TAC ATTACK

FEBRUARY 1977

STOPPING THE AARDVARK... Pg 4

Tac Attack
February 1977
Stopping the Aardvark... Page 4

TAC ATTACK FEBRUARY 1977 VOLUME 17 NUMBER 2

FEB

FOR EFFICIENT TACTICAL AIR POWER

FEATURES

DEPARTMENTS

TACRP 127-1

Articles, accident briefs, and associated material in this magazine are non-directive in nature. All suggestions and recommendations are intended to remain within the scope of existing directives. Information used to brief accidents and incidents does not identify the persons, places, or units involved and may not be construed as incriminating under Article 31 of the Uniform Code of Military Justice. Names, dates, and places used in conjunction with accident stories are fictitious. Air Force units are encouraged to republish the material contained herein; however, contents are not for public release. Written permission must be obtained from HQ TAC before material may be republished by other than Department of Defense organizations.

Contributions of articles, photos, and items of interest from personnel in the field are encouraged, as are comments and criticism. We reserve the right to edit all manuscripts for clarity and readability. Direct communication is authorized with: The Editor, TAC ATTACK, HQ TAC/SEPP, Langley AFB, Va. 23665. Autovon 432-2937

Distribution FX, Controlled by SEPP.

Angle of ATTACK

FOD...A PEOPLE PROBLEM

A review of 1976's Foreign Object mishaps makes it obvious we need to strengthen the command's Foreign Object Damage (FOD) prevention program.

We destroyed or inflicted major damage to one TAC aircraft engine every four days. These engine FODs resulted in the loss of almost 6 million dollars and numerous manhours ... losses we can ill afford.

FOD incidents have caused jammed flight controls, dropped objects, stuck throttles, lost canopies, blown tires, etc. Inspection reports during 1976 pointed out weaknesses in our Consolidated Tool Kit (CTK) program. Tool control was often weak and various foreign objects were in the CTKs. Flightline vehicles were noted to have cotter pins, fasteners, screws, and other foreign objects on their seats and floors. FOD containers were not always available on the flightline. Screw bags were not always used in the Phase Dock area. The list is endless and indicates inadequate supervision, mismanagement, weak leadership and a general apathetic attitude among people who work on or near aircraft.

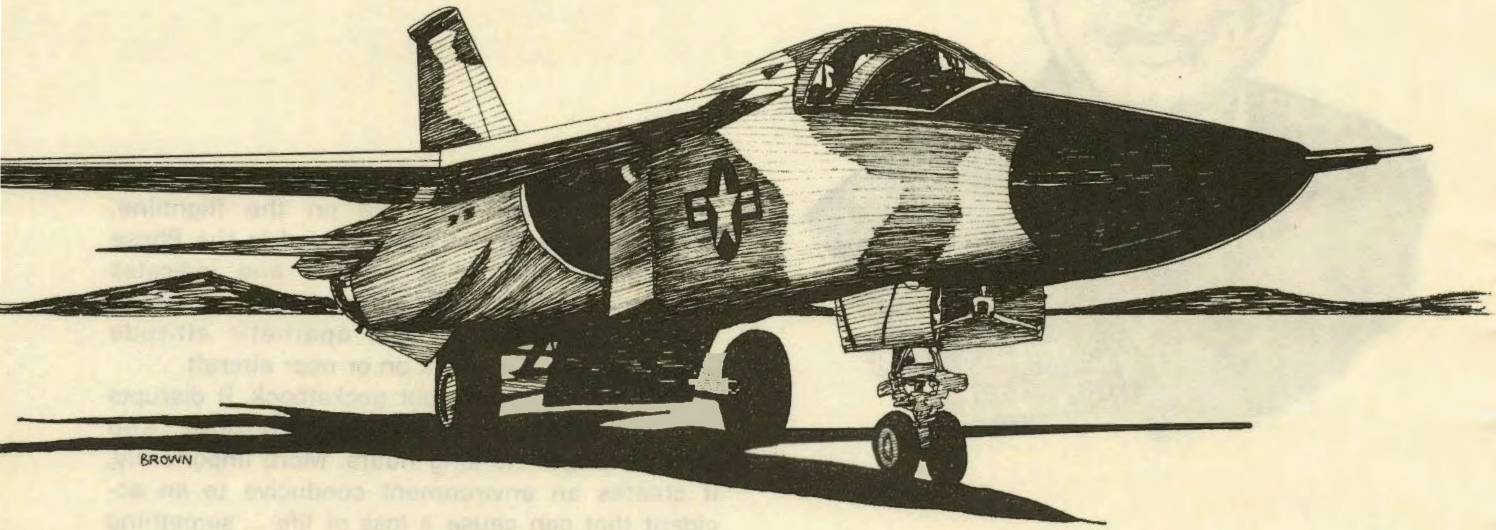
FOD not only hurts our pocketbook, it disrupts our flight schedule, training programs, and creates longer working hours. More importantly, it creates an environment conducive to an accident that can cause a loss of life ... something we can not condone.

The FOD prevention program is a people program and everyone must actively participate if we are to make the program more effective. Everyone who works on or near aircraft must understand the magnitude of the FOD problem. Tool accountability programs must be meaningful, engine bay inspections must be thoroughly accomplished, personal bench stock of screws and fasteners must not be tolerated. The unit FOD monitor can not carry the FOD Program ... he can help manage it, but unless each individual actively participates, the program will fail. Only with your help will our Foreign Object Damage Program become more than an exercise in "bean" counting. Let's work together to make it a true *prevention* program.

George M. Sauls

GEORGE M. SAULS, Colonel, USAF
Chief of Safety

STOPPING THE AARDVARK



By Lt Col Malcolm F. Bolton
Commander, 430th TFS
Nellis AFB, NV

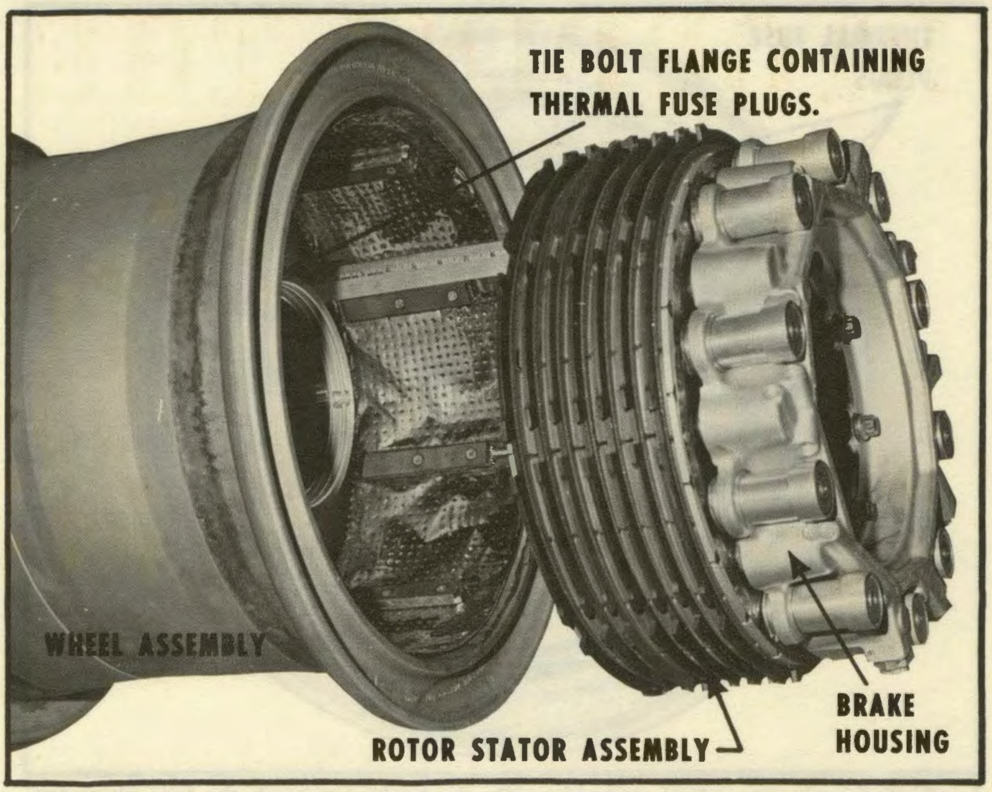
The F-111 has as good a brake system as any tactical fighter in the inventory. The brakes can halt a 90,000 lb F-111 aborting at rotation speed on a 10,000-foot runway ... without use of a barrier. But, as good as they are, it is easy to abuse the brake system and degrade its performance. Blowout plugs have been known to relieve tire pressure ... to the complete bewilderment of the pilot who had done nothing more than a little aggressive taxiing. As such, it may prove beneficial to delve into the F-111 brake system and give aircrews additional data over what they are exposed to in the Dash One.

One item ··· not commonly known is the design criteria for the brakes. Military specification MIL-W-5013 and General Dynamics Specification ZL09503 show that the Air Force required General Dynamics to equip the F-111 with brakes that would:

1. Make 45 landing stops at 70,000 lb gross weight starting from a power-off stall speed of 112.1 knots. This energy requirement is still carried as the top of the green zone on the brake energy chart.

2. Make five landing stops at 80,000 lb gross weight starting from a power-off stall speed of 120 knots. As you have no doubt guessed, this is the top of the yellow zone on the brake energy chart.

3. Make one aborted takeoff stop at 90,000 lbs starting from a main gear unstick speed of 140 knots. As you are probably quick to recognize, this is not the top of the red zone. Red zone limits have an added factor for engine thrust decay of 4 million ft lbs. The original brake energy chart reflected a maximum of 37.5 million ft lbs for a 90,000 lb aircraft aborting at



Brake housing and tire have been removed from F-111A wheel assembly. Maximum heat concentration occurs in the rotor/stators nearest the housing. Note that this is approximately 6 inches from tie bolt flange and directly opposite the tire/wheel bead seat area. Photo 2 shows location of fuse plugs in the wheel tie bolt flange.

