

TAC ATTACK

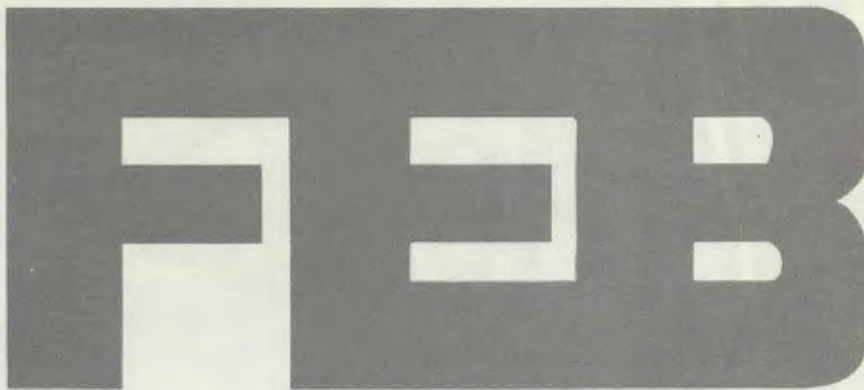
TAC attack

FEBRUARY 1976



HARRISON

PARACHUTING
TECHNIQUES Pg...4



FOR EFFICIENT TACTICAL AIR POWER



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TACRP 127-1

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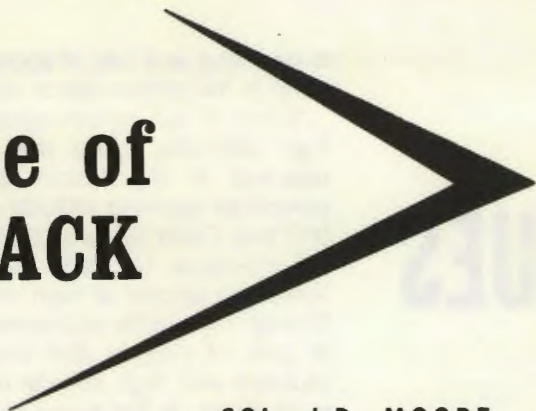
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Angle of ATTACK



Which Kind?

COL. J.D. MOORE
Chief of Safety

While drafting this, my tenth and last attempt at words of wisdom from this office, I reflected on the nine previous efforts. The first one, May, appeared prophetic in some ways. Nothing really profound or too original was written — just a few “hard sayin’s.” Events, however, proved them to be even more accurate than expected. But then, so did the previous history upon which the “sayin’s” were based — and that proves once again that hindsight is belated brilliance!

These past ten months have been rather demanding, safetywise, as many of you will agree. Despite our favorable comments on 1975 in last month’s AOA, we are still acutely aware of the sustaining essentiality for improving our performance. In order to do so, all of us must be involved.

You may recall these words:

“People prevent accidents.”

“Conscientious supervision and disciplined performance are essential to accident prevention. Both are people factors.”

“There is no mystique to safety; it is simply doing the job right.”

“Don’t do anything dumb.”

Ad nauseum! No encouragements, admonitions, rewards or penalties that can be devised will prevent accidents unless every single one of us recognizes and accepts the personal and professional responsibility to be safe.

There is an unfortunate misconception among some to the effect that “Safety has the accidents.” The fallacy is apparent. You do not blame safety people for accidents. They cannot save some clod who is unwittingly determined to practice self-destruction, mayhem or manslaughter. Safety folks can look for hazards, advise the uninformed and teach the uneducated about accident prevention, but only if the audience is receptive. Those that are not receptive, of course, have to be classified as accidents looking for places to happen.

The real first line of defense against accidents is individual common sense reinforced by leadership from all levels of supervision. Our accidents, *all kinds*, are real horror stories of ignorance, carelessness and supervisory failure. Ninety-seven accidental deaths in TAC during 1975 resulted from everything from aircraft crashes to drownings. Indescribable human suffering! Incalculable cost! Why? Because some people cause accidents as well as other people prevent them. *Which kind of person are you?*

I leave this job for another, which will afford me an even greater challenge — practicing what I preach. We welcome Colonel John F. Rhemann, a dedicated TAC man, to the Chief of Safety chair.

Remember: The mission — professionally, effectively, safely!

Have a good one! ➤

Editor’s Note:

Colonel John F. Rhemann took over as TAC Chief of Safety on 14 Jan 1976. Colonel Rhemann has an extensive fighter aircraft background, having flown more than 350 combat sorties in the SB-2C, T-6, F-100 and A-7D. His staff positions have included squadron ops officer, squadron commander, wing assistant DO, wing DO, wing vice commander and numbered air force DO. He also served four years as a Plans and Programming Officer in the Command Plans Branch, Director of Plans at HQ USAF and a tour as Director of Contingency/Exercise Plans at HQ TAC. Check next month’s Angle of Attack for a sample of Col Rhemann’s safety philosophy.

PARACHUTE TECHNIQUES FOR AIRCREWS

By Maj Allan R. Homstead
Chief, Life Support Branch, Hq TAC

In the normal course of inflight escape or ejection from an aircraft, there is a phase where the aircrew member descends by parachute to the surface of the earth. (We have no recorded instances to the contrary). Although this article is aimed at aircrews, some of the following info may serve as a refresher course for those who jump for a living — or just for the sport of it. Unfortunately, too many crew members in the past have failed to hack the program in this landing phase and have suffered serious injury and even death. Many of the losses in this area result from lack of knowledge. This article will attempt to provide you with a better understanding of the fundamentals and techniques of parachuting and increase your odds for survival.

GENERAL INFORMATION

Almost every conventional escape system in present use utilizes the old, reliable C-9 parachute canopy. Regardless of how or when it's deployed, you will ultimately ride one each orange, white, brown and sage green, 28-foot, flat circular, 1.1 oz per yard, high porosity canopy to the ground, water, trees or whatever. Its 800 square feet of material will allow an average bear (175 lbs) on a standard day at sea level

to descend at a rate of approximately 18 feet per second or the mathematical equivalent of 5-1/2 foot fall.

Some of our egress systems, when put to use at high altitudes, carry the crew member (drogue retarded in the Martin Baker) to a reasonable parachute opening altitude — approximately 10-15,000 feet. Other systems require extended free-fall by the individual. No matter how it's done, anyone who leaves an aircraft at high altitude must pass quickly through the hostile environment where he is exposed to lack of oxygen and low temperatures. Another problem with high altitude ejections, less obvious to most jocks, is the associated high terminal velocity (approximately 130 KIAs-or 200 KTAS-plus at 30,000 feet) which will produce severe opening shock — approximately 25 Gs at 30,000 feet.

FREE FALL

Free fall, as I have mentioned, is an alien environment. In truth, however, it's generally not as unpleasant as one might think. The sensation of hurtling your pink body at the ground really does not exist until you get close to the ground. It's really more like floating than falling, but deep in your heart you know that you are really rushing to earth. Expect to be moderately panicked at the thought — you may even "brown out." However, try not to lose control of your ability to think and function. On nonautomatic systems, you will have to pull the ripcord yourself. You will, no doubt, be looking for some cue as to when — 10,000 feet MSL is a good average except over very high terrain. If you're wondering, look closely at the ground — if you can discern color or distinguish objects like vehicles on a highway, it's probably time to pull the ripcord.

When in doubt — whip it out! Better too soon than too late. Only experience can teach you to accurately judge altitude — so play it safe on the high side.

You want to fall in a stable attitude. This will be difficult on your first try, but if you can stabilize yourself it will make your fall much safer and far more comfortable. One of the problems of being unstable is that you may auto-rotate, perhaps violently. A falling body has a natural tendency to spin in a back-to-earth position. This is guaranteed to completely disorient you and can even be incapacitating. It's also an excellent set-up for a parachute malfunction or an entanglement injury during 'chute deployment. OK, you're convinced you want to fall stable, but how? Spread out, arch your back, move your arms back to about 45°, sort of like the leading edge of a delta wing. If you hold this position for a few seconds you should end up face to earth and reasonably stable. You may be turning one way or the other because of body assymetry, but at least you'll be right side up. Once you are face down, this position will be much easier to hold because of air pressure.

If you happen to be in a situation where you have to "do it yourself" with the ripcord, be sure to look at the ripcord as you go for it (your hand naturally follows the

eye). Look at it, grasp it securely, extract it from its pocket or holder and pull vigorously! Note: If you are not enjoying stability and are tumbling at parachute opening, the "airborne" body position with arms tucked in and legs together will help preclude man/parachute entanglement. OK, now you've pulled the ripcord — with any luck, this will signal an end to your free fall.

PARACHUTE DEPLOYMENT

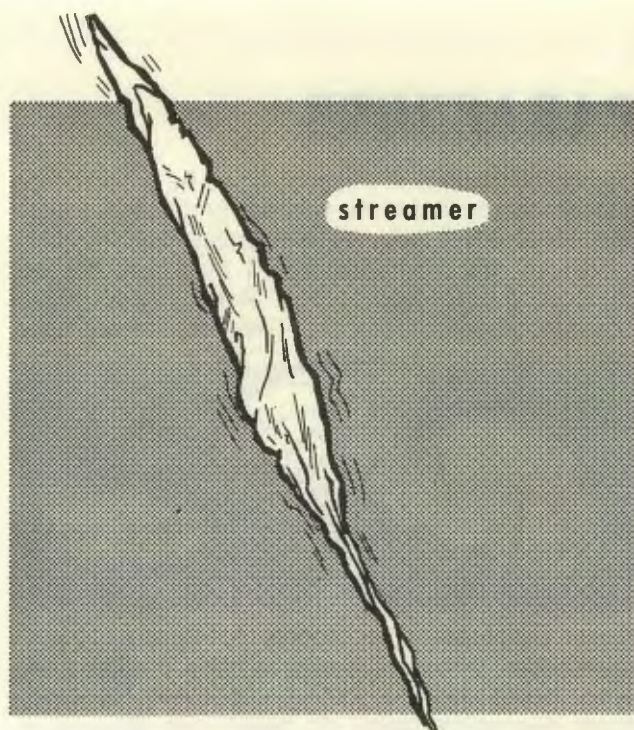
Parachutes in present use are deployed by various means — some are conventionally deployed by pilot 'chute extraction, some are ballistically deployed or extracted and/or ballistically spread. Still others are mechanically extracted as in the case of the Martin-Baker assembly. Regardless of how they are deployed, some things are common to virtually all parachute deployments.

Opening shock (technically a combination of snatch force and opening shock) is governed by a number of factors such as airspeed at deployment, size of the parachute canopy (the smaller the canopy area, the faster it develops, all other things being equal), type of deployment system, separation of snatch force and opening, etc. The apparent opening shock, or the yank that your old bod feels is a different story. If you happen to be on your head or upside down as you get opening shock, a fairly low "G" opening may really smart, especially if you get an arm or leg caught in a riser or suspension line. Maximum opening loads vary from about 4-1/2 to about 10 Gs, depending on conditions. Fortunately the peak load only occurs for a very brief period of time. (Peak normally occurs as inflation reaches the lower lateral band). As soon as you have recovered from the opening shock, you should check the condition of the canopy and assess your general situation. This may be a little difficult at night, but usually there is enough light to make a cursory check of your canopy.

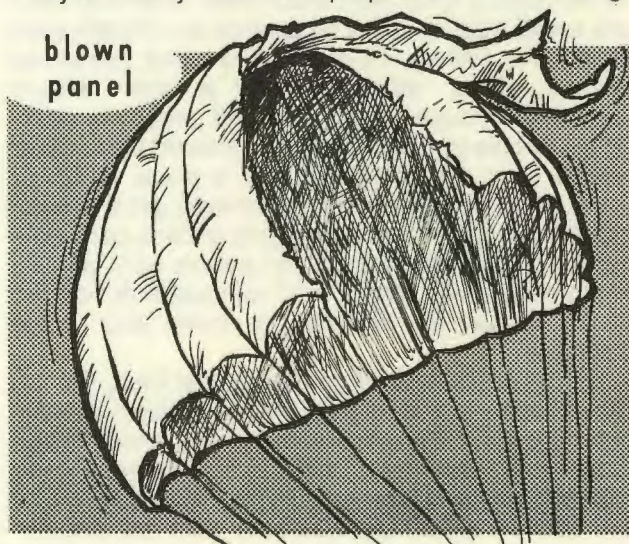
MALFUNCTIONS

Statistically, parachute malfunctions are fairly rare, but if you happen to be one of those "unlucky guys," statistics are little consolation. Malfunctions come in a great many forms and magnitudes. I will address the common garden variety that you can do something about. First, remember that anytime you experience a malfunction of any kind, disregard the 4-line release. To actuate these with some malfunctions may induce an oscillation or canopy rotation and aggravate an already serious condition.

