Air Force Base,
Arizona

AIRMAN:



A1C Turkington



EXPLOSIVES SAFETY PLAQUE

1st Special Operations Wing
Hurlburt Field, Florida

33d Tactical Fighter Wing
Eglin Air Force Base, Florida

366th Tactical Fighter Wing
Mountain Home Air Force Base, Idaho

MISSILE SAFETY PLAQUE

33d Tactical Fighter Wing
Eglin Air Force Base, Florida

FLIGHT SAFETY PLAQUE

1st Special Operations Wing
Hurlburt Field, Florida

24th Composite Wing
Howard Air Force Base, Canal Zone

27th Tactical Fighter Wing
Cannon Air Force Base, New Mexico

347th Tactical Fighter Wing
Moody Air Force Base, Georgia

507th Tactical Air Control Wing
Shaw Air Force Base, South Carolina
Award Includes 549TASTG, Patrick
Air Force Base, Florida

552d Airborne Warning and Control Wing
Tinker Air Force Base, Oklahoma

TAC Flight Safety Trophy Winners



131 TFW(ANG)
St Louis IAP, MO
15 April 1978 - 14 April 1979
Award Includes:
183 TFG, Springfield, IL
188 TFG, Ft Smith, AR

121 TFW(ANG)
Rickenbacker AFB, OH
16 April 1978 - 15 April 1979
Award Includes:
112 TFG, Pittsburgh, PA
178 TFG, Springfield, OH
180 TFG, Toledo, OH

128 TASW(ANG)
Truax Fld, WI
28 April 1978 - 27 April 1979
Award Includes:
163 TASG, Ontario, CA
110 TASG, Battle Creek, MI
182 TASG, Peoria, IL



**DON'T
WAIT
UNTIL
IT'S
TOO
LATE!**