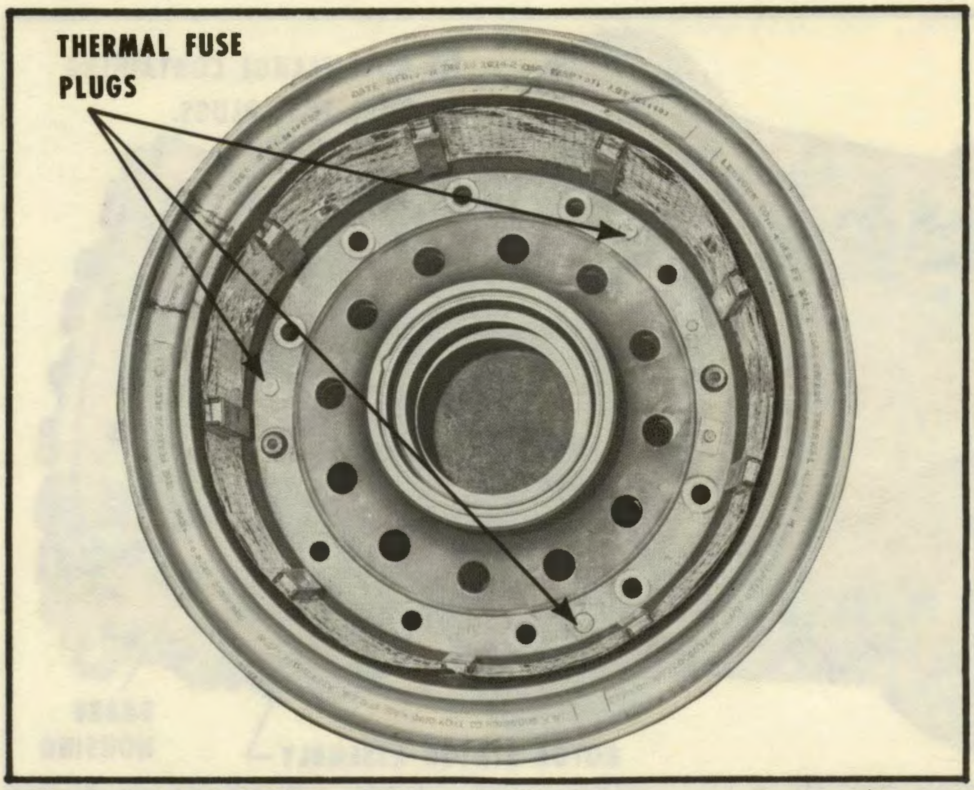
140 kts. The aircraft brakes have now been tested for energy levels of 42 million ft lbs equating to a 100,000 lb aircraft aborting at 140 kts and this now equates to the top of the red zone.

These requirements are what were used to build the brake energy charts. They were constructed strictly from calculated data. As you can see, the speeds used are not those actually used in today's operational units. So you might ask whether they are accurate data.

Actual brake tests done at the Edwards Flight Test Center on F-111A No. 1 proved that the charts were, if anything, conservative. The brake tests shed a great deal of light on information about stopping a high speed, heavyweight F-111. Information extracted from these tests may be useful, especially to pilots who have yet to experience a high energy abort.

In the test and evaluation at Edwards AFB, eight refused takeoffs (RTO) were performed at 82,000 lbs gross weight; four on a dry runway, four on a wet runway. Six RTOs were performed at 90,000 lbs gross weight; three on a dry runway, three on a wet runway.

A maximum afterburner takeoff roll was initiated. When the aim refusal airspeed was attained, one throttle was retarded quickly to idle to simulate an engine failure. After a delay of approximately three seconds to simulate crew reaction time, the second throttle was retarded quickly to idle, maximum antiskid braking initiated and aft control stick applied. The control stick was continuously held as far aft as possible without lifting the nosewheel off the ground following the same procedures recommended for landing. With the spoilers extended, it was possible to attain full aft stick without rotation at 130-135 KIAS, depending upon the external loading (82,000 lbs - 130 KIAS; 90,000 lbs - 135 KIAS). Maximum antiskid braking and full aft stick were maintained to approximately 20 knots. As a preventive measure to keep the brakes from fusing and immobilizing the aircraft on the runway, the aircraft was never brought to a complete stop on the runway.



Looking directly into wheel assembly with the brake removed, the fuse plugs are visible in the wheel tie bolt flange.

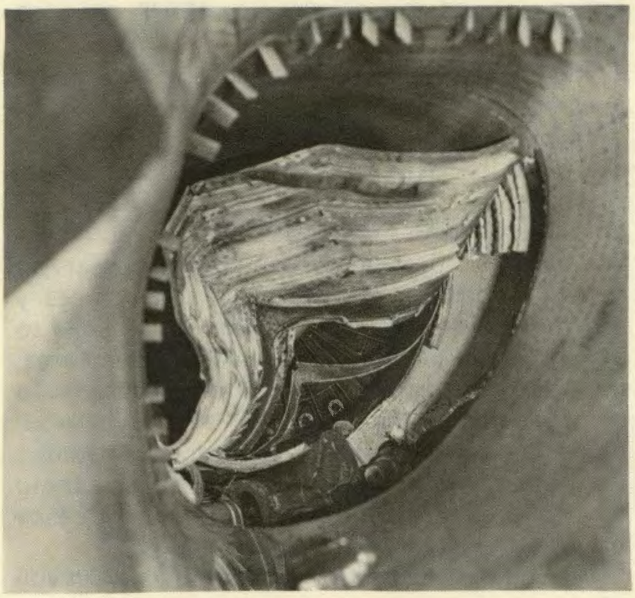
The results of the brake tests showed several items of interest. Some made it into the Dash One and are common knowledge. However, many of the test pilot's comments in the report did not make it into the handbook and are of interest. The following are extracts taken from the F-111A Category II RTO tests:

1. The RTOs conducted on a dry runway showed the brakes to be torque-limited down to approximately 20 KIAS, i.e., the brake pressure was never sufficient to lock the wheels. As a result, the antiskid did not cycle. (This means that if you have felt antiskid before on normal landing and don't feel it on a heavyweight, high speed abort - it's still working, so keep standing on the brake pedals ... you're not going to skid the tires.)

2. The RTOs conducted on wet runways showed the brake pressure to be sufficient to lock the wheels. As a result, the antiskid continuously cycled from the moment maximum antiskid braking was applied until the brakes were released. This indicated proper operation of the antiskid system, i.e., whenever a wheel skid was sensed, brake pressure to that wheel was decreased and a full wheel skid never occurred.

3. Brake fires occurred on several of the dry RTOs. In most cases, these were the result of hydraulic fluid leaking onto the brakes. The brake fires that occurred on the 82,000 and the 90,000 pound, 140 KIAS, dry RTOs must be classified separately. These fires, which were hydraulic fires, were much more intense. Sufficient heat was generated on both RTOs to melt the brake linings. In both cases, the fires started shortly before the braking was completed and were confined to the brakes; the fires never spread to other parts of the aircraft. Thermal plug protection caused deflation of both main gear tires shortly after stopping.

4. Brake fires did not occur on any wet runway RTOs. In fact, the wheel thermal plugs did not melt on the two highest brake energy wet runway RTOs. This would seem to indicate that the effective energy absorbed by the brakes during wet runway braking was somewhat (and possibly considerably) lower than that indicated by Figure 5-11 of the Flight Manual. This is due to the aerodynamic drag acting over a longer distance. Energy dissipated in aerodynamic drag during a wet runway stop is significantly higher (perhaps twice) than for a dry runway. However,



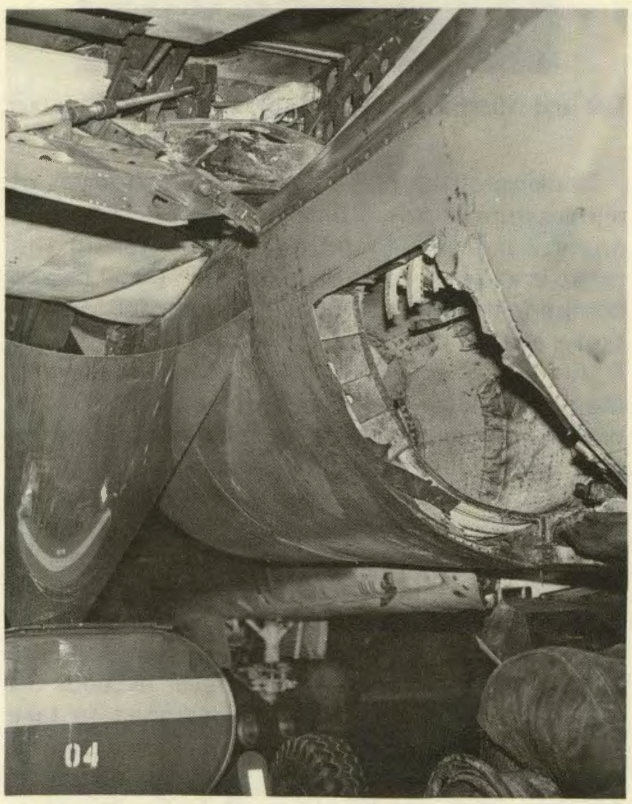
Damage to engine bay area.

do not be fooled; use the precautions contained in the Brake Energy charts just as you would for a dry runway.

5. Braking response was smooth, positive and immediate for all RTOs. Some brake fade was evident toward end of the braking on the dry runway RTOs, but it presented no problem. A small controllable side lurch was apparent at the initiation of braking when application of both brakes was not simultaneous. This presented no problem on a dry runway but did cause an intial yaw on a wet runway. The aircraft "slid" away from the original ground track, and thereafter, considerable attention was necessary to maintain direction and ground track through nose wheel steering. (What engineers refer to as the "right foot syndrome" may explain this. For right-handed people, the right foot is more sensitive to brake pressure than the left. A right-handed pilot will usually tend to stand on the left brake more than the right ... hence a directional control problem - a good piece of trivia to remember when operating on a wet or slick surface. For left-handed people, it's vice-versa.) Also, if aborting above 120 knots, remember to pull straight back on the pole. Any differential in the slabs is going to make the aircraft roll (wallow) and compound your steering problem.