Streamers (failure of the canopy to inflate). Fortunately, this is very rare and is generally caused by a "hang up" or entanglement at the skirt of the canopy or lower lateral band. Try taking hold of the risers and jerk them alternately. This may "shake it loose" and cause deployment — at this point you had better give it all you've got because you've got nothing to lose but your life.



Blown panels. These occur most frequently during high-speed deployments. Unless numerous complete panels in the high pressure area (upper portions of canopy) are blown, your pulse rate will probably incur a greater increase than your descent rate. All you can really do is stay "cool" and prepare for a firm landing.



Mae West (partial inversion). By far the most common problem, this malfunction comes in various forms and degrees and is named for the bra-like shape the canopy frequently takes on. What has really happened is that part of the canopy has tried to invert upon inflation. When this occurs, one or more lines are pulled over the top of the canopy dividing it into lobes (bra cups). When a canopy inverts during deployment, there is usually some degree of material fusion because nylon has a very low melting point and can easily be friction burned. If the line is not severely

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fused to the canopy, it can sometimes be pulled off by pulling vigorously on the suspension lines that support the smallest lobe. If this exercise doesn't work, break out your trusty-rusty MC-1 knife and cut the lines which travel over the top. Make sure you have the right ones! Cutting 3 or 4 lines will not seriously

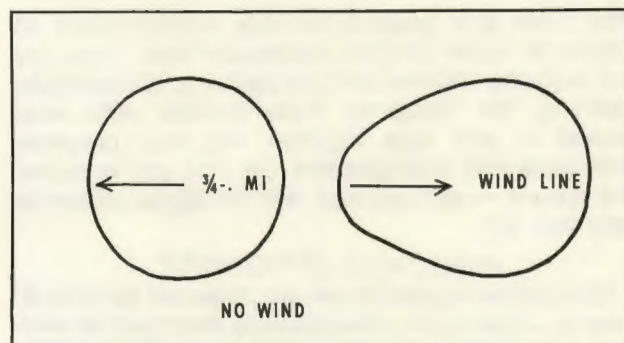


affect the canopy — just use this cut in place of the 4-line release. It may cause the canopy to glide sideways or backward, but you'll get used to it. No matter which way you're going it's better than spinning in under a malfunction. This malfunction is survivable, so don't panic.

CANOPY CONTROL

The C-9 canopy is sort of an "oldie but goodie." It has been around for a long time and the procedures for controlling it are well established. Crew members are sometimes reluctant to attempt any modification or do any fooling around with a good parachute canopy. They allow as how a man "should leave well enough alone" once the canopy is open. These people perhaps do not understand the facts, or realize what a formidable threat a group of power lines, fence rows and buildings (or even just a mess of cholla), can present when hanging under a parachute canopy. If your imagination can picture what you will look and feel like after a bout with just one little old cholla cactus, you will want to make your 'chute steerable!

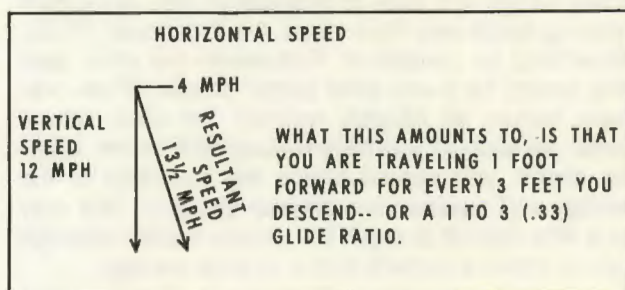
Four-line release and pull down vent lines. The improved stability and slightly reduced rate of descent associated with the 4-line release have already been mentioned. But, let's look at the maneuvering capability of the C-9 canopy. To put it in perspective, if you open at 10,000 feet AGL on a calm day (and immediately make the 4-line release), you can travel horizontally almost $\frac{3}{4}$ of a mile in any direction. Wind will alter the pattern of things and make the area width in which you could conceivably land into an oval instead of a circle with its axis oriented down the wind line. The stronger the wind, the longer the oval. It may be difficult for a novice under the canopy to judge exactly how far he might go in a given direction on a particular day. Reading wind speed and direction for steering purposes is not as difficult as it may sound. You need be only moderately perceptive to see



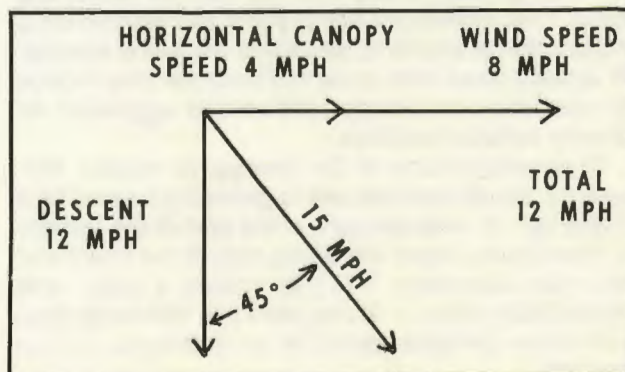
smoke, leaves, dust, flags, laundry, ripples or waves on the water or even your own ground travel once you get down close. These indications will give you a hint as to the wind speed as well as direction if you study them. Smoke is easy to read. Dust probably means a fairly strong blow! Tree leaves will turn at just a slight breeze. If the light branches are waving, it's generally 10-15 knots. If the trees are bowing to the wind and thrashing — prepare for an exciting landing. More about those later. If, after sizing up the situation, a need to travel exists — start early. To avoid large obstacles such as towns, woods, lakes and bad guys, etc, it will take some altitude. So plan ahead.

To translate 3-4 MPH in more usable terms, here is a little vector analysis:

18 FPS — approximately 12 MPH.



In the above case, every thousand feet of altitude you descend, you can travel laterally a little more than the length of a football field — with no wind. Figure it out — just a common everyday 8 MPH breeze will allow you a 1-to-1 glide ratio heading downwind. Not all that



bad!! If you dig trig, you'll notice you've got a glide angle of 45° — look down and project yourself to safety. Safety, in some cases, may not be avoiding water or obstacles — quite the contrary. Trees are generally the place to go in the combat situation and in high winds. Open water is frequently even better. There is much to be said for flexibility in selecting landing spots. The *real* value of steerability is often found close to the ground, like when you're just about to take out a barbed wire fence or some power lines. Here, just a few feet of movement at the right time can literally save your butt. Here's how:

Once you have a good parachute canopy over your head and have assessed the situation, it's time to make the 4-line release. Reach up and secure the red loops on the risers in each hand, then yank them sharply — a couple times if necessary. As the lines release, the canopy will surge forward slightly and probably furl the leading edge slightly. It will quickly settle into a nice, stable, steady-state 3-4 MPH glide-in at the direction you are pointing. Turning can be accomplished quite simply by pulling on the red loops or risers. Pull the right rear riser and you get a right turn — left rear riser gives you a left turn. The rate of turn depends on how hard you pull — the harder you pull, the faster you turn. If you happen to have one of the parachute assemblies that has a cross-connector strap, such as the Martin Baker or Douglas Escapac, your steering authority will be considerably restricted. It takes an armful of riser to produce a turn of reasonable rate. You can do two things to rectify this limited steering authority: One, you can break out your trusty-rusty MC-1 (or suitable substitute) and cut the rear cross-connector strap thereby allowing you to displace the risers to a much greater degree, or you can climb the appropriate riser to reach the suspension line group — then climb the suspension line group to effect steering. With a handful of suspension line, you can really turn! Turning can also be accomplished or augmented by pulling the opposite front riser. Now that you know how to turn, let's try some slips and other tricks you may have heard from the "5-jump commandos" with novice "blaster" wings on their chest.

Slip to the Rear

With a steerable (4-line release) canopy, this slip has little or no value at altitude and should be performed carefully at low altitude. What it can do for you, is slow your forward speed without significantly aggravating your rate of descent by shifting the center of pressure of the canopy forward and reducing the spill of air from the rear of the canopy. Skilled parachutists use this procedure to perform stand-up landings. When its execution is properly timed, it will slow the canopy just as the jumper is touching down. Neat stuff, right — for experts!

Slip to the Front

Now here's one that you can do something with.

Let's say you observe yourself drifting toward a hazard (like a village full of gomers), but you are presently safely out "over the gulf." You would much prefer to land out in water where the chopper can get you than near the unfriendlies. You wish you could go straight down, but the diurnal convergance (onshore breeze) has got you. Turn the canopy to face away from the village. Climb the front risers and "pull them deep into your chest" as they say at Fort Benning. If you have a cross-connector strap, it makes a great handle. This will increase the canopy's forward speed against the wind and significantly increase the rate of descent by shifting the center of pressure aft and distorting the canopy skirt to increase the vent of air from the modification. The more you pull, the faster you go — forward and down! The front of the canopy will furl and with great vigor you can climb far enough to virtually collapse the canopy. Then you really go down. When released, the canopy will quickly recover to normal. Some "steering" of the front risers may be required to maintain direction. The canopy turns the opposite direction of the front riser pulled. Because of the high descent rates available with this slip, it is recommended that it be "let off" well before touchdown, especially if you are over land. **DON'T MANEUVER TOO CLOSE TO THE GROUND!**

Other Slips

Lateral slips have no real value with a steerable canopy; however, if you are riding your C-9 "flat" (unmodified) for some reason, a slip of sorts can be used to damp oscillations. If you grab a handful of riser on the side of the canopy that you are swinging toward and just as you approach the height of the swing, pull down the skirt, the canopy's center of pressure will be shifted and will dampen the oscillation. Let slips off slowly or you will re-induce the oscillation. Practice this while you are high so that you are stable by the time you get close to the ground.

Parachute Landings

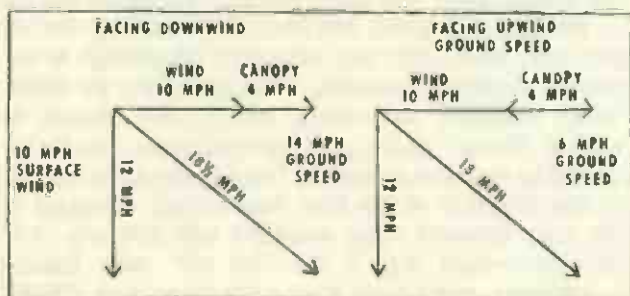
There is probably more erroneous information on this critical phase of a parachute jump than all the other phases put together. This phase is the one where you frequently win or lose the ball game, so it behooves you to avail yourself of the ungarbaged word.

Normal Landings

If there is any such thing as a normal landing from an emergency parachute jump, it's when you land on flat, open, nonhostile terrain with reasonable conditions prevailing. Many variables affect the landing impact, such as pressure altitude, temperature, suspended load and wind. As previously mentioned, an average bear on a NASA standard day at sea level descends at 16-18 FPS or the mathematical equivalent of a 5-1/2 foot fall. Raise the temperature, pressure altitude or increase the suspended load (mass of your a —) and the rate of descent is increased accordingly. This increase, although ap-

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preciable, probably will not hurt you until you near the extreme. (Like above 10,000 feet, or 120° F and over 250 lbs body weight). The variable that really becomes significant is wind. A little goes a long, long way. If you relate back to the vector analysis offered in the portion on maneuvering, you can see that extending the horizontal vector quickly stretches the hypotenuse which represents your actual impact, speed, and angle. Surface winds in excess of 15 knots or so pose a special problem to be discussed later. If at all possible, you should attempt to land facing into the wind, thereby reducing your ground



speed by the forward speed of the canopy. Do not, however, become so intent on an "upwind landing" that you "ding" into an obstacle that you could have avoided by turning downwind. A face full of cholla or a barbed wire neck tie is a high price to pay for a few MPH reduction in ground speed. Consider your situation carefully. The ability to steer the parachute canopy is an extremely valuable asset, but only when utilized properly.

Another factor bearing heavily on landing impact is oscillation (angle of the dangle). If you are on the downward swing of the oscillation as you impact the ground, considerable force can be added. You will hit like a proverbial "ton of crap," usually at an awkward angle to boot. This should be impetus to make the 4-line release so as to minimize oscillation. It also means that you should cease steering or violent slipping well before ground contact as these maneuvers tend to induce oscillation.

Water Landings

The secret of safely landing in the "drink" is PREPARATION. If you do not have flotation equipment ready when you splash down, you may end up in Davy Jones' locker. Get your LPUs inflated before you get to the water.* The survival kit should also be deployed — this will, hopefully, inflate your life raft. Carefully open canopy release covers, if applicable, and prepare to release the canopy on impact with the water. Do not, however, cut it loose before your feet are wet

— depth perception is extremely poor over open water. Unsuspecting souls have been known to cut away hundreds of feet in the air, thinking they were just about to hit. A belly flopper from a couple hundred feet can really smart. If you jettison your canopy quickly after entering the water, you won't be dragged. If you do get dragged, remember your water survival training and drag on your back, bent at the waist and legs apart. The whole thing is a lot more fun if you can breathe. Generally, the only time you will get dragged is if you are physically incapacitated or otherwise unable to release the canopy. If by some remote chance the canopy falls over your head, do not dismay — you can easily breathe under it or even through it if necessary. Don't let claustrophobia spoil your chances of survival. The biggest problem is entanglement — just be deliberate and untangle yourself. (Remember — follow a seam to the skirt of the canopy). Water makes for a nice soft landing, but can produce serious complications. So be prepared.

Tree Landings

Trees are a fairly common proposition in emergency parachuting, since much of the world's land mass is covered with them. They are frequently a good place to go in combat, but if you don't watch out, you may get a "sharp stick in the eye" or a lower orifice. If you're sure it's "treesville," there is some advantage to dropping your survival kit just prior to going in. It will preclude your kit from "hanging up" in an inaccessible place — perhaps leaving you dangling by the lanyard. Discard your oxygen mask and lower your visor. Cover your face with your hands. Unless you want an unscheduled vasectomy, keep your legs together — tightly! If you can, back into the trees. When you're securely hung in the tree of your choice, gather your wits before you make any moves. Make damn sure you are securely hung! If you don't have a lowering device, you may be able to swing yourself to a limb or the trunk of the tree and climb down. Whatever you do, be careful. It would be a shame to survive the jump only to get class-sized falling from a tree!

Power Lines

High tension power transmission lines occasionally have a way of creeping in between you and the ground. They pose a definite threat, especially in urban areas built before the age of underground utility lines. If there are wires in the area, do your very best to steer and avoid them, for there is a good chance of getting zapped. Unavoidable power lines are best negotiated in the streamline position — hands and arms extended up inside the risers, feet together. The trick is to slip through without shorting out a few thousand volts. Good luck, for if you don't hang up your-

*Incidentally, a "G" suit makes an excellent makeshift flotation device. It can be removed from your legs while hanging under the canopy by unfastening one leg strap at a

time and unzipping. If plugged and orally inflated, simply sticking your arms through the knee holes will make you a neat set of water wings.

self, your survival kit probably will (if you don't drop it), possibly leaving you in a very compromising position. Do yourself a favor and avoid all power lines to begin with.

Mountain Landings

Mountains too, are frequently a dandy place to go in a combat environment; however, few things are as formidable as a hillside just bristling with jagged rocks. Not much you can do, but fend with your feet and pray a lot. If you're going into the hills, there is frequently a distinct advantage to making it to the trees — provided you're not above the timberline. Mountains often have strong and squirrely winds that can really slam you in and drag you over the rocks. Snow abounds in the high country which often leaves you wondering how far underneath it the rocks lie. Hope for a deep drift.

High Wind Landings

Strong winds are a very common threat to the intrepid aviator turned parachutist, and realistically pose the most serious problems. Before you have been pulled very far by your parachute, you will discover why some Indians favored "dragging" as a means of torture. It will literally beat hell out of you in very short order, and provide you with some very crude sandpaper surgery. There are many ways to help avoid being injured by dragging. They are worthy of your consideration *before* you find yourself in the situation. First, how do you know the wind is blowing and how do you tell its direction? Before you get very close to the ground, it should be fairly obvious. The indicators discussed earlier — smoke, leaves, dust, laundry and your ground speed should tell you direction and velocity if you "read the signs." Trees bowing to the wind, dirt and dust or snow stripping off an open field or smoke streaking over the ground should all indicate that you've got trouble. Like most everything else in aviation or parachuting, the secret to success is preparation. Look it over and decide how bad it really is — remember trees and water are havens in a really strong wind. If you can find a hedgerow that will snag your canopy before you drag very far, it may help. Try to keep in mind how hard you'll hit that hedgerow if you land *on* it instead of *in front* of it. For moderate winds, turn to face into it (thereby reducing your ground speed) and prepare to release the canopy immediately upon touchdown. If you have a parachute with a cross-connector strap, consider breaking out your trusty-rusty MC-1 (that you always carry — right?) and cut both straps. This will allow the canopy to be collapsed by the release of only one fitting. You may want to open the canopy release covers, if applicable. Just in case you do get dragged, be sure to roll on your back — it will help to keep you handsome and make it a lot easier to actuate your canopy releases, which incidentally should be a primary consideration. Just as when landing in the water,

be careful not to release the canopy before you touch down. If you think a "belly flopper" into the water is bad deal . . .

Night Landings

Night parachute jumps pose a unique problem. Even though it's dark out — things are usually not as "black" as they seem. Unless it's a really dark and dreary night, you should have enough ambient light to discern the condition of your canopy. Towns and highways are generally obvious for their lights (in peacetime) and can mean fairly rapid assistance — the kind of assistance you don't need in combat. On moonless nights, you will usually be tricked into thinking you're going to land before you do. The tops of corn tassles or weeds give the appearance of firm ground under low light. When your feet grope for the ground, it will still be a few feet away and, at best, an ungraceful landing is usually the result. On an optimistic note — winds are generally much lighter at night.

PARACHUTE LANDING FALLS (PLFs)

There are a number of different "approaches" to parachute landings. The old jump school solution stressed the five (5) points of contact — balls of feet, side of calf, thigh, lower back, and latissimus dorsi (or push-up muscle). Unfortunately, attempts at the five-point landing frequently are inadvertently abbreviated to three points — toes, knees, nose or heels, butt, head. I consider the conventional PLF to be much like judo techniques — very effective if you're practiced up. If not, perhaps a simpler method would be more appropriate. Realistically speaking, if you attempt to land in the same natural manner that you would use if you fell off your porch or bar stool or whatever else you're accustomed to falling off of, remembering just two things — feet together and elbows in, you stand an excellent chance of walking away. You may have heard the "five-jump commandos" say to keep your eyes on the horizon and don't look at the ground (mostly BS). When your pink body is descending to earth, you will (and should) be looking down. The secret is to not look *straight* down — this causes poor depth perception. Try about a 45° angle — this will let you see where you are going, but will not encourage a case of "ground rush." Avoid "anticipating" the ground by attempting to retract your legs or stiffening up. Landing is a very critical phase of the jump where a great many people are injured — many unnecessarily.

CONCLUSION

It is said that "fear is born of ignorance." Misconceptions about parachuting abound among aviators. Unfortunately, education will not completely dispel all fear, as there is a bit of "clutch factor" inherent in all types of falling. Education can, however, improve your chances of living to fly another day. Know about your parachute — your fanny literally hangs on it! ➤

A NEW HOME FOR TAC FIGHTERS ..

Lt Colonel Ardern is a 1963 graduate of the AF Academy and attended UPT at Williams AFB. Bill flew Thuds in SEA, with over 150 missions "up north." Upon his return, he instructed at the F-105 RTU at McConnell AFB. After picking up a Master's degree through AFIT, Bill served a tour working at air-to-air fighter weapons performance analysis at the Pentagon. He then went to the Armed Forces Staff College at Norfolk, VA, and after his F-4 checkout, back to SEA as the Assistant Operations Officer/Wing Executive Officer of the 432d TFW at Udorn. Returning stateside, Lt Col Ardern is now serving as Chief of Safety with the 347th TFW.



**By Lt Col Bill Ardern
Chief of Safety, 347th TFW**

All you fighter types, take note. Ninth Air Force spread its wings to make room for a peachy new TAC base in friendly south Georgia. With plenty of warm sunshine, fresh air, and near a community with the motto, "There are no strangers in Valdosta," Moody AFB joined the Tactical Air Command team.

In ceremonies on 1 Dec 75 at Moody AFB, GA, ATC turned over the reins of command to TAC. The 38th Flying Training Wing was officially deactivated and Moody became the home of the 347th Tactical Fighter Wing.

Moody has trained pilots for nearly 34 years, with over 1,215,000 flying hours logged. The first active duty personnel were assigned to Moody in 1941 with the Beech AT-10 as their first trainer. During the '50s, Moody trained pilots in the F-89D (Scorpion) and the F-94C (Starfire), both all-weather interceptors, as well as the F-86.

In April 1961, the Air Force combined the preflight,

primary, and basic flying programs. Since then, Moody has produced 4,432 pilots. The first Cessna T-37 jet trainer arrived in early 1961 and was followed by the T-38. Until recently, more than 150 T-37 and T-38 aircraft were stationed at Moody.

Moody's new wing, the 347th TFW, had its origins in the Pacific during WWII. The 347th TFW's P-39 and P-40 pilots were credited with downing 225 enemy aircraft. Before the unit was inactivated after the war, it had produced seven "aces". The unit was reactivated in 1968 and flew F-4Cs at Yokota, Japan, and later at Mountain Home AFB, Idaho. The 347th was equipped with F-111As at Takhli, Thailand in 1973 and subsequently was moved to Korat, Thailand, where it was once again inactivated in June of 1975. It has now been equipped with F-4E aircraft. Two tactical fighter squadrons, the 68th and 70th, with impressive histories dating back to WWII, are assigned to the 347th.

For those who may wish to stop in and see the new

.....MOODY AFB



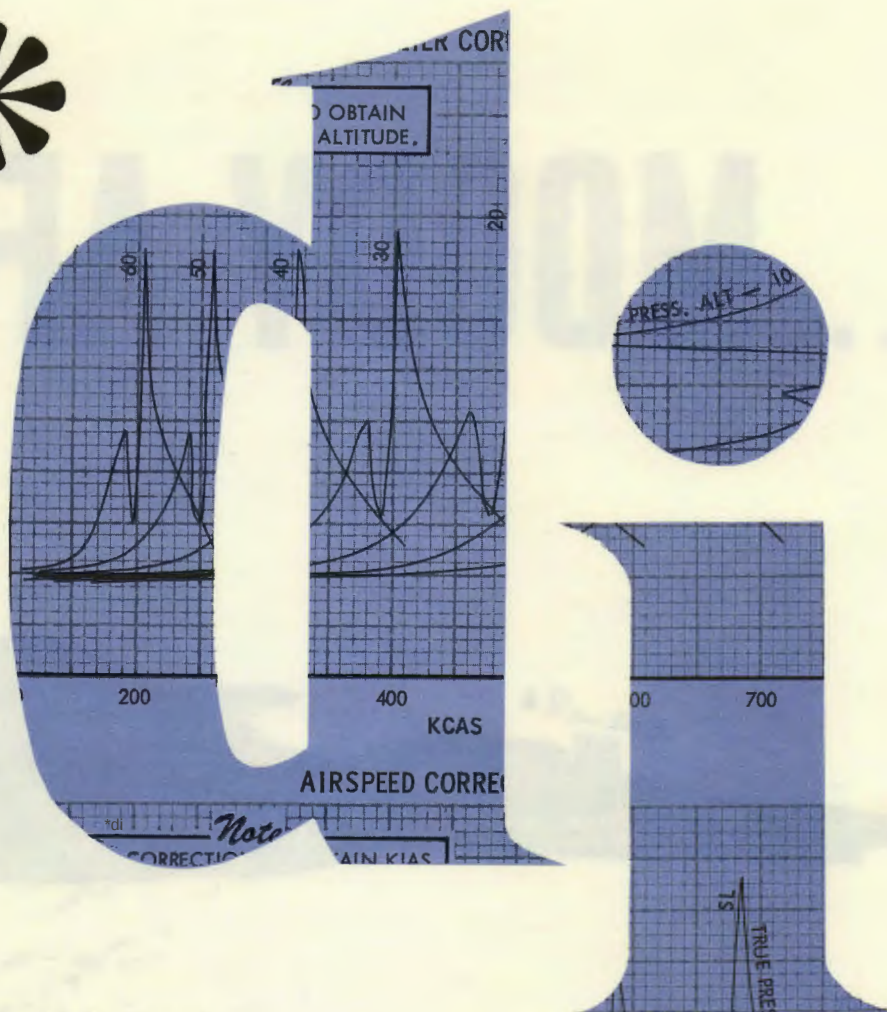
look of TAC at Moody, a word about the base. Moody has two parallel 8,000-foot runways with TACAN and VOR located on the field. ILS, PAR, and ASR are available from either direction. Barriers and arresting gear include the MA-1A and BAK-12. Construction of a munitions storage area and engine test cell are in progress, so be sure to check the NOTAMs prior to your departure for Moody. Changes to the BAK-12 arresting gear will be taking place over the next several months.