6. The most difficult part of braking on a wet runway was maintaining full brake pedal deflection while steering with the rudder pedals. The difficulty arose because larger rudder pedal deflections were necessary to maintain directional control on a wet runway than on a dry runway. As a result, there was a tendency to reduce brake pressure on the "rearward" pedal. In addition, the pilot's foot occasionally slid up onto the pedal if a special effort was not made to "lock" his heel below the pedal prior to brake application. This amplified steering difficulties. In general, the aircraft was very responsive to small steering inputs at high speed since the rudder is still effective. Caution had to be exercised to keep from overcontrolling the aircraft.

7. At no time during these tests was aircrew safety a problem. Not once did the wheel thermal plugs fail to function properly, nor did the brakes explode. (This is what can happen if the thermal plugs fail to function properly. ED)



Damage to left engine intake, aux flap and inboard underwing panels. The wing fuel tank was also cracked by the exploding tire.

All of the above talks about heavyweight aborts which, hopefully, will remain a very low statistic for the future. There are some additional facts about the brakes that apply to everyday usage that might come in handy. All of it centers around heat buildup in the brake system which is the greatest threat to the tires and brakes.

LT COL MALCOLM F. BOLTON is this month's Fleagle T-shirt winner.

Tire and wheel assembly with blowout plug still intact.

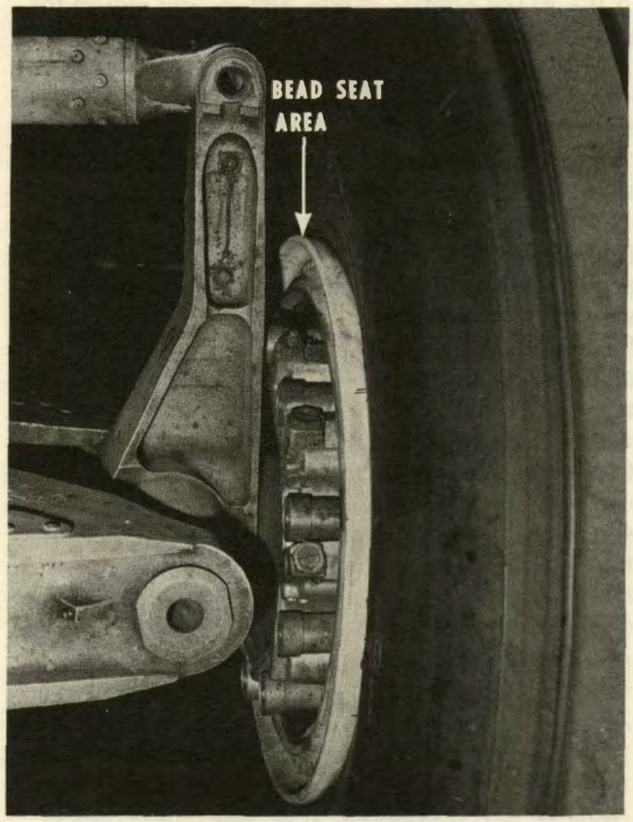
Thinking of the brake energy chart in terms of temperature allows a different perspective when analyzing brake technique. Considering the temperatures generated in the brake components, the top of the green zone on the brake energy chart represents a 1100° - 1200° F; the top of the yellow, 1300° - 1400°F, and the top of the red approximately 1900°F. The problem arises in keeping this magnitude of heat buildup from reaching the tires.

F-111 tires are taxied during qualification testing for a distance of 30,000 feet at maximum aircraft weight on a one-time test to simulate a long taxi. They are also subjected to a 10,000-foot taxi test before each of a series of takeoffs and 10,000 feet after each landing. During these tests, taxi speed never exceeds 30 mph. While aircraft tires are designed to take this, tire carcass temperatures can rise significantly, as much as 50°F. Aircraft taxied at higher speeds can have a much higher temperature rise. The rise in temperature is due to flexure of the tire sidewall as it rolls under load. This problem becomes critical when viewed in perspective of a tire's critical temperature limits.

High performance aircraft tires all use nylon cord. At temperatures of approximately 150°F, nylon begins to lose strength. If temperatures do not exceed 400°F, the cord will return to full strength as it cools. However, if approximately 400°F is exceeded, permanent loss of strength will occur; and at approximately 450°F, the cord will melt allowing the tire to fail catastrophically. It should also be noted that taxiing an aircraft does not cool tires/brakes.

Keeping this problem in mind, engineers designed the bead seat area of the tire/wheel assembly to never see more than 400°F with the tire inflated. With the temperature available on a heavyweight abort, it is absolutely necessary to deflate the tires as the bead seat area can easily see more than 400°. As it was not feasible to place thermal blowout plugs near the bead area, they were set in the wheel tie bolt boss area. To compensate for location, TAC aircraft blowout plugs are set to melt at 368°F. Just remember, on a hot day at Nellis and a long taxi, it's easy to have a tire casing in the 100° to 150° zone prior to ever getting on the runway.

So, you ask, what do these numbers warn you of as a crewmember trying to get a sortie airborne? Ponder the following:



Normal brake installation on F-111A. Arrow denotes tire/wheel bead seat area.

1. Never proceed with any suspect dragging brake. Never taxi with your feet on the rudder pedals where you can induce brake drag by the slightest of foot pressure. A dragging brake can easily add several 100°F to the brakes just in taxiing to the runway. This temperature rise decreases the brake's energy absorbing capability, and could cause you to start an abort with a brake already well into the green zone or even in the yellow zone. With brakes already hot, you could have a brake or fuse plug failure due to exceeding brake capacity.

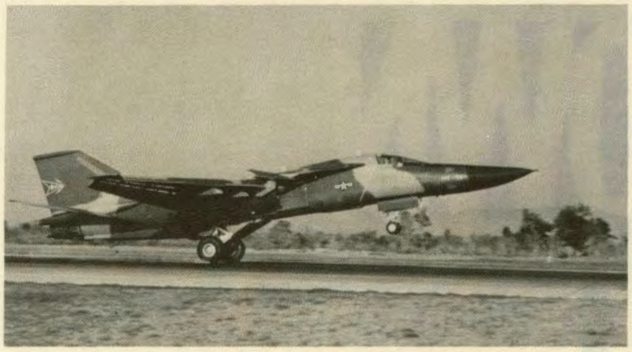
2. Avoid long distance taxiing without adequate cooling time. The heat buildup in the tire casing lowers the tire's tolerance to hot brakes. A high energy abort coupled with a lower heat tolerance could cause a tire/wheel explosion. Taxiing to quickcheck, back to the chocks for minor maintenance, then back to the runway may be too far to taxi without a cooling period. (Editor's Note: T.O. 1F-111-1 limits taxi distance to 30,000 feet.)

3. Maximum temperature in the wheel occurs approximately 45 minutes to one hour after braking. If for any reason you've done any heavy braking, wait until the tire and brake housing are cool to the bare hand before attempting anything else that may require braking.

4. Brake use is additive as far as heat is concerned. If you have a propensity to test the brakes just after touchdown, don't. Wait until you're ready to stop the aircraft, then get on the binders and halt it. Pumping the brakes, or easing on them throughout the roll, will add a great deal more heat to the brakes than one smooth application. The technique of easing on the brakes for longer than necessary will give you a good chance of melting the thermal plugs ... just about the time you get in the chocks ... tough to explain to your commander.

5. Hydraulic fluid temperature in the vicinity of the brake housing during a maximum gross weight abort can reach 500 - 600°F. Since the ignition point of MIL-H-5606 hydraulic fluid is 470°F and fire point is 250°F, a fire is imminent and will usually last as long as fluid is available. If you're doing heavyweight takeoffs, it makes good sense to preposition a fire truck on the departure-end where he can get at you in a hurry while you're trapped in the barrier with a burning wheel.

As stated at the beginning, the F-111 has an outstanding brake system. Hopefully, these words will add to aircrew knowledge of a critical system on the F-111.



NOTE: References: Air Force Flight Test Center, Technical Report 66-16, F-111A Category II Refused Takeoff Tests, September 1968.

Lieutenant Colonel Malcolm F. Bolton (M.S., Texas Christian University) is Commander, 430th Tactical Fighter Squadron, 474th Tactical Fighter Wing, Nellis AFB, Nevada. His service experience has included assignments with SAC, ADC, PACAF, and TAC, as well as staff assignments with NORAD and AFSC. He was assigned to the Air Force Plant Representatives Office and General Dynamics Corporation where he flew all models of the F-111 during production acceptance test flying. He is a graduate of Air Command and Staff College, and served a Southeast Asia combat tour in F-111s.

THE AMBULANCE DOWN IN THE VALLEY

Author Unknown

'Twas a dangerous cliff, as they freely confessed,
Though to walk near its crest was so pleasant;
But over its terrible edge there had slipped
A Duke and full many a peasant.

The people said something would have to be done,
But their projects did not all tally.
Some said, "Put a fence around the edge of the cliff,"
Some, "An ambulance down in the valley."

The lament of the crowd was profound and was loud
As their tears overflowed with their pity;
But the cry of the ambulance carried the day
As it spread through the neighboring city.

A collection was made to accumulate aid,
And the dwellers in highway and alley
Gave dollars or cents - not to furnish a fence -
But an ambulance down in the valley.

"For the cliff is all right if you're careful," they said;
And if folks ever slip and are dropping,
It isn't the slipping that hurts them so much
As the shock down below - when they're stopping."

So for years (we have heard),
As these mishaps occurred,
Quickforth would the rescuers sally,
To pick up the victims who fell from the cliff,
With the ambulance down in the valley.

Said one, to his pleas, "It's a marvel to me
That you'd give so much greater attention
To repairing results than to curing the cause;
You had much better aim at prevention.

For the mischief, of course,
Should be stopped at its source;
Come, neighbors and friends, let us rally.
It is far better sense to rely on a fence
Than an ambulance down in the valley."

"He is wrong in his head," the majority said.
He would end all our earnest endeavor.
He's a man who would shirk this responsible work.
But we will support it forever.

Aren't we picking up all, just as fast as they fall,
And giving them care liberally?
A superfluous fence is of no consequence,
If the ambulance works in the valley.

The story looks queer as we've written it here,
But things oft occur that are stranger.
More humane, we assert, than to suffer the hurt
Is the plan of removing the danger.

The best possible course is to safeguard the source
By attending to things rationally.
Yes, build up the fence and let us dispense
With the ambulance down in the valley.