Local airspace is shared with other traffic which deserves mention. Interstate Highway I-75 runs north and south through Valdosta and serves as a convenient *navaid* for light aircraft en route to and from Florida beaches — keep an eagle-eye out for bugsmashers.

Nature's air force puts on regularly scheduled air shows, morning and evening, throughout the fall and winter months as flocks of blackbirds move between

feeding and roosting locations. Additionally, larger birds of prey regularly soar through approach and traffic pattern routes throughout the day. During local flying operations, an active bird watch is maintained. At other times, it pays to check with tower or RAPCON and keep your head out.

With aggressive programs as well as individual awareness and involvement, Moody has compiled 13 months of accident-free flying under ATC and earned the USAF Flight Safety Certificate. TAC welcomes the 1900 ATC people at Moody who contributed to this achievement and have changed hats to become members of TAC's newest wing. With a reputation for professionalism, these "old heads" are working closely with newer arrivals to provide a safe, smooth transition to F-4 operations at Moody AFB. You are invited to come visit the 347th and see TAC's newest addition.



By Lt Col Gerald B. Hurst
Commander, 834th CES
Hurlburt Field, Florida

"TOPSY 42, 5 MILES FROM TOUCHDOWN, APPROACHING GLIDEPATH. WHEELS SHOULD BE DOWN..." Out of force of habit, Captain Joe Stick visually rechecked his gear and flap indicators and pressures. "...BEGIN DESCENT..." Stick inched his power back and began the descent. "...ON GLIDEPATH AND SLIGHTLY LEFT OF CENTERLINE...TURN RIGHT THREE DEGREES TO ZERO SEVEN FOUR..." With a deft tap on the rudder, Joe picked up the required heading and continued his final approach. His eyes rapidly scanned the instruments as he applied minute changes in control stick pressures. "...ONE MILE FROM TOUCHDOWN...ON GLIDEPATH...ON CENTERLINE...TURN LEFT..." And that's when Cap-

tain Stick's engine flamed out! Two seconds later, Joe had analyzed the situation, tucked his chin in and ejected from his doomed aircraft. If no one told you the end result of this true saga, could you mathematically determine the odds for or against Joe Stick's survival? Or even the probability of the accident occurring at all? The folks in flight safety shops have used mathematics extensively for many years, but their efforts have been primarily aimed at compiling statistics and presenting trend analyses. Processed data has been used as the basis for corrective actions, to define systematically areas of required safety emphasis, to bring about procedural changes and to identify those units which have attained enviable goals in flight safety achievement. Ever since

* Factor of Decision Irreversibility

Lieutenant Selfridge became the first military flying casualty and the number "one" was entered on some statistician's roster, there has been a continuous flow of data reflecting cause and effect in the formidable campaign to make flying a safer pursuit.

With all this affinity for numbers, we might think that the guys in flight safety would attempt to make use of today's advanced mathematics and computer technology toward the ultimate goal of accurately predicting accident occurrence. Such an undertaking (impossible, of course) would produce equations employing numerous variables and predicted constants to be cubed, divided, square rooted and then integrated from briefing time to engine shutdown. Each possible mechanical failure would require a coefficient of occurrence. Each aircraft in the inventory might have an "accident prone" factor, and each of us would have his own coefficient of "pilot luck" (and which of us hasn't had his share at one time or another). All the possible inputs to such an imaginary accident equation would make both mathematician and computer programmer cringe with hopeless frustration.

But given the task of deriving an accident equation, one major factor would demand prime consideration — the factor of the **IRREVERSIBILITY OF PILOT DECISION**.

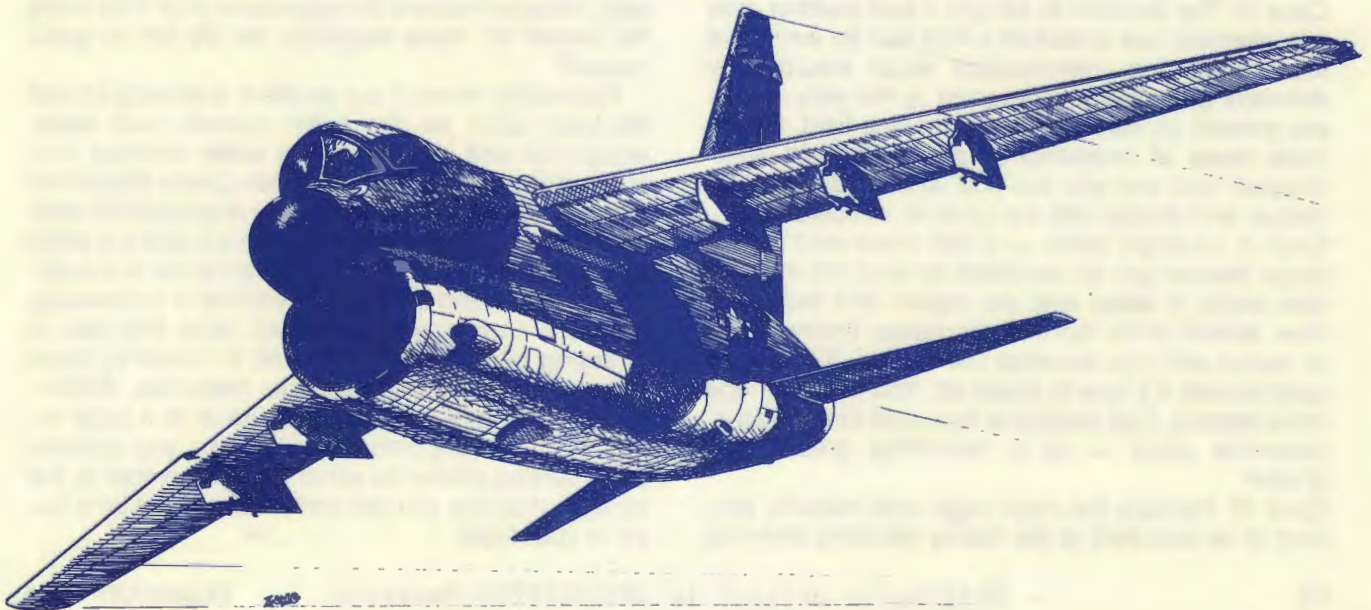
Mathematicians could label this decision coefficient (d_j). The factor d_j would weigh heavily in determining if the resultant of all the other factors in the equation would indicate an accident, incident or just another uneventful flight. Like all the factors that go into the makeup of an accident, d_j would have to be a variable. It would further have to be a function of time; in that the pilot might make one decision that was immediately irreversible. Or, in an entirely different situation, he might be faced with making a series of deci-

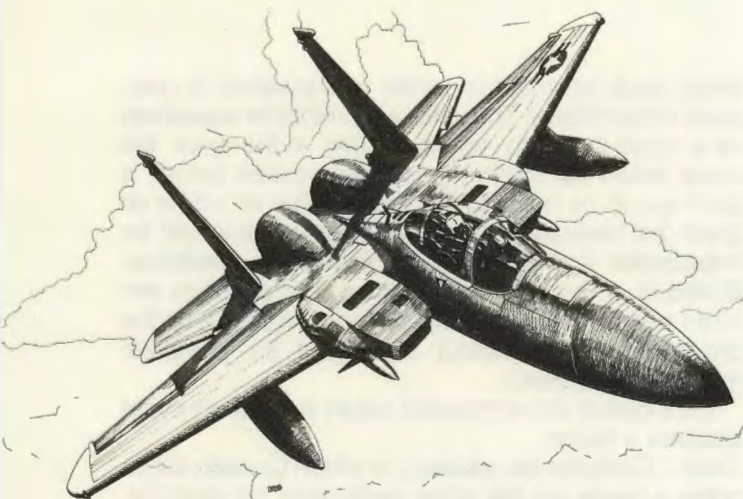
sions, each leading him closer to a situation of complete irreversibility. The value of d_j might be visualized as a cone in which, upon entering at the apex, the value would be small. As one progressed further, a point would be reached where the value would be so great that reversal of the accident process would be impossible and an accident would be inevitable. Stated in polite alert hangar lingo, our pilot has entered a region not unlike that of beginning a trip up the proverbial creek without benefit of an adequate means of propulsion.

Let's look at some possible cases in which d_j might become a factor:

Case I. Consider the situation in which Captain Jones notes a badly cut tire while performing his preflight. His experience and better judgment tell him that he should take time to have the tire changed, but because of the undesirable delay he decides to press for one more landing. Once he has made that decision and has actually taken off, he is committed and has incurred a maximum d_j value. When integrated with other variables, it will determine if his flight will be uneventful or filled with stark, hair-raising excitement. Add the quantities of a wet and rough runway, a possible drag chute failure and the need for maximum braking, we can see how Captain Jones would have been wise not to have made his irreversible decision.

Case II. The scramble horn goes off and Major G.O. Faste is out the door and strapping into the cockpit with adrenalin sloshing at eyeball level. His first start attempt is unsuccessful and his wingman, a brand new first lieutenant, gets to the runway first and is airborne as our major brakes to a quick stop on the runway and pushes the power up to military. He is really pressing now and elects to ignore (rationalize?) the higher than normal oil pressure fluctuations dancing on the gauge. He releases brakes, strokes the after-





burner, and leaps into the air. Major Faste has just willingly entered the cone of irreversibility and has incurred a d_i of unknown, but increasing value. If he has, in fact, become airborne in an aircraft with a progressively failing engine oil system, this factor and the other variables will play out their hand at some point in time and the result will become abruptly apparent. Having not incurred a d_i factor at all would have prevented the event altogether, which is what the Dash-One limitations and gadget read-outs in the cockpit are all about anyway.

Case III. Captain Light is at 39,000 feet on a cross-country and well short of his destination when the hydraulic pressure begins to fluctuate. After pondering the grim prospects of landing and being stuck at God-forsaken AFB, Captain Light elects to continue to his planned destination. The d_i he has incurred will be of only minor consequence if the source of his problem only is in the indicator. If progressive hydraulic failure should be the problem, then Captain Light had better have a very high factor of "pilot luck" as a multiple in his equation.

Case IV. The decision to file into a bad weather area with alternate fuel stretched a little taut (to avoid that time-consuming intermediate stop) would very definitely give you an increasing d_i the very minute you passed up the last suitable landing field. Fifteen more knots of headwind or an unexpected ATC-directed hold and you can find yourself descending deeper and deeper into the cone of irreversibility.

Case V. Lo-angle strafe — a stiff cross-wind on the range caused you to overshoot on your roll-in. Your dive angle is steep and the pipper isn't behaving. Now, almost at the foul line, the pipper finally settles on target and you squeeze the trigger. It's looking good except it's time to break off. You press for one more second. That second is borrowed time on an irreversible clock — d_i is becoming greater and greater.

Case VI. Perhaps the most tragic and wasteful product of an accident is the fatality resulting from the

delayed decision to eject. Take the pilot who inadvertently pulls his bird into a post stall gyration just above minimum ejection altitude. After a few moments of complete disorientation, he realizes that he is out of the stall, but is now entering a spin. He knows he is low, but wants desperately to save the aircraft (and who knows what other considerations might be paramount in his mind at this time?) He sticks with the aircraft and gives it his all until he finally ejects too late! Each moment he delayed his ejection gave him an increasing d_i factor and brought him deeper and deeper into the vortex of irreversibility.

The several hypothetical cases we have examined may seem simple when we view them after the fact. And, at the time that each sequence was initiated, the pilot probably took his ultimate personal safety and that of his aircraft for granted. Accidents always happen to the other guy. No pilot deliberately sets out to enter the dragon's mouth, but to some the "bite" does become a reality.

Our imaginary accident equation does not exist, but the variable of pilot decision definitely does. It plays an important part each time we fly. Our proven ability to cope with the hundreds of situations and problems requiring sound decisions is why we're considered professionals. But, each year the statistics reflect the numbers of those who, for one overriding reason or another, permit themselves to proceed beyond the threshold of good aeronautical propriety.

So what can we do to keep to an absolute minimum the mathematical odds of having an accident? The answer is quite clear — and equations and computers are not needed. Keep d_i completely out of the picture by employing the professional approach to flying. In essence, this means using sound and mature judgment based on a complete knowledge of our aircraft and mission procedures. And it means self-discipline. The mission is important and the aggressive spirit that characterizes the Air Force pilot is necessary. But what value is the aggressive pilot if he loses his aircraft or, more tragically, his life, for no good reason?

Fortunately, most of our problem is already solved because today we are better trained, have better equipment and are more flight safety oriented than ever before. But just as it was when Orville Wright first broke ground in 1903, the ultimate responsibility rests with the pilot. He hasn't changed much over the years and is still subject to fits of vanity, personal and external pressures and other manifestations of motivational behavior. Consequently, we still have the task of stressing flight safety in an effort to conserve those valuable personnel and materiel resources. Achieving that goal of a zero accident rate is, to a large extent, up to you, the pilot. The next time you contemplate defying gravity via aerial flight, remember d_i , the variable that only you can control. Don't let it be a factor in your flight.

PHYZ-BIZ

Part II

To Exercise... Or Not To Exercise

By Lt Col Harold Andersen
HQ TAC Physiological Training Coordinator

Last month I gave a brief resume of some of the pros and cons on aerobics as found in newspaper articles. Generally, the same degree of controversy can be found among "Blue-Suiters": A few are dedicated "jocks" who have long ago decided that a daily exercise program is mandatory for their well-being; another clearly defined group (considerably larger in number, I feel) have rejected exercise as unnecessary and superfluous to their needs; a third group lies between these two extremes, they are not committed to a regular program of exercise, but periodically entertain thoughts of "getting back in shape," and have most likely participated in some sort of exercise program but abandoned it for one reason or another. This latter group is the focal point of the controversy, being pushed and pulled by both factions. Bombarded with "expert" opinions from both sides, they have become confused, and because of the confusion have become immobile...both literally and figuratively. On one hand they hear of the desirable "benefits of exercise": improved respiratory and circulatory effects, lowering of cholesterol and triglycerides in the blood stream, increased energy and stamina, weight loss, etc. However, on the reverse side of the coin they fear the physical damage described in some articles (i.e., foot and leg problems, heart attacks, etc.).

To some extent the Air Force has required the participation of all 3 groups in its official "Aerobics" program, since members must participate in a yearly weight check and demonstrate their ability to jog 1.5 miles. Herein lies a real danger to the exercise haters and the "sometimes jocks;" AF leaves the other 364 days of training up to the individual who may or may not be able to discipline himself, arrange his work schedule, find a suitable exercise area, etc. In the majority of cases they just give up, or perhaps compromise by trying to do it all on the weekend. In any case, it's bad news. Irregular bouts of strenuous activity are definitely *not* what the doctor ordered; there must be a dedicated commitment to a regular program, preferably 5-7 days per week!

Probably every member who has not as yet made that "dedicated commitment" has formulated a number of reasons why he, personally, is not engaging in an exercise program. Some of the reasons are valid, no doubt about it, but the great majority of them are ra-

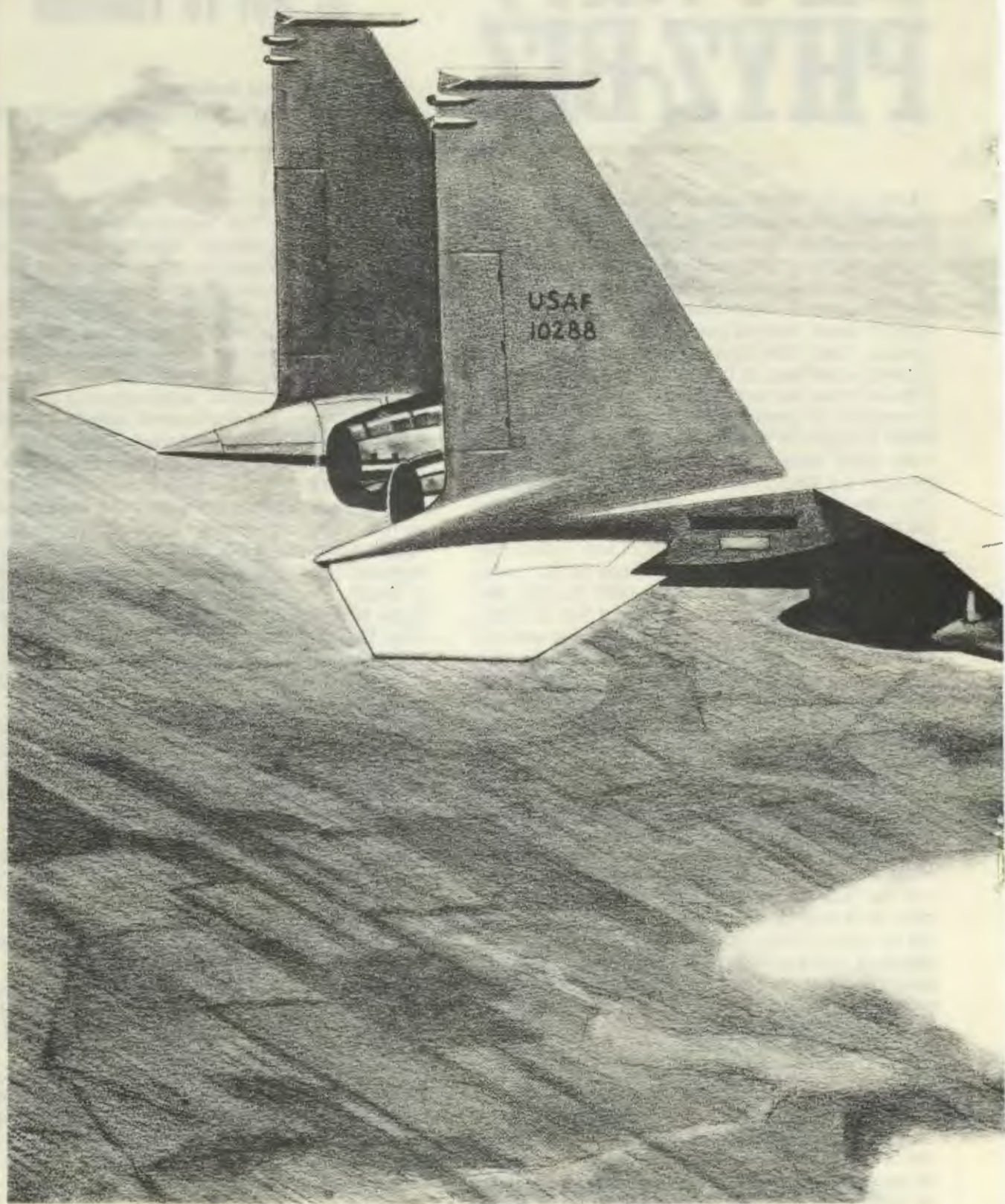
tionalizations, meant only to salve the conscience. Somebody said, "The hardest part of any exercise program is getting started." Nothing could be truer — for both the *initial* decision to start the program and then the *daily* decision to get out and perform!

I believe that the vast majority of Blue-Suiters have healthy hearts and can safely participate in a program of aerobic type exercise — and obviously HQ USAF holds the same belief. The main problem is to overcome the "mental inertia" which prevents active participation. As the first step towards starting a program, the novice should be conservative, especially if you are over 30. Have the Flight Surgeon review your last annual physical, and the ECG (electrocardiogram); if there are any significant or suspicious findings (overweight, high cholesterol, and/or triglycerides, irregularities on the ECG, etc.), these areas should be explored thoroughly, so that you start with a clean bill of health. The exercise ECG is recommended for those 40 and over. Secondly, get a copy of Cooper's "The New Aerobics" (either buy one or borrow one from the base library) and follow his recommendations to the letter. He has some very conservative programs, several of which may appeal to you. Remember, if you don't like exercise, you'll dodge it every chance you get. So if running isn't your bag, try walking, or cycling, or swimming, or whatever — but *do* get started. No matter what form your program takes, there are several precautions to observe:

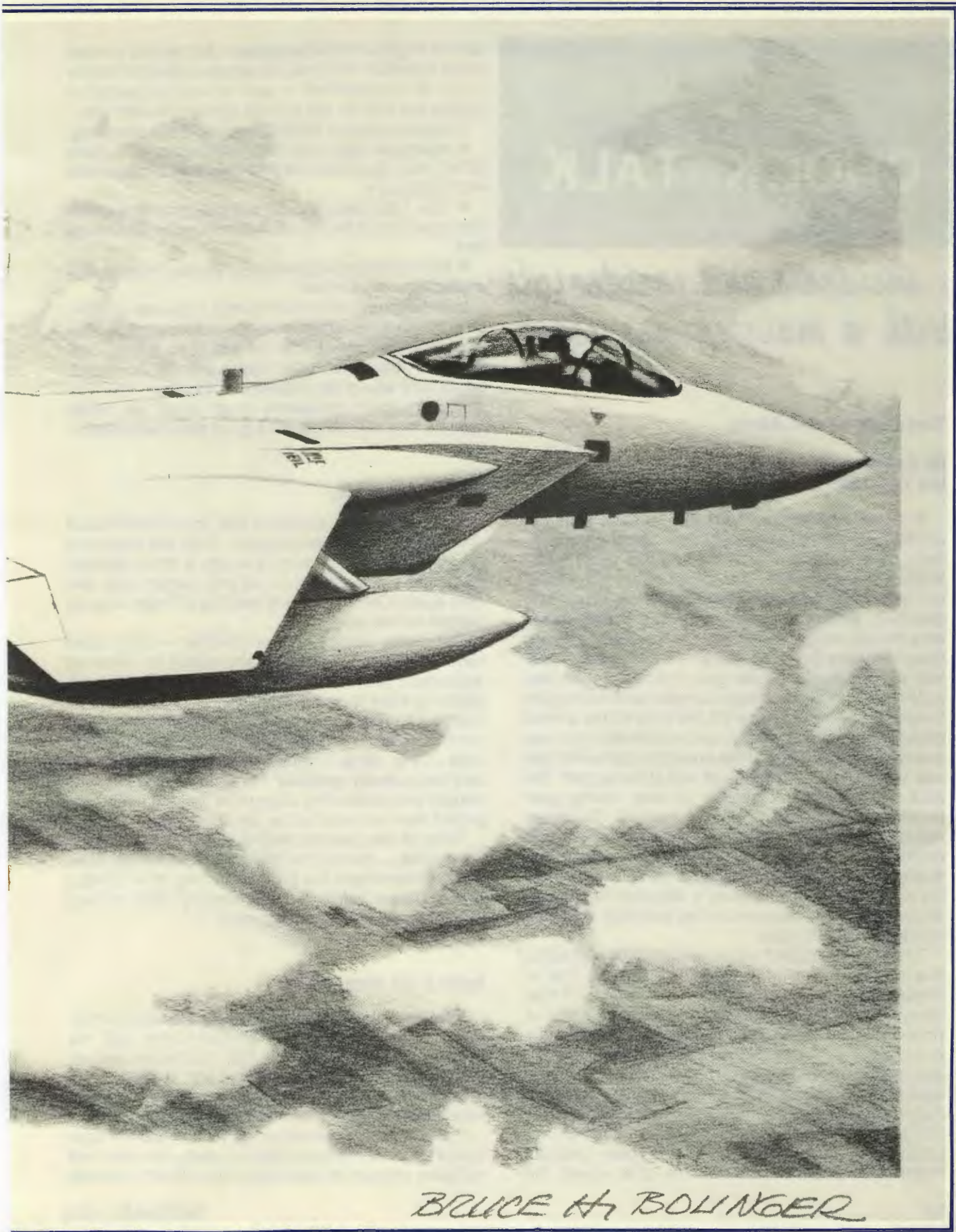
- Don't let your initial enthusiasm run away with you (sore muscles have a very discouraging effect).
- Be conservative and work well within your capabilities.
- Stick to your daily routine.
- Don't be deterred by artificial obstacles (the daily mental obstacle is the toughest of them all).
- Keep records of your progress. Whenever you increase distance, decrease time, lose weight — whatever, record it — these tangible proofs of improvement will help you maintain your interest.