PLACE THE FACE

This F-84 "Thunderjet" pilot was assigned to the 136th Fighter Bomber Wing in Korea during May 1952.

The response to our first "Place the Face" contest was great. But don't stop now ... keep those cards and letters coming each month for your chance to win the coveted "Fleagle Fanny Feather of Fate Award." The competition is keen, but everyone has an equal opportunity to win.

If you have any "vintage" photos of well known TAC personnel and would like them included in our contest, send them to:

TAC/SEPP
Langley AFB, Va 23665

Please include the name of the individual in the photo, the year and place photo was taken. All photos will be returned to the sender.

This month brings the photo of a dashing F-84 combat pilot ... can you "Place the Face?"

TAC TIPS

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

REFUELING MISNOMER : BRUTE FORCE DISCONNECTS

We have all briefed and rebriefed brute force disconnect emergency procedures and hopefully, we know that the disconnect should be accomplished as gently as possible. However, when you suddenly find that long striped thing on the back end of the airborne gas station stuck tightly in your sleek fighter's receptacle, can you still maintain your cool?

Try putting yourself in this pilot's cockpit and see if you can experience your own sensations and reactions when, and if, you ever get "hung up" with a tanker.

The flight was a normal refueling training mission at flight level 200. Everyone took their gas without incident until Blue Four initiated his disconnect. Both the receiver pilot and boom operator reported, "Negative disconnect."

After approximately 10 seconds (which probably seems like an eternity when you're ready to get off the boom), the receiver became unstable within the refueling envelope. It's understandable, isn't it? Your palms are all sweaty, knuckles white on the controls, mouth dry and sticky as flypaper, and there is a rapid pounding in your chest.

With verbal corrections back to centerline from the boom operator, the receiver returned and stabilized in position. Then, without further ado, the receiver dropped straight off the end of the boom before the boom operator could give any further corrections. The brute force disconnect cracked the boom fork assembly, and the receiver escaped without serious damage.

With a sigh of relief, everyone can now RTB normally instead of having to make an emergency landing with a refueling boom wrapped around his sleek fighter. And, how did your mental "hang-up" with the tanker come out? Hopefully, just as fortunate, if not better.

Here's one recommendation if you are ever faced with having to make a "brute force" disconnect: Coordinate the disconnect with the boom operator to reduce the possibility of damaging equipment. And, if you keep your cool, you'll be able to get free from that long striped thing with a "gently" forced disconnect.

•••

From the good guys at the Air Weather Service, comes the following:

IMPROVED PILOT WEATHER REPORT FORMAT

A new, improved pilot weather report (PIREP) format was recently instituted in the United States. The new format, in use since 15 October 1976, replaced the old "free form" PIREP format used for many years. The new PIREP format standardizes the sequence in which weather elements reported by pilots are transmitted to base weather stations and centralized forecast units. The standardized sequence follows:

/OV	Location (Position, Time, Altitude)
/TP	Type Aircraft
/SK	Sky (Cloud Bases, Coverage, Tops)
/TA	Outside Air Temperature
/WV	Wind Velocity (Direction, Speed)
/TB	Turbulence (Intensity, Type, Altitude)
/IC	Icing (Intensity, Type, Altitude)
/RM	Remarks

Pilots can continue to report weather conditions observed in flight without regard to the new format. Meteorologists will encode PIREPs in the new format for transmission. The only difference you will notice is that meteorologists will request that you report location of observed weather elements with respect to navigation aids such as TACANs, VORTACs, VORs, or TVORs.

Pass on a PIREP ... help out a friend.

PHANTOM SHEDS PARTS

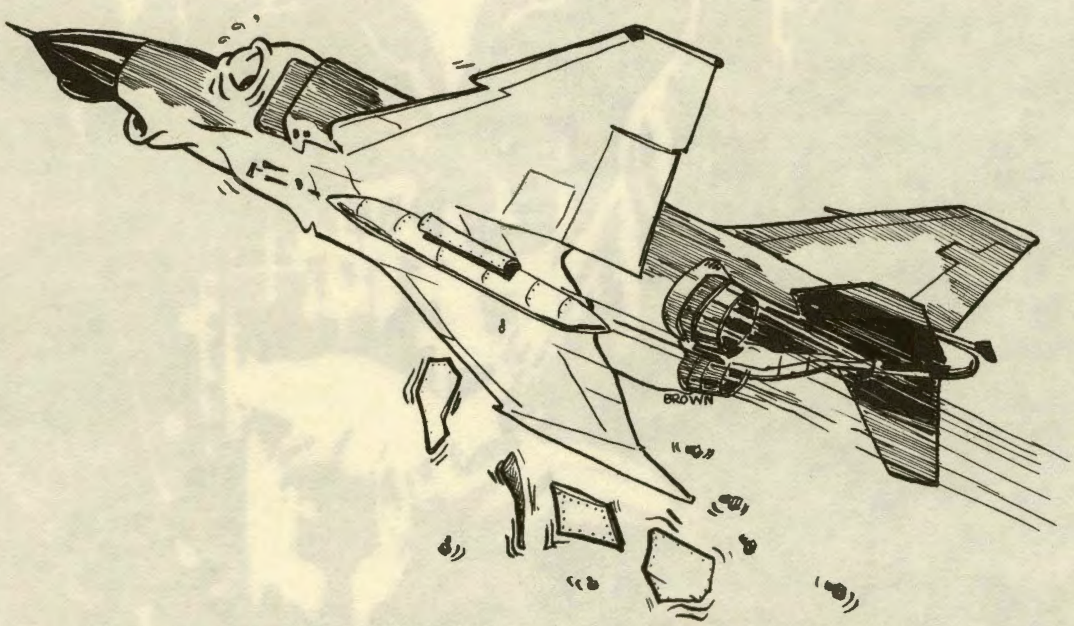
The mission was the last leg of a cross-country flight. The Phantoms made single-ship takeoffs and while the flight lead was monitoring number two's rejoin, he noticed something wrong. The wingman's right travel pod was open approximately two inches and what appeared to be the pitot cover and its cord were trailing approximately 10 feet behind the travel pod.

The departure was immediately terminated, airspeed reduced, and a recovery to the departure airpatch initiated. When the aircraft was configured for landing and the angle of attack increased, some of the aircraft's "780" gear departed the travel pod. As the F-4 touched down, the aux air door locks fell out and were subsequently found on the runway. Inventory of the travel pod after engine shutdown revealed a nose gear downlock, two main gear downlocks, one pitot tube cover - with streamer and cord, one tail hook pin, and one static ground cord to be missing.

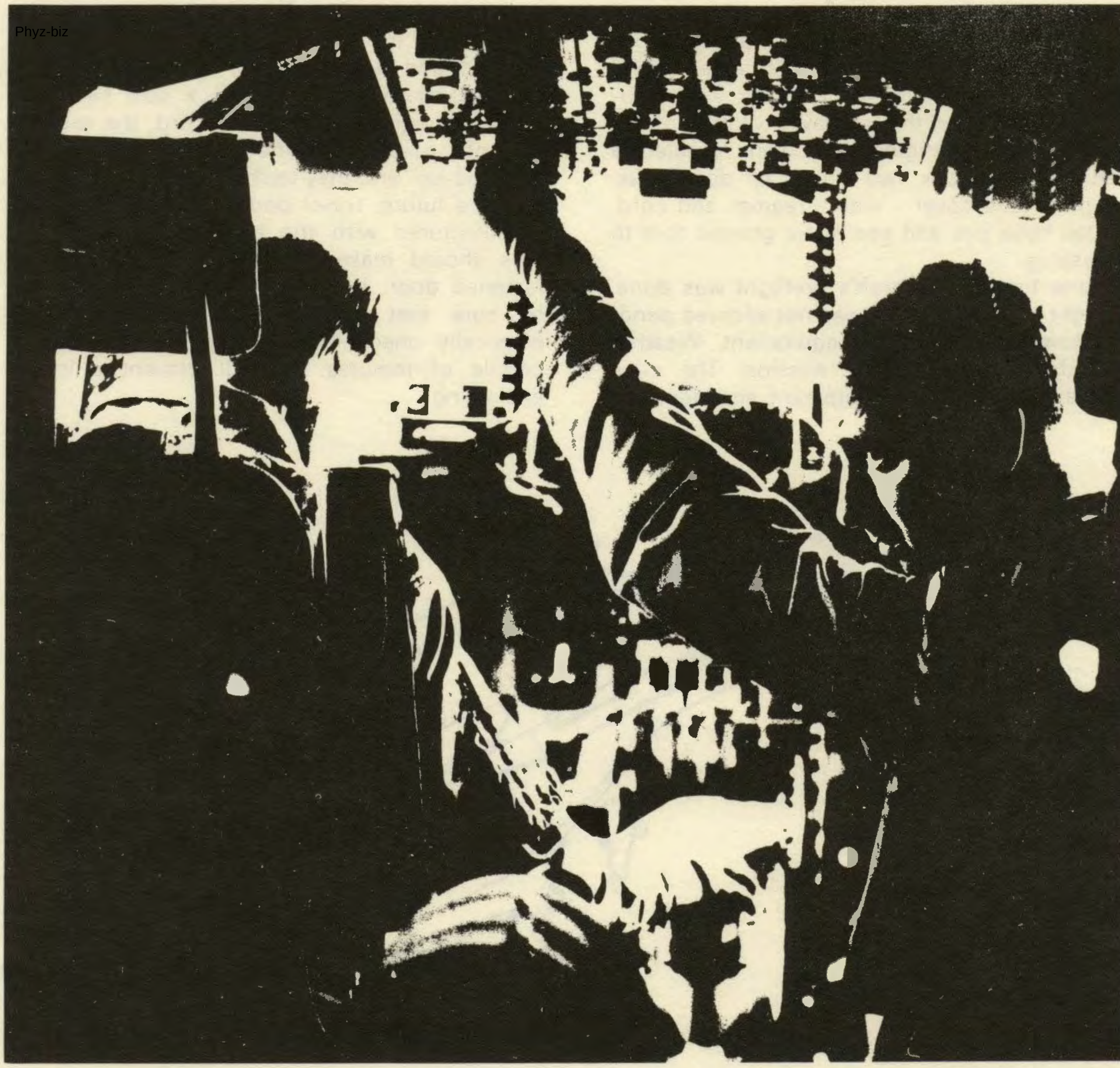
At the time the aircraft's preflight was done, the right travel pod door was not secured pending stowage of the 780 equipment. Weather precluded continuing the mission. The crew chief stowed the 780 equipment and departed the area. The aircrew stayed with the aircraft. Forty-five minutes later, the weather improved, and the aircrew decided to continue the mission.

Another crew chief arrived and secured the left travel pod. This was physically checked by the aircraft commander. He did not physically check the right pod, although he observed the door closed. The quick check was performed by the same crew chief who had secured the left travel pod door. No ground interphone cord was used by the quick-check crew. At this time, the WSO asked the AC if the travel pods had been secured and expressed the desire to ask the quick-check crew to recheck pod security. However, without the ground cord, the request was not passed on. The aircraft was given a "thumbs-up" and they took off.

In the future, travel pods at this wing will be manufactured with the hinge on the bottom. This should make it easier to detect an unfastened door. However, the only way to really be sure that travel pods are secure is to physically check them. It'll only take another couple of minutes, but it'll prevent a lot of explaining.



PHYZ-BIZ



STORIES WITH MORALS

By Lt Col Harold Andersen
HQ TAC Physiological Training Coordinator

In any discussion of physiological incidents, we tend to consider only the more spectacular cases, i.e., those involving hypoxia or decompression sickness. While these cases may be more intriguing, the potential for mishaps from such mundane disease as sinus pain, ear pain or abdominal gas pains should not be ignored.

Here's an example of one aircrew who was "laid low," literally and figuratively, by a common sinus block. A routine descent from FL 280 to 16,000 feet (cabin altitude decreasing from 6,000 to 5,000 feet) generated right ear and facial pain. Nasal spray with Afrin, followed by several vigorous Valsalva maneuvers, failed to relieve the problems. When cabin altitude reached 5,000 feet, the crewman lost consciousness, which was regained when the cabin altitude was increased to 6,000 feet. He subsequently lost consciousness on two other attempts to decrease cabin altitude (increase pressure) to 5,000 feet. His fellow crewmembers, fearing for his life, administered mouth-to-mouth resuscitation and external cardiac massage. On orders of a ground-based flight surgeon, the aircraft was landed while he was unconscious. Subsequent examination by an ear, nose and throat (ENT) doctor provided a diagnosis of "maxillary barosinusitis." The hapless crewmember admitted to having a "cold" for the previous week, but since he had never had either an ear block or sinus problem in the past, felt he would have no problem flying with it.

Compounding the problem, caused by his poor judgment, was the unfortunate coincidence that he was a member of that small (but not rare) population group which exhibits a fainting reaction to severe pain. (NOTE: The application of mouth-to-mouth resuscitation and external cardiac massage should be initiated only when indicated by absence of respiration and pulse.)

In another case a sinus block occurred during a landing approach; the IP was hit by severe pain, and turned over the control of the approach to his student. He landed short of the runway, striking some power lines. Result: Two fatalities and one aircraft destroyed. Neither the IP nor the student ever dreamed that a sinus block would be their final undoing.

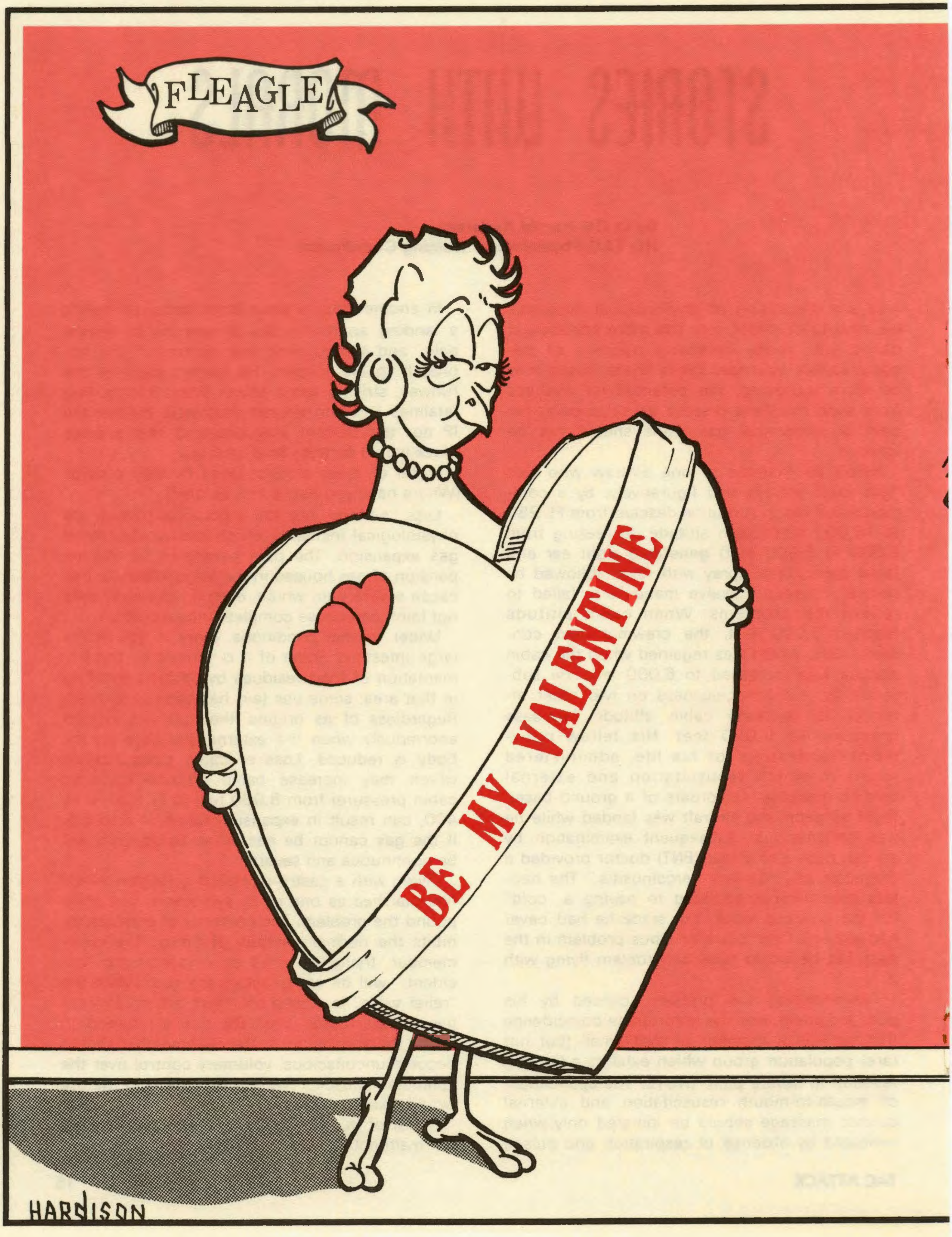
Moral of these stories: Don't fly with a cold! (Where have you heard that before?)

Less common, but still a potential hazard, are physiological incidents which involve abdominal gas expansion. The pain generated by the expansion of gas housed in the large intestine, can cause severe pain which, even if the victim does not faint, can cause complete incapacitation.

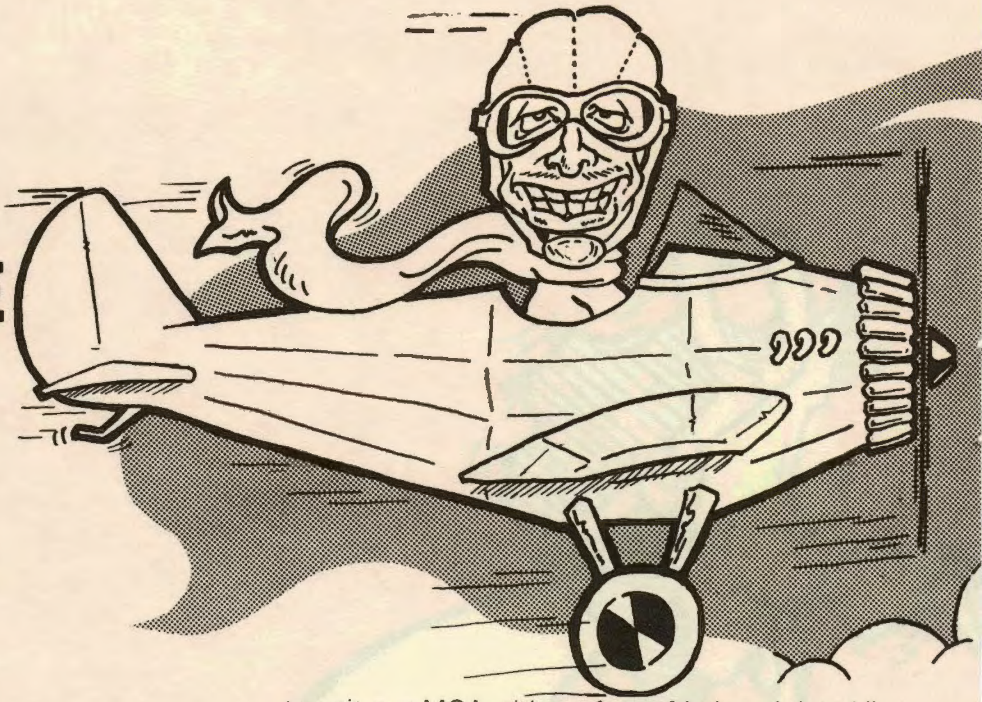
Under normal conditions, there is gas in the large intestine. Some of it is formed by the fermentation of food residues by bacteria dwelling in that area; some gas (air) has been swallowed. Regardless of its origins, that gas will expand enormously when the external pressure on the body is reduced. Loss of cabin pressurization which may increase cabin altitude (reduced cabin pressure) from 8,000 feet to FL 300 or FL 400, can result in expansion ratios of 3 to 5.5. If the gas cannot be passed as flatus, pain will be continuous and severe.