For you women in the audience, Dr. Cooper's wife, Millie, has an excellent little book entitled "Aerobics for Women." Yes, the exercise requirements for gals are different (vive la difference!). Millie took this into consideration when she wrote her book.

Good luck and keep on truckin'!



Last month, the 1st Tactical Fighter Wing, now located at Langley AFB, proudly accepted delivery of their first F-15. The unit's proud



BRUCE H. BOLINGER

history, coupled with the Eagle's bright future, will result in a formidable addition to TAC's fighting forces. Welcome to the First!

CHOCK TALK

chock talk

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

Test Equipment — Safely

By Capt Dan Brown
HQ TAC/SEF

A recent T-39 accident resulted from the failure of an inverter installed as part of a package of test equipment. After a touch-and-go landing, the pilots noted smoke in the cockpit. The tower confirmed smoke coming from the aircraft and an emergency was declared. When the gear handle was placed down, only the left main and nose gears indicated safe, so the emergency gear release handle was pulled — still with an unsafe right main gear indication. Fire was confirmed in the aft fuselage compartment so the pilot turned the hydraulic pump off. He noticed the aircraft controls become very heavy and no elevator trim was available. Tower advised the crew that hydraulic fluid was being dumped over the aft end of the aircraft. The pilot told the tower controller he was having gear problems and asked for a visual check. Controller replied that the gear appeared to be down so the pilot elected to complete the landing. The aircraft appeared to be down and rolled about 500 feet before the right main gear collapsed. It departed the runway and made a "180" before coming to a stop. The crew egressed without injury.

The T-39 was rigged with a project (2500 volt static) inverter to test a microwave landing system. The inverter failed and served as an ignition source for fluid spraying from a high pressure hydraulic line leak. A post-accident inspection revealed the hydraulic pump grounding wire had not been properly secured and the hydraulic line itself had acted as a ground source — as a result the line arced, overheated, then ruptured. The resulting fire also burned the aircraft trim wiring bundle, causing the loss of trim which aggravated the pilot's problems. The gear problem might have been solved had the pilot yawed the

aircraft to get a manual extension, but he was worried about possible structural failure as a result of the fire in the aft compartment — and he had his hands full getting the bird on the ground without elevator trim.

Several causes of the accident are worth repeating:

- Adequate technical data and inspection criteria for the mod equipment was not available to the people who installed it.
- The T-39 Dash-Six did not specifically address the inspection of the hydraulic pump motor grounding wire.
- No monitoring equipment for the test inverter was available to the aircrew.

Basically, it all boils down to this: If you are responsible for installing equipment, make sure you have the tech data available to do the job right. Without the ability to test new ideas, improvements in aircraft equipment would be impossible. However, the guidance for such programs must cover all safety aspects or it will simply be a giant step backwards.

WITH THIS RING...

There are lots of accidents that occur and reoccur — mishaps that are preventable. They are especially frustrating because a simple action, a single precaution could prevent them — yet they happen over and over again. One example is wearing of finger rings by people on the job.

The worker was a C-130 aircrewman — but it could have been any TAC person who works on electrical equipment (shock hazard) or works on, or around, anything more than a few feet high ("brute force disconnect"). This Herky operator had climbed up to remove jump platforms from an overhead storage area in the cargo compartment. He lost his footing and instinctively grabbed for a handhold. His ring caught on a protruding object and the ring finger was pulled from his hand as he fell to the floor.

Think of the pain this man experienced — think of the trauma — think of the effect it had on his life. Now, think of how simple it is to take your ring off and drop it in your pocket before you start working. Take the easy way out — you can't afford *not* to.

TOOLS OF THE TRADE

After engine start, the pilot began the flight control check. When the stick was moved to the right, the controls began binding. The hydraulic system checked good, so a visual inspection of the actuator was performed. When door 47L was removed, pliers were found in the actuator area.

Paint on the screws securing the door had not been broken prior to the inspection indicating the door had not been opened for some time. The aircraft's records

or the third time in...
he verified that the T-38 has an annoying
pated gobbling up of comm cords. Although the Tail
will eat the cords, they cause severe indigestion and
usually several hundred broken teeth! The latest hun-
gry hummer ate the comm cord that connects the
engine technician on the ground to the rear cockpit
comm connection. In this case, the cord was secured
by the retractable crew step in front of the engine in-
take and a mil power run sucked the cord into the
engine. As a result of this eleven-thousand dollar
carelessness, all unit personnel have been briefed to
tie the cord to the main gear rather than the crew step
and keep all slack out of the cord.

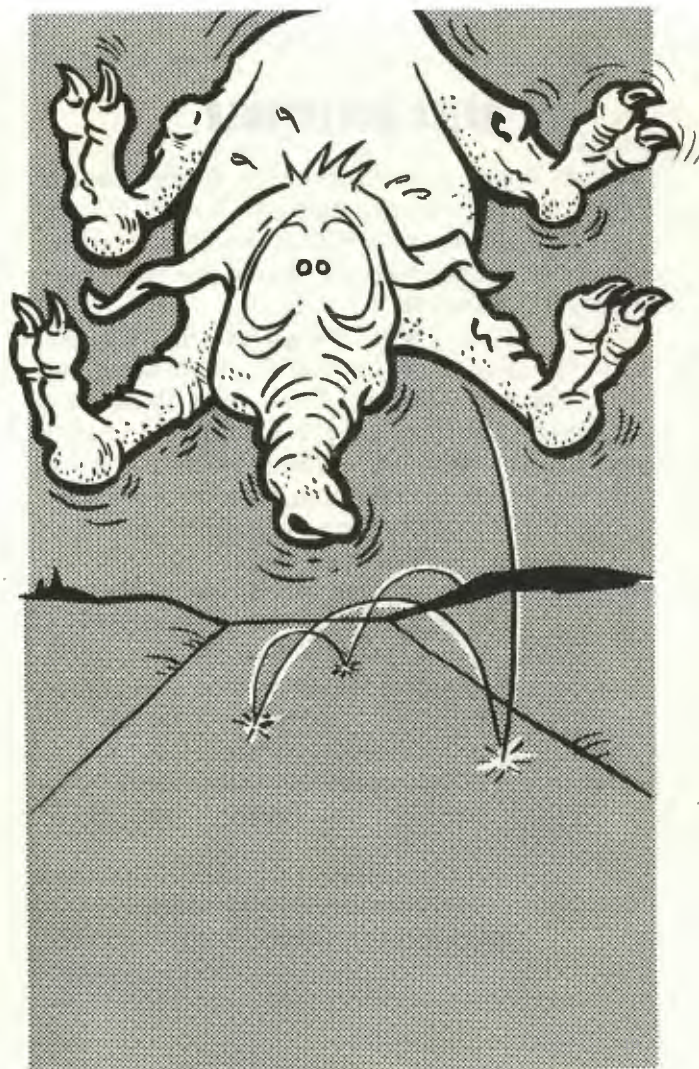
What are your unit's procedures to avoid a similar
occurrence? Better get a handle on the situation
before your Phantom, Eagle or Sluf tries to add foreign
objects to its diet. It's a hell of a lot more expensive
than filet mignon.

JUMPING AARDVARK

After rotation, but prior to liftoff, the instructor pilot in
the left seat of the F-111 felt the left wing drop. After
takeoff, a chase aircraft rejoined with the incident
aircraft and checked its landing gear. Although it ap-
peared to be down and locked, the position of the
landing gear linkage could not be ascertained. Fuel
was dumped and a straight-in approach and barrier
engagement accomplished.

Investigation revealed that the left strut had col-
lapsed due to improper installation of the strut upper
bearing adapter. This part can easily be installed in
reverse. If this happens, undue pressure is placed on
the upper bearing retainer which can cause the strut
to collapse.

TO 451-78-3, which covers the installation of the
strut upper bearing adapter, was reviewed. Depiction
of proper installation of the bearing adapter in the
Tech Order was not clear and it did not mention the



ARTCC WEATHERMEN

Weathermen in the Air Route Traffic Control Center? At least in the Kansas City ARTCC, for now. Possibly in all ARTCCs eventually, if the current test continues to show the promising results it has thus far.

Yes, the current test. There was a blurb in our June 75 issue of TAC ATTACK which described the purpose of this test. The overall objective is to determine if having weathermen in the ARTCCs will enhance enroute weather service provided to the military pilot. Feedback received during the 2 Jun through August 75 period of this one-year test indicates that it will. MAC/Air Weather Service included the following observations in its first quarterly progress report: ARTCC forecasters can effectively identify potentially hazardous convective weather from FAA radars; hazardous convective weather data (advisories) can be effectively relayed to enroute aircrews by ARTCC controllers; and forecasters working in the ARTCC increase the quantity of PIPEPs transmitted from the ARTCC.

If you transit the Kansas City ARTCC area and end up on the receiving end of this new service, let your local AWS unit know what you think. They'll pass the word along to the people evaluating the usefulness of these new procedures. Next progress report is anticipated early in 1976. We'll keep you informed.

ADMINISTRATIVE OVERSIGHT

Two F-4Es began their takeoff roll. The aircraft rotated and everything looked good up to liftoff. Then it happened ... the lead aircraft yawed to the left and the pilot noticed the DC bus light illuminate. No other warning lights glowed, but the gear would not retract.

The crew accomplished the double generator failure checklist, used emergency gear lowering procedures, and was led back for a successful approach-end barrier engagement by number two.

The electrical test receptacle cap (3P325...located under the right rear canopy sill) was loose. When this cap becomes loose, both generators drop off of the line. The cockpit indications are those of double generator failure. If the cap is retightened, the generators may be reset.

An AF Form 847 was submitted by the wing recommending a step be added to the F-4E Flight Manual double generator failure checklist to ensure that the electrical test receptacle cap is secure. Our intrepid Fox-Four SPO remembered that this change had been recommended and approved by the Flight Manual folks some time ago, and sure enough it had. The change had been incorporated in Change 3 to the F-4C/D and RF-4C Dash-One's, but not to the F-4E Flight Manual. Why? An administrative oversight. The result? Operational Supplement 10 to the F-4E Dash-One and the assurance that the change will be incorporated in the next revision to the Flight Manual.

COMMUNICATIONS GAP

Someone once said, "I know you believe you understand what you think I said, but I am not sure you realize that what you heard is not what I mean." At least, I think that's what he said. This statement aptly describes a communications problem. Even though the statement seems humorous, its truth is illustrated by the following recap of two recent aircraft incidents.

The student AC and IP air-aborted a syllabus mission after spurious pitch inputs were felt. The stab augs were disengaged and the malfunction ceased. While burning down fuel in a holding pattern over a large body of water, the instructor asked the student if the external tanks were dry. The student said they were. The IP then stated, "Then I think we should dump our wing tanks." To which the student replied, "Do you want to do it right here?" The IP answered, "Yes." The student then pushed the "Panic" button and jettisoned the external wing tanks.

The IP had wanted to dump the internal wing tanks of fuel to expedite the reduction of the aircraft's gross weight. Unfortunately, there was a breakdown in communications which cost "Uncle Sugar" a little over \$4,000.

The second incident occurred during a ground attack tactics mission. Student aircraft commander in the front cockpit, IP in the rear. The aircraft had dropped out of position during a descending turn. The flight lead called for him to move back to the briefed position. The leader called for afterburners to accelerate to 500 KIAS and made a small check turn into the incident aircraft which was in the process of closing to the proper position. The student banked the aircraft in order to stop the closure rate and pushed over slightly to keep the lead in sight. At this time, the IP momentarily lost sight of the lead. He gave instructions to the student not to push over and tapped the stick to the rear. The student didn't hear the IP's comments and counteracted the aft stick pressure. Result? A pilot-induced oscillation that ended with an 8-positive and 3-negative "G" reading on the accelerometer.

Because of this breakdown in communications, a complete major over-"G" inspection was required. Fortunately no damage was found, but three and one-half days were expended accomplishing the inspection.

OK, but both of these incidents involved a guy in RTU. He didn't have much experience in the jet. Right? Yes — but there have been incidents and accidents involving "old heads" that were caused by a lack of, or breakdown in, communications. Pilots have retracted the gear while on the ground and even ejected from perfectly good aircraft because of a breakdown in communications.