Flying with a gastro-intestinal condition which has diarrhea as one of its symptoms, can compound the problem. The presence of diarrhea inhibits the normal passage of flatus. The crewmember, trying to avoid an embarrassing "accident," will be apt to retain the gas. When the "relief valve" is closed off, there are no alternative escape routes ... all the gas is retained. If, under these conditions, the crewmember should become unconscious, voluntary control over the sphincter muscles would be lost and nature would take its course.

Moral of this story: Don't fly when you have a G.I. malfunction.


FLEAGLE
BE MY VALENTINE
HARDISON

IT'S A HOSTILE WORLD



By Capt Terry Schwalier
Office of Safety
HQ 9TH AF
Shaw AFB SC

"Ya got that, 3," Chuck exclaimed.

"Yeah, I got it." I must have looked disinterested. After all, this was my third air refueling/tactics mission this week. Everything should be standard-standard. I felt as though I could predict everything that Chuck was going to say and must have looked like it. No wonder Chuck wanted to make sure he had a captive audience ... at least, I thought I could predict everything he was going to say.

"Aircrew responsibilities: clearing. I'm primary for that. You wingmen help out by clearing through the guy you're flying off of. Our good weather today should see a lot of private pilots out doing their thing, so keep your head out.

"Areas of primary concern will be when we're below 10,000 MSL around Saulsburg City, Myhrumville, and Lake Rundell Municipal Airport. We should be pretty safe in the PCA for refueling, in the MOA for our road recce, and on the range for our deliveries ...."

That didn't sound right. "Wait a second, Chuck, what's so safe about a Military Operating Area?" I interrupted.

"Well Mike, that's restricted airspace isn't it? Must be or the DO wouldn't have gone through the hassle that I heard he went through to get it. No prop jockey in his right mind would dare transit our MOA without fear of being violated."

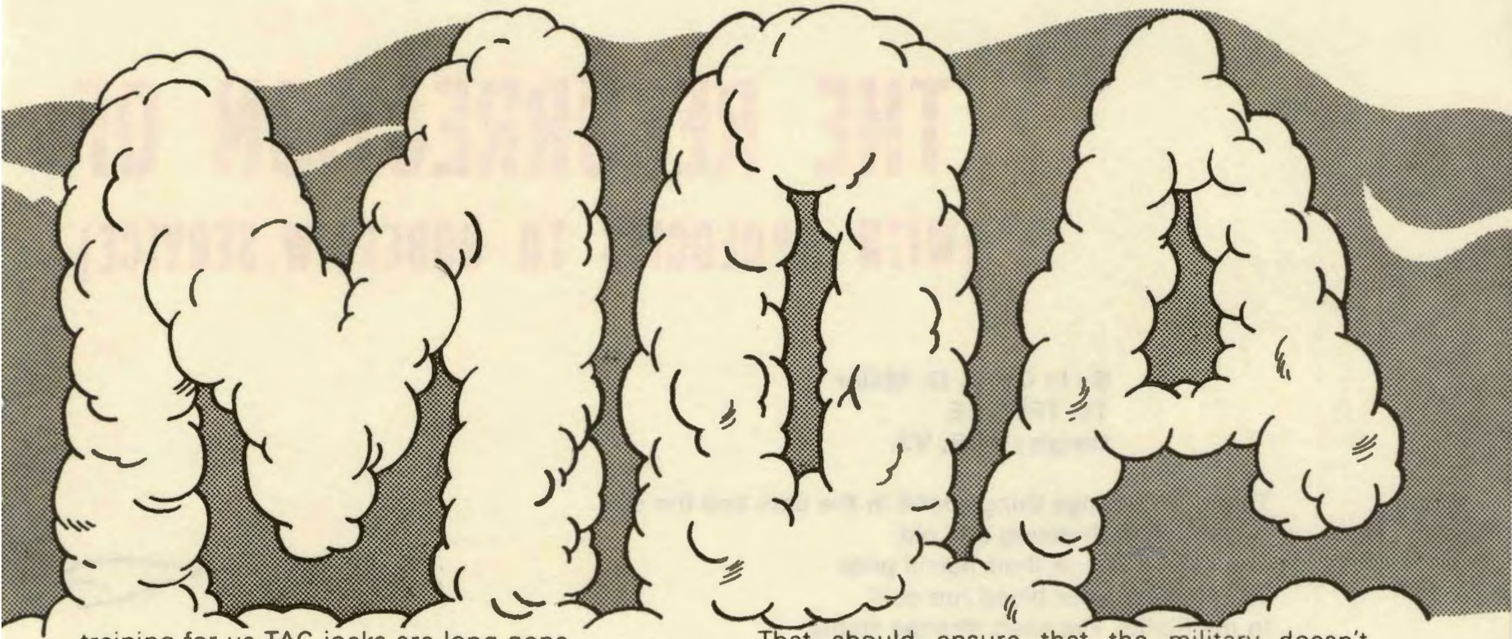
"That's not right, Chuck," I replied. "A MOA is not restricted airspace. I spent a lot of time in DOV over the last 3 months trying to get the MOA approved. I learned plenty. If we have 5 minutes, I can give you the low-down."

"Press," Chuck said, as he leaned back in his chair. "We still have 20 minutes until desk-out."

"OK," I retorted, beginning to feel a little pressure as three sets of eyeballs refocused on me. "First off, a MOA (Military Operating Airspace) is an area which has been designated for use by the military to contain non-hazardous activities. By non-hazardous I mean acro and ACM/BFM. (Hazardous activities are those in which we release weapons. That requires a restricted area.)

"A MOA was given to us for three reasons. First, it insures IFR traffic is kept away from us. This is accomplished with ATC vectoring other IFR aircraft around the MOA or restricting you to a certain portion of the MOA and vectoring IFR aircraft through the other portion. You might think of yourself as being on an IFR 'VFR inside' clearance while working a MOA.

"The second reason for establishing MOAs is to confine military activities into specific areas. You could call the MOA the natural outgrowth of the old Intensive Student Jet Training Areas around ATC bases. I'm afraid the days of using any area between airways for aero or formation



training for us TAC jocks are long gone.

"The third, and probably most important, reason for MOAs is to notify the civilian pilots as to where our training areas are. Hopefully, they'll think twice before transiting our MOA on a VFR flight plan. However, the point we must remember is that the civilian aviator is perfectly legal in pressing through our MOA. All we can do is inform him of the area's existence. The MOA is not restricted airspace."

"OK," Chuck interrupted. "What's the difference between a MOA and one of our warning areas?"

"Nothing really," I replied. "ATC services are about the same. The only difference is that a MOA is over land and a warning area is over water. **Neither protect you from anything but IFR aircraft.** Like the MOA, the warning area is not restricted airspace.

"Another area the DO is concerned about for midair collision potential is our low-level route structure. I'll bet you didn't know that he had to review our low-levels twice a year to insure areas of high conflict potential are avoided.

"You remember that the last leg of the Hunky Dory 132 was swung around to the south last month. That move was a result of this low-level review."

"I sure wish he'd do something about point Charlie on that same low-level," Chuck interrupted again. "Three other low-levels cross at that same place ...."

"He is," I replied. FLIP requires us to coordinate with Aman AFB, the route originator, before our schedulers list it on the daily frag. That should ensure that the military doesn't schedule a conflict. We should also see a new CIF next week that will require us to make a call on 255.4 - 2 miles out from the intersection."

"Super." Then pausing and squinting his eyes as if to ponder a problem, Chuck added, "Doesn't look as though the situation is ever going to look better. The local areo club has nearly tripled its membership over the past 3 years. They've also picked up four new airplanes ... seems as though any VFR flying outside of a published area or route is not too smart."

"I'll second that!" Then I remembered a conversation I had with the chief of current ops last week. "As a matter of fact, the DO types are now trying to negotiate a new mid-level (1,500 AGL to 10,000 MSL) route structure to give us published routes and keep us IFR between our training areas and low-level routes. Rumor has it that beginning in mid-77, we will have to be in a published training area/route to fly above 250 KIAS when below 10,000 MSL. A mid-level route structure would then serve dual purposes: one to help out our midair collision avoidance efforts, and the other to allow us to keep the smash up."

Chuck looked at his watch. "We'd better press." Then tightening his facial expression for an air of authority, "That was good info, Mike. Let's keep our heads out ALL the time." Then, with a wink, he added, "It's a hostile world out there."

"2."

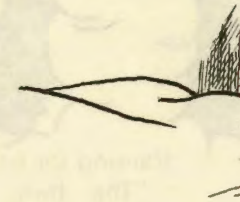
"3."

"4." came the reply. →

THE RESURRECTION OF

(WITH APOLOGIES TO ROBERT W. SERVICE)

By Lt Col T. D. Miller
1st TFW/SE
Langley AFB, VA



There are strange things done in the dark and the sun
By airmen both young and old;
The safety files in their horrid piles
Would make your blood run cold;
In my flights, I've seen strange sights,
But the strangest I ever did see
Was not in the air, but in a barnyard where
I resurrected Lieutenant Lee.