How can we prevent this type of incident from recurring? One way is through better crew coordination. Flight leaders should plan their pre-mission

briefings to allow for adequate individual crew element briefings. No maximum time is set for briefings. Start the briefing earlier if the mission is complicated or some members of the flight are new guys or guys you've never flown with.

Make sure what you are saying is understood — not just heard.

HOT MIC

The Oscar-Deuce was flying a rocket qualification mission with eight 2.75s. As the pilot turned base for his fifth hot pass, the jock transmitted, "12, base leg" — and a rocket fired from the right pod. The jock wanted all members of his flight and the range officer to know of this strange occurrence, so he made another radio transmission — whoosh — another rocket fired. Although he had armed prior to final, but was certain he hadn't pushed the firing button, the pilot made two more passes and fired the remaining rockets, using the radio mic switch. This confirmed (obviously) that the problem was in the control yoke.

Investigation revealed a short between the wires to the armament firing button and microphone switch.

System malfunction? Right. Only problem was, the 0-2 ops procedures say not to turn the master arm switch on until on final, and require the system to be "safed-up" and an RTB made in the event of an inadvertent release.

We were lucky this time. No one was injured, but the odds for injury or damage to property were significantly increased because of failure to follow established procedures. Be professional — do the job, do it right, the first time. It's as easy as that.

OUT OF THE MOUTHS OF BABES

A third-grade class was asked to write a short story with a moral. Here's one result. The moral speaks volumes —

THE BIRD AND THE BOY

Once upon a time a bird was flying thru the forest and he hit a tree and broke his wing. A half an hour later a boy was walking and he found the bird and he took care of him for a week. When he got better the boy kept him as a pet but he could never fly again.

Moral: Look before you fly.

By Patrick O'Neill, Age 9

CLASSICS from the CLASSROOM

This classic has been published in several magazines previously, including TAC ATTACK, but it's good enough to run again. The author taught school in Ballwin, Missouri, for seven years. Prior to that, he taught at Gallup, New Mexico, and Jefferson City, Missouri. With an interest in aviation, Mr. Dunn often required his students to write theme papers on the subject. He provided portions of these student papers to the editor of Boeing magazine where they were published for the first time. —ED

Classics from the classroom

by Mr. Harold Dunn

Did you know that the first lady aviator was Kitty Hawk? That Roger Wilco invented the "language of communication?" Or that one of the chief by-products of the aviation industry is going places?

This information has been gleaned from test papers and essays during the 11 years that I've taught elementary school youngsters.

Kitty Hawk and Roger Wilco may have their admirers but Baron Von Richthofen, the German ace of World War I, has also come in for his share of adulation. A 10-year-old girl summed up her feelings like this: "In a uniform or not, Baron Von Richthofen was a dashing figure."

If history repeats itself, it usually does it with some unexpected twists when grade-school pupils tell the story:

"Spinning jennies were flying jennies that did not work."

"People talked about flying in balloons for centuries. Finally there was enough hot air to get them off the ground."

QUESTION: On his first flight, how long was Wilbur Wright in the air?

ANSWER: I'm not sure. Five feet something with his shoes on.

One of the fringe benefits of being an elementary school teacher is the possibility that the next paper I correct will contain a wrong answer that is twice as

witty and delightful as the right one. When members of the grade school set turn their attention to men notable in aeronautics, youngsterisms seem to come as thick as chalkdust. Three examples:

"Euclid thought out how to make geometry help people to fly. He was born in the 300s and died in the 200s. That is another thing he thought out how to do. He thought out how to do it by using B.C.s."

"Charles Lindbergh is the most famous person in flying history and so are the Wright Brothers."

"The Wright Brothers made their first flight in 1903. 1903 was really in the 20nd. century but



everybody was behind the times in those days."

The elementary school youngster's mind is a vast storehouse of information . . . half true, half false and wholly delightful. Sometimes he isn't wrong at all. It's just the way he puts it:

"During the Twenties, people started walking on airplane wings and things like that. I know it is crazy but this was before television or anything so what else was there to do?"

"Back in 1924, eight men tried to fly around the world but they only ended up where they started."

"Floyd Bennett comes from the year 1926. He is a famous aviator few people have ever heard of."

Ever heard of the word "pecally?" I hadn't until I came across this in a paper: "When I first started studying about air-

planes, pecally things began to happen. First I was heightened by their vast hugeness. By and by I put on my thinker and thought how important they really are. I then heaved a sigh at how it would be fun visiting at where they are made."

Much of the juvenalia that I've collected through the years has been devoted to comments about Charles Lindbergh's historic first solo flight over the Atlantic. Here are three of my favorites:

"Charles Lindbergh was the first to fly to Paris. He did it by the airplane method."

"When they asked him if he would like to fly to Paris, he rolled his eyes and flashed his teeth and said Sure."

"A straight line is the shortest distance between two points unless you are going with Lindbergh to Paris. Things are different

there."

In commenting on the duties of the navigator, a girl who claimed she was one of aviation's "starchest supports" wrote: "The navigator figures out the latitude and longitude. Latitude tells him where he is and longitude tells him how long he can stay there."

Her best friend once concluded: "The three main crewmen on a plane are the pilot, navigator and percolator."

If any of these definitions have caused Webster to turn over in his grave, he would have to do it with a smile. Here's what I mean:

"Drone is a spare name for when people cannot think how to say pilotless airplane."

"When anybody says plane, what he is saying depends on whether he is saying it to a pilot or a carpenter."



"I know what a sextant is but I had rather not say."

"A visa is a passport permitting an airplane to leave the country. For round trips you need a visa versa."

One chap absorbed the information regarding the many uses for airplanes in our modern world, but his skepticism showed: "How many uses they have for airplanes these days is more for saying than believing."

Three years later his younger sister wrote: "The number of aircraft in the world today is an absurdly large fact of a number."

Ramjets have certainly come in for their share of comments recently. The remarks have proved to be unexpected, unconventional and undeniably true:

"Until it is decided whether ramjets are rockets or jets, we must continue to call them ramjets."

"The way ramjets work, as I

understand it, is not very well understood."

"In ramjets the air rushes out when the fuel is ignited. So would anybody."

A couple of years ago there was a tiny moppet in my class who had a delightful way of expressing her thoughts. Here's how she summed up her feelings: "From now on I will put both gladness and wonder in my same thought about airplanes."

More than one eager young scholar has started out with a discussion of air travel and ended up in outer space. The following astronomical observations are fresh from the minds of four fourth graders:

"The North Star is, as a matter of fact, almost straight north. This is quite a coincidents."

"Our Mother Earth has small poles and a large equator because of the tremendous speed as she

hurdles through the space. Since we are along for the ride, we too tend to be flat at our poles and round at our equators."

"Some people can tell what time it is by looking at the sun but I have never been able to make out the numbers."

"Through the years people have guessed that Venus might be inhabited by women, dragons, or other strange creatures."

No one looks to the future as eagerly as youngsters do. Last year I received these two predictions about future air travel:

"Thanks to what we are learning from aviation, we should soon be able to look forward to having ceilings made out of fog."

"So far planes have only been able to fly in circles of no more than 360 degrees. This could be the next big breakthrough in air travel."

TACTICAL AIR COMMAND

AIRCREWMAN of DISTINCTION



Capt James R. Cole
355th TFS
354th TFW
Myrtle Beach AFB, SC



On 1 December 1975, Captain Cole was number two in a flight of four A-7Ds scheduled for a night air refueling mission. Single ship takeoffs were planned and all ground operations were normal. Night takeoff phase was uneventful until just after liftoff when, passing through 155 knots, Captain Cole heard a loud "bang" and felt severe engine vibrations. Options available to Captain Cole at this critical time were limited. He faced the choices of an immediate ejection, continuing the takeoff and flying an immediate precautionary landing pattern at night in an aircraft with unknown damage, or an attempt to land the aircraft on the remaining runway that was rapidly disappearing under the nose. Captain Cole quickly decided to land straight ahead on the runway. Since he had not retracted the landing gear, he retarded the throttle to idle, and perfectly executed an idle power approach to touchdown.

Immediately, he lowered the tail hook in anticipation of a departure-end barrier engagement. Braking attempts at this high speed had little effect. He successfully engaged the first available barrier, thus providing an additional safety margin in case of hook-skip or barrier failure.

Post-flight inspection revealed that the engine had ingested a large bird, causing massive damage to the LP-1 and LP-2 rotor blades, and to the LP-1 stator blades. It also showed a 6-inch hole in the air inlet extension. The severe engine damage could have caused engine failure and necessitated ejection had Captain Cole continued his takeoff.

His timely reaction to a critical emergency during a night takeoff and the ensuing recovery of a severely damaged fighter qualify Captain Cole for this month's TAC Aircrewman of Distinction Award.



FLEAGLEGRAM

RESPONSES FROM THE FRONT

Dear Fleagle

While doing my thing on the last quarterly safety inspection, I found an old nemesis — highly flammable rubberized “horsehair” packing material being used as shelf padding for electronics equipment. Checking and exhausting the 85-series TOs and TPOs, plus all the know-how by packaging and crating experts within a 200-mile radius, I am finally turning to you. Where is it written that flammable packing material is not to be used as padding?

SMSgt Herbert C. Williams
363th AMS, Shaw AFB, SC

Dear Herb

For your buddies who need a regulation to back up this common sense safety rule, try AFR 127-101, para 12-29b, “Flammable packing materials such as excelsior or shredded paper will be stored in fire-resistant bins, equipped with fusible-link covers.” By extension then, for those who are satisfied with logic, do not use flammable packing material for shelf padding. ‘Nuff said—

F Fleagle



Dear Fleag

There I was, hanging around the ops desk when wing called down and asked for a crew to ferry a bird out West. Being one to grab at any chance for a little flying time (and perhaps a chance to update my ski lodge currency), I naturally volunteered my services. Down to base ops to file a three-hop stopover, get the weather brief and check the NOTAMs. Nothing significant except that the barrier was out for awhile at my destination, but a telephone call assured me that it would be up by the time we got there. Turnarounds at the first two bases were good and it looked like we had an uneventful XC nearly in the bag. Weather folks did mention something about snow showers in the destination area, but nothing serious in itself (Key Phrase). Well, off for a cruise over the mountains. About 20 minutes out, I decide to amuse myself with the radio and ask Center for permission to talk to METRO. No need says Center, we've been instructed to give you the following: RCR at destination is now ZERO-SIX!!! Yahoo, here we go. "What's the weather like elsewhere?" Hmm, radio is breaking up — generator seems to be dropping off the line. It died completely in a short while. Weather is about the same within 200 miles. Well, the whole thing winds up in a good approach-end arrestment on one of the slickest surfaces I've ever seen. The airplane was towed away as we shuffle-slid our way to the bar. WHERE did all this snow come from? (See key phrase above.) And how come nobody said anything about the 06 RCR. As it was later revealed, an RCR had been transmitted in SOME forecasts for the destination, but deleted in others. For want of nothing less than the best, I only asked for the most recent forecasts at both stopover bases. High ceilings and blowing snow were all I was given during all three weather briefs. The forecasts I got just happened to be the ones without the RCR info. In my mind, this satisfied the requirement to update intermittent and final destination weather at stopover bases. The above "combination of ingredients" certainly made