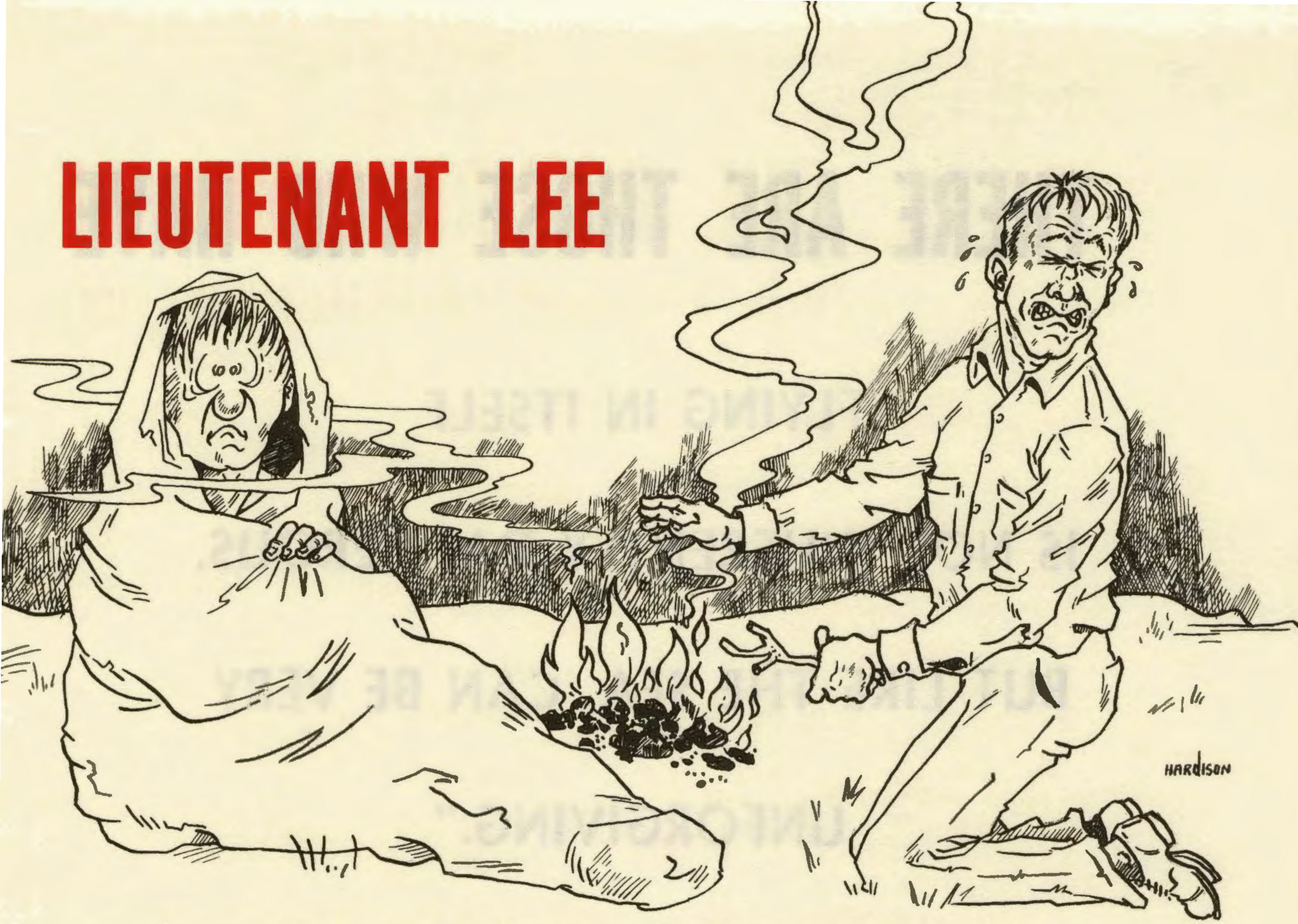
Johnny Lee was from Miami, where the southern breezes flow,
Why he left his home in the South to roam the skies,
God only knows.
Though often told, the lessons bold seemed to pass him like a sieve,
In his homely way he'd often say,
"This ground safety is for others to live."

Now Johnny's great steed was a Zoomie's need,
And a sight I'll never forget,
T'was painted bright red and a dragster's dread,
Four hundred plus in a 'Vette.
A Lieutenant's dream or so it would seem,
With power to spare 'neath the bonnet
But with Johnny the driver, and who could be wiser?
He drove at warp two - like a comet.

The snow and the ice, a seasonal vice, made our Johnny long for his home.
T'was the cold that he dreaded, as the flight line he treaded,
Which chilled clear through to the bone.
Though cautioned by commanders at meetings
On weather, seat belts, tires and speeding,
With extra advice from the Top to the unit
Car safety was seeded, but how often heeded?
By some, but not our Lieutenant.

He was on his way, that fateful day
With his Gib on the long drive to town
A few beers at the bar with stories bizarre helped bring his judgement down.
On a road both narrow and winding, Johnny's speed in the 'Vette was most blinding.
Patchy ice on a curve caused a terrible swerve, with Johnny too late to respond.
In a blur of red, the car took its head,
Left the road, dropping Lee off in a pond.

LIEUTENANT LEE



The scene I observed as I rounded that curve, ten miles from the nearest town,
One comrade out cold, the other most bold, neck deep in ice water dark brown.
The lad in the car appeared better by far, his seat belt kept him from leaving,
The one in the pond, the lieutenant named John, would require some very fast heeding.
To the pond I'd run, though my lips were numb and dragged the body clear,
He was cold as death, but a spark of breath I could see in the winter air.
A car blanket I found, lying around and placed on my frozen chum
A fire would be great, but maybe too late, I needed heat without sears.
Then glancing around, I fatefully found a corral with fifty odd steers.

My course was decided, my actions abided as I piled on the steaming mess,
The cattle out there, with their curious stares, continued to produce - more or less.
I was packing it on at ten after one, a mound like a mummy most grand,
When a voice quite clear, came through to my ear,
"I'm quite warm now, it's the smell I can't stand!"

There are strange things done in the dark and the sun
By airmen both young and old;
The safety files in their horrid piles
Would make your blood run cold.

In my many flights, I've seen strange sights,
But the strangest I ever did see
Was not in the air, but in a barnyard where
I resurrected Lieutenant Lee.
(MORAL - FASTEN YOUR SEAT BELT AND YOU WON'T GET COLD!)

THERE ARE THOSE WHO HAVE

"FLYING IN ITSELF IS NOT INHERENTLY DANGEROUS, BUT LIKE THE SEA, CAN BE VERY UNFORGIVING."

By Capt Raymond K. Ferrell
21st CompW/Flight Safety
Elmendorf AFB, AK

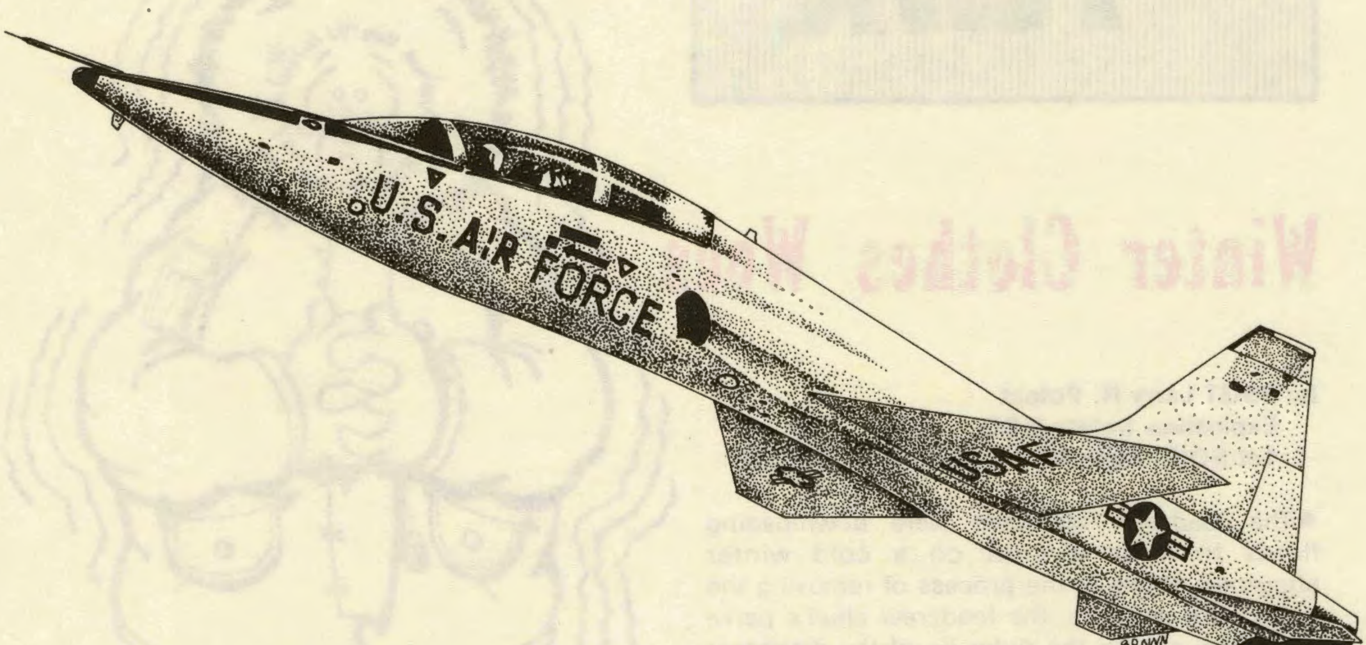
As one of the more experienced T-38 IPs in my flight, I was proud to be awarded some of the more marginal students in the class. Perhaps it was my natural skill, ability and cunning which afforded me this "status symbol?" More recently, I have come to the conclusion that it was the flight commander's revengeful payment for not laughing at his jokes. At any rate, there was one student from whom I learned a great deal. Unfortunately, the learning process was only one-way ... he washed out.

It was a few years ago, while assigned to Air Training Command, that this incident, which significantly affected my attitude toward aviation, occurred. The student was having problems in the landing phase; specifically, the flare. I think his problem could be summarized in one statement. His landings would have been acceptable if the runway had been 25 feet higher or he had been 25 feet lower. Since this was not the case, problems developed which affected his ability to think and perform while airborne.

These problems came to a climax on one of his final "pre-solo" rides. No longer responding to verbal instructions, Lt Lurch had been sent around by the mobile control unit several times for flaring high. These high flares were naturally accompanied by low airspeed. He was becoming quite frustrated and angry with his performance. To help relieve the tension, I demonstrated a pattern and landing. To my surprise, his next pattern was quite good. I was in a mild state of shock as we approached the overrun. Never before had he maneuvered his aircraft so close to the ground with such skill.

Approaching the overrun, the T-37 mobile control unit located beside a parallel runway

AND THOSE WHO WILL



broadcast on guard frequency for a T-37 on final to go-around. Thinking the radio transmission was directed toward him, ol' Lurch immediately selected full afterburner on both engines. While his actions were excessive, nothing he did surprised me. Rather than salvage the resulting bad approach, I decided to let him continue the go-around. Noticing his reluctance to assume a climb attitude, I thought he was overreacting to his usual low airspeed condition.