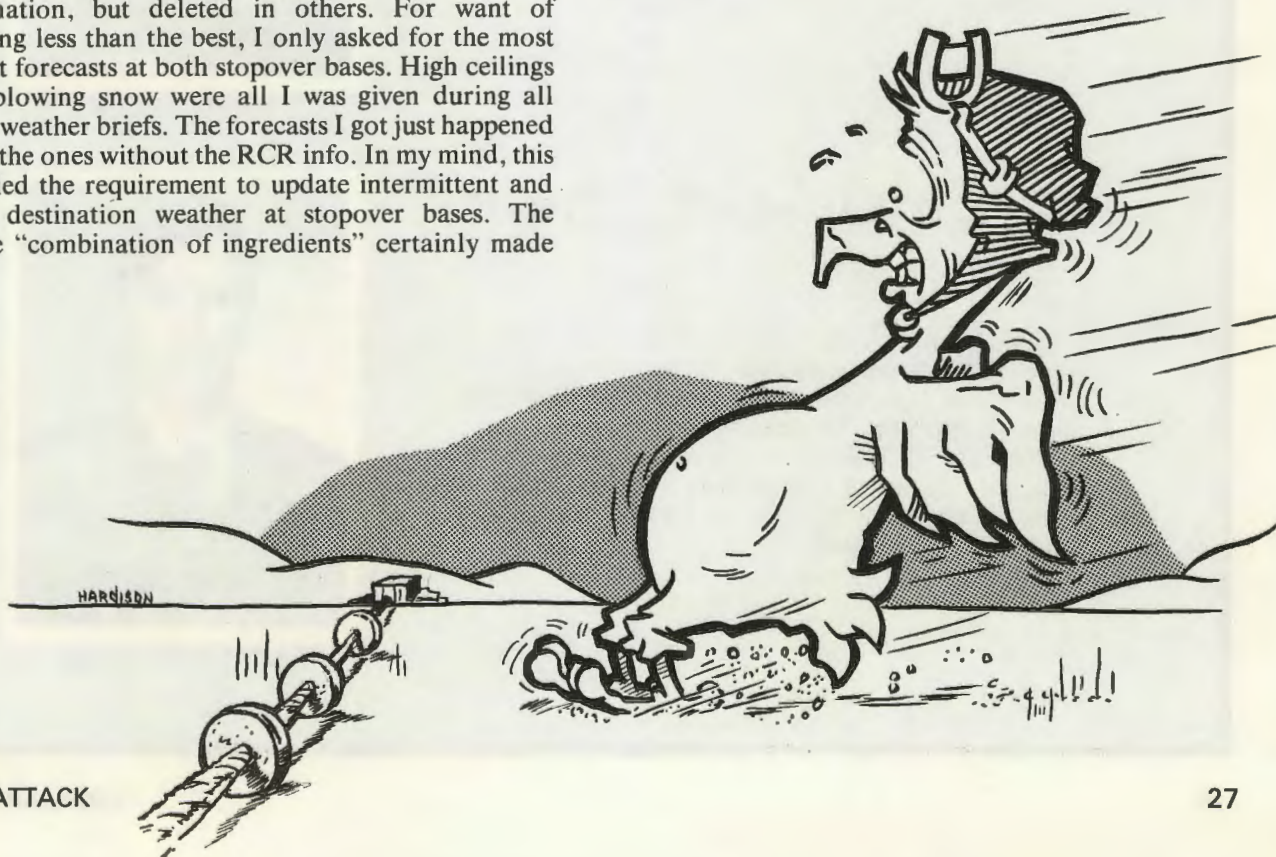
this one of my more memorable flying experiences — unforgettable, in fact. It certainly will be a cold day in an eternally warm place before I forget to ask the guy about an RCR where there is *any* form of precipitation.

Dear Ski Bum

My friends over at 5th Weather Wing tell me that your mistake was... what you asked for is what you got. RCR is not reported on terminal forecasts. They are found in each station's observation. Observations are transmitted every hour (each half hour if there is significant change) and will have the current RCR if it is less than dry. When you update your forecast, don't forget to ask for your destination's latest observation. It could save you from skiing... down a slick runway.

Fleagle

P.S. How were the ski bunnies...?





TAC

SAFETY AWARDS

Maintenance Safety Award

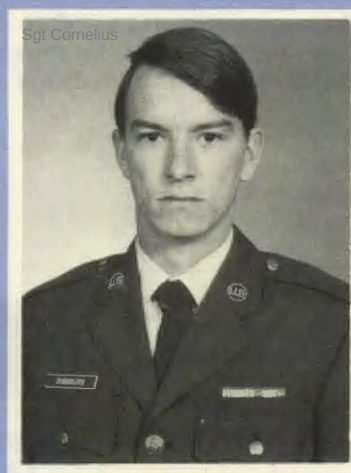
Staff Sergeant Robert M. Tully, 33d Organizational Maintenance Squadron, 33d Tactical Fighter Wing, Eglin Air Force Base, Florida, has been selected to receive the Tactical Air Command Maintenance Safety Award for this month. Sergeant Tully will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.



SSGT TULLY

Crew Chief Safety Award

Sergeant John T. Cornelius, 4507th Consolidated Aircraft Maintenance Squadron, 507th Tactical Air Control Group, Shaw Air Force Base, South Carolina, has been selected to receive the Tactical Air Command Crew Chief Award for this month. Sergeant Cornelius will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.



SGT CORNELIUS



...and
we
got letters...



Editor

I was quite surprised to see the F-106 with bombs, etc., on page 30 of your December issue. There are very few people who actually saw an F-106 in this configuration (minus the tailgun artwork), since it only existed for approximately 36-48 hours.

The story: I was an F-106 pilot with the 318th FIS, McChord AFB, WA, from '68 to '71. Note: The 318th's squadron insignia is clearly visible on the tail section. The picture was taken at Osan AB, Korea, in October or November 1968 (specifically, Alpha Diamond). At the time, the 318th FIS airplanes were on-station as part of the Pueblo incident forces buildup in that country. However, at this specific time, the bulk of the aircrews were from the 48th FIS, Langley AFB, VA. Squadrons were rotated every six months, however, aircraft only once a year — hence, 318th FIS aircraft with 48th FIS aircrews and support personnel. I was, among others, augmenting the 48th at the time; my parent unit had rotated to the CONUS earlier in the year. Anyway, the spirit of competition and camaraderie prevailed throughout Korea in those days. Osan was saturated with fighter jocks and the flying was fantastic. With the 48th Squadron Commander's active participation, we arranged to "borrow" two fully loaded MER's (MK-82s) from the F-4 unit down the flightline. The suspension lugs were compatible with our external tank mounts, so hanging them was no problem. Once accomplished, we took pictures of each other standing next to this super configuration. During this period we were visited by the then current ADC Commander, and of course, we made sure he saw this unique Delta Dart. We had placed bedsheets over the bombs to heighten his curiosity as he approached the airplane — then we dramatically unveiled this new F-106 mission prototype. He had an excellent sense of humor and asked if we could really drop bombs like that in a pinch. Yes, was our answer; however the



LETTERS

whole mess had to go — MERs and all. The bombs obviously couldn't arm remaining on the MERs, so would be ineffective. On the other hand, we could load them armed. Release would require using our tank jettison circuitry. Of course, no gunsight existed.

The entire maneuver was an outstanding episode of ingenuity and a little bit of chicanery. Again, with all the various fighters and associated Sierra Hotel jocks jinking about Osan in those days, this imaginative F-106 configuration was a welcome Kudo for those of us who "steered the Dot" to glory.

Capt Thomas M. Messelt
4501st TFRS
MacDill AFB, FL

Editor:

After viewing the mystery airplane photo in the "Letters" section of the TAC ATTACK, December issue, I believe someone has done an interesting job with photo modification or sheet metal work to the actual aircraft, which is an F106. If this is so, will this be a regular feature?

In the interest of safety, please don't bite your tongue while it is still in the cheek. Remember, WEATHERMEN DO IT WITH CRYSTAL BALLS.

Paul R. Mason, SSgt
Det 5, 3 Wea Sq (MAC)
England AFB La

Editor:

Your photo of an unidentified experimental aircraft in Letters (TAC ATTACK December 1975) brought back memories. The flying machine displaying a multi-mission capability was none other than the F-106T (T for Tactical). This superior aerial weapon resulted from R&D work done by members of the 318th Fighter Interceptor Squadron, McChord AFB, Washington. The project was accomplished while the squadron was deployed in 1968 to Osan AB, Korea in response to the Pueblo Crisis. The deployment represented the first "over-the-pond" utilization of F-106 inflight refueling capability. Once at Osan, the squadron found itself thrust into solid TAC territory and surrounded by F-4's and Thuds. Not to be outdone, resourceful members of the 318th installed MER's and MK-82's on the sleek F-106. For a brief period there was chilling fear among TAC residents that ADC would take over

their mission; however, the T-model was not a "buy" and TAC remained secure. The original 106-T did not sport the tail turret configuration, and I strongly suspect that one of your artists may be guilty of exercising exuberant imagination. Incidentally, tail protection was unnecessary on the F-106, in that its ACM capabilities rarely permitted aggressor aircraft to attain six o'clock advantage.

GERALD B. HURST, Lt Col, USAF
Commander, 834th CES
(Former Six, Thud and Deuce Driver)

Our artists claim that they, too, need tail protection and deny taking advantage of artistic license. Perhaps if all Delta Dorques had tail turrets, they would know what's happening behind them —ED

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A NEW FEATURE FOR YOU IN TIG BRIEF

TIG Brief, the Air Force I.G.'s crosstell magazine, is dedicated to the promotion of good management practices and safety information. Lieutenant General Donald G. Nunn, Inspector General, recently proposed a new column for TIG Brief to enhance the effectiveness of the magazine by drawing on the experience of those in the field.

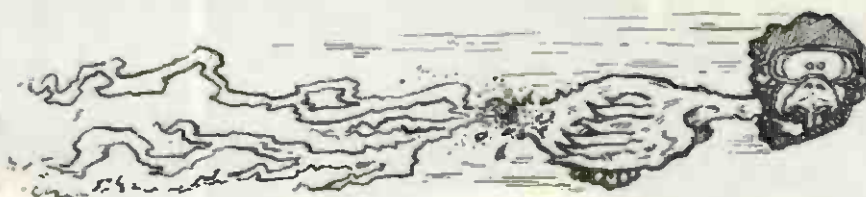
Most articles in TIG Brief are prepared by AFISC, the Air Staff or MAJCOM IGs. The new column, entitled "Lessons Learned" will depend on inputs from Air Force people below Air Staff. It will feature problem/solution information, pitfalls to be avoided, and innovative techniques from those on the job. It is hoped that the sharing of personal experiences by managers, supervisors and workers will prevent recurring problems and offer new solutions to old management headaches.

Innovative TAC commanders, supervisors and line workers should use this column to share their ideas with their compatriots Air Force wide. We're all in this together, so if you have a contribution, a "lesson learned," pass it on to:

AFISC/PGMC
Norton AFB CA 92409

Provide the "who, what, when, where, why and how" of your problem/solution. Include your autoyon number so that any necessary coordination or clarification may be accomplished by telephone.

TAC TALLY



TOTAL ACFT. ACCIDENTS	►
MAJOR ACFT. ACCIDENTS	►
AIRCREW FATALITIES	►
TOTAL EJECTIONS	►
SUCCESSFUL EJECTIONS	►

TAC		
DEC	thru DEC	
	1975	1974
1	28	23
1	26	19
0	20	13
1	16	18
1	13	16

ANG		
DEC	thru DEC	
	1975	1974
1	17	20
1	14	19
0	7	8
2	10	10
2	9	8

AFRES		
DEC	thru DEC	
	1975	1974
2	2	6
2	2	4
0	0	2
4	4	2
4	4	1



FIGHTER/RECCE WINGS		
ACCIDENT-FREE MONTHS		
79	33 TFW	TAC
45	127 TFW	ANG
43	31 TFW	TAC
30	56 TFW	TAC
23	27 TFW	TAC

OTHER UNITS		
ACCIDENT-FREE MONTHS		
125	136 ARW	ANG
105	DET 1, DC	ANG
81	135 TASGP	ANG
77	182 TASGP	ANG
76	126 ARW	ANG

MAJOR ACCIDENT COMPARISON RATE 74-75
(BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

TAC	74	4.5	5.4	5.6	4.5	4.0	3.6	3.1	3.2	3.0	2.9	2.8	3.2
	75	7.9	5.4	3.6	2.6	3.1	3.5	5.2	6.4	6.0	6.5	6.3	6.1
ANG	74	7.2	8.6	8.2	5.7	6.0	6.3	7.6	6.6	6.3	6.4	6.9	6.5
	75	5.3	2.8	5.3	3.7	4.7	6.8	5.9	5.1	5.1	5.4	5.3	5.2
AFRES	74	0	16.4	8.9	8.8	6.7	5.3	5.8	5.0	4.3	3.8	3.5	2.6
	75	0	0	0	0	0	0	0	0	0	0	0	4.9

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



FIRE !! BAIL OUT !



HARDISON



1. PULL FOUR LINE RELEASE
2. DEPLOY SURVIVAL KIT
3. INFLATE LPU

© Stan Hardison, 1975



4. ASSUME LANDING POSITION



HIS PROCEDURES WERE ALMOST PERFECT.

YEAH... TOO BAD HE DIDN'T CHECK HIS CHUTE.