Approaching the threshold, and still maintaining a slight descent, his intentions became quite clear. With both engines operating at full afterburner and with excessive airspeed, Lurch lowered the nose of the aircraft. Realizing he had no intention of going around, but rather "going in," I took control of the aircraft. The immediate sequence of events now appears hazy to me. However, I recall my eyes had assumed a protruded position; throat had completely closed; heart was pounding and slight nausea instantaneously appeared. The entire sequence of events took only a few seconds.

For awhile, I shared poor Lurch's anger and frustration, but finally realized that he had taught me an invaluable lesson. Frequently, IPs are cautioned to avoid complacency with exceptionally good students. The chances are remote, but the possibility always exists that an exceptional student can fly the aircraft into realms of flight from which recovery is difficult, if not impossible. The fact that a person who always flies with marginal students can become complacent also, is never discussed. It is just taken for granted you should be ready for anything from even the "predictably" unpredictable. Such is not the case.

I'll not bore you by drawing some obvious conclusions about complacency, safety, etc. However, this incident brought forth further meaning to the phrase, "Flying in itself is not inherently dangerous, but like the sea, can be very unforgiving."

chock talk

...incidents and incidentals with a maintenance slant.

Winter Clothes Woes

by SSGT Larry R. Poteat
Explosives Safety NCO
1st SOW, Eglin AF Aux Fld No. 9, Florida

● The loadcrew members were downloading flares from an aircraft on a cold winter afternoon. While in the process of removing the ninth flare package, the loadcrew chief's parka sleeve caught on the outer lip of the dispenser tray, causing him to drop the flare package. The loadcrew tried unsuccessfully to catch the flare, but it fell four feet to the ground and was rendered unserviceable.

● An instrument technician was to troubleshoot an aircraft's static pressure system during the cold, predawn hours. The front seat and rails had been removed by the egress personnel, but they failed to insure the canopy jettison pin was installed. The instrument technician also failed to insure the safety pin was installed when he resumed his work. During an attempt to retrieve a tool which he had dropped in the cockpit, his parka sleeve caught on the canopy jettison initiator linkage and it actuated.

The ideal environment to perform maintenance is in warmth and comfort. However, Mother Nature gives us the cold shoulder during the winter months and out comes the bulky winter clothing to protect us from the elements. The two mishaps mentioned above illustrate how winter clothing can significantly reduce our ability to perform routine maintenance tasks by restricting movement. Winter clothing also affects our senses of sight and touch ... senses which we all heavily rely upon to perform our jobs.

Winter clothing has caused many accidents because people were not aware of just how much it restricts their performance ... accidents which have caused injury to personnel, and thousands of dollars damage to equipment. Don't let yourself be caught in a winter weather trap. Take a little extra time when you're all bundled up in your parka and mukluks ... it will save time in the long run.

EAGLE FUMES

The four F-15s took off and proceeded to the tanker. Everything was uneventful until after lead had finished his refueling. At this time, lead noted a slight headache developing in the temples and front part of his head. During an "Ops" check, the pilot selected 100 percent oxygen and noted a slight odor which had the effect of a mild inhaler. He went back to normal oxygen and initiated a return to base. During the return, he developed a slight nauseous feeling, declared an emergency, and put number two in the lead.

Most of the descent was flown with the oxygen mask off because this was more comfortable, and no odor could be detected in the cockpit. The headache and nauseous feeling did not lessen or increase in intensity until landing. The pilot, however, did feel very warm during the last 5 minutes of flight but had no difficulty in flying the Eagle. The nauseous feeling disappeared approximately 20 minutes after landing ... but the headache lingered for another hour.

The aircraft was impounded and tests were performed on the oxygen converter, mask, and connector. No contaminants were found. Tests were then conducted on the oxygen regulator and hose. These revealed carbon disulfide produced from the hose.

The aircraft's windshield had been changed three days prior to the incident, and this was the first flight since. The pilot involved in the incident later identified the sealant as having the same odor he had smelled in flight.

What happened? An unauthorized silicone compound was used to prepare the surface and it retarded the curing of the sealant. The sealant contains carbon disulfide which is toxic. Because it had not fully cured, it gave off vapors which produced the symptoms.

We were very fortunate this time. The incident occured near a suitable landing sight, and the pilot was able to land before he was incapacitated. The ending could have been tragic ... *all because someone used an unauthorized compound to prepare the windshield surface. Use the proper materials and equipment when performing any maintenance.*

WANTED

A new Editor for TAC ATTACK. Qualifications: Grade of Captain or Major, with recent experience in tactical fighters. Must be remote ineligible and possess some writing ability. Reporting date: September thru December 1977.

If you're interested in a good job and completing a staff tour, all at the same time, contact Lt Col John Patterson or Capt Marty Steere, TAC/SEP, Langley AFB, VA (AUTOVON 432-3373/2937) for additional information.

GROUND CONTROL APPROACH (GCA)

By Mr. J. W. Hafley
ATC Consultant
Headquarters TAC

The GCA has been with us for 20 years, but its days are numbered. "YOU'RE ON GLIDE PATH, ON COURSE, THREE MILES FROM TOUCH DOWN." Those are comforting words on a dark and rainy night when you are returning from a tough mission or terminating a long IMC flight. It's nice to know someone cares and is down there watching your progress and guiding you to a safe recovery.

But time has a way of changing the complexion of all things. Our methods for precision approach are no exception. GCA is on the way out in favor of the Instrument Landing System (ILS). The transition started several years ago when Air Force declared ILS to be the primary precision approach aid. The ILS is in common use today for strategic operations, and more and more TAC base ILS installations are being commissioned. Within the next three years, GCAs will start to be phased out at many locations.

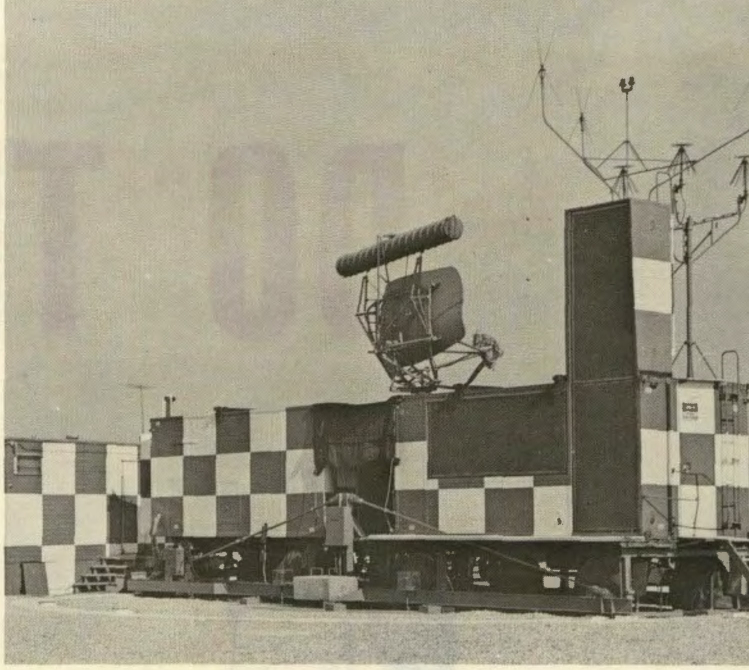
The GCA has been around since 1948, and has served its purpose well. But existing equipment is obsolete, and new generation gear is extremely expensive and will be in limited quantity. Maintenance and spare parts costs have soared and the system requires trained operators which is another heavy expense. It all boils down to the cost effectiveness equation, and GCA just doesn't measure up any more.

The ILS, on the other hand, is an unmanned, reasonably inexpensive, and passive facility which is in worldwide use and provides essentially the same service as GCA. It doesn't lose targets in heavy rain like GCA and has a backup transmitter which automatically comes on line if something breaks. It provides the pilot a visual reference of his position during the approach, and even has backup communications in many instances. Furthermore, the ILS is the approach concept upon which the new generation Microwave Landing System (MLS) is based. So eventual transition to such a system will be far easier from ILS than it would be from GCA.

The big kicker in ILS is the fact that an airborne receiver is required, where GCA only needs two-way radio capability. That fact alone has delayed an earlier move to dispose of GCA. For TAC F-4s, the GCA has been, and still is, a must for precision approach service. But that, too, is changing. The retrofit program is underway for the F-4 and other birds in Air Force (both active and Air Reserve Forces). In about two years, there should be a receiver in most of the birds we fly.

Another ILS limitation is that it is not tactically transportable. You just can't set one up overnight at an unprepared airfield. We do have TALAR, an interim Microwave Landing System (MLS). It is suitcase size, but only a few C-130s are equipped to use it; and no more ground or airborne equipment is being procured. So, for tactical needs in the near-term, the GCA is still our only precision approach aid. Because of this, we will retain GCA at selected stateside bases to augment ILS and to provide training for controllers, maintenance men and pilots.

In the future, however, both GCA and ILS will give way to the international standard Microwave Landing System. TALAR is just one version of interim development in microwave frequency systems which exist today. There are several civil systems ... the Army has one, and the Swedish Air Force has used them for years. But the United States is holding fast against proliferation and lack of commonality in this new generation of precision approach aid. The FAA and DOD are committed to international competition in 1977 for an ICAO standard system. It



is a long range effort. By the time the signal format is identified, specifications drawn up, contracts let, prototypes built and tested, and finally, production started on both ground and airborne hardware, some years will have passed. When it comes, it will be a new generation facility. Used like ILS, it will provide accuracies and reliability for automatic approach and landing. In fixed base versions, it will provide variable glide slopes and curved approach paths for flexible traffic management. The system will be produced in a number of versions, from a "suitcase" tactical facility with straight course and one glide slope, to the most sophisticated systems employed for Category 3 (0-0) landings at major airports. In between, will be austere civil versions for general aviation and feeder airports, and for Category I military fixed base requirements. A building block concept will be used so that ground systems can start out small and have growth potential to the more capable versions when aviation demands increase. Being an ICAO standard, both civil and military aircraft will be able to use ground systems worldwide. The only limiting aspect will be the ground elements available and the aircraft receiver capability. An aircraft computer will be necessary to take advantage of the sophisticated fixed base MLS. But because of common signal format, each aircraft will be able to fly any MLS and use the combined ground and airborne capabilities

So that's the outlook in the air traffic control area. The new systems will take some getting used to. In the long run, they should provide both aircrews and controllers with better, safer service.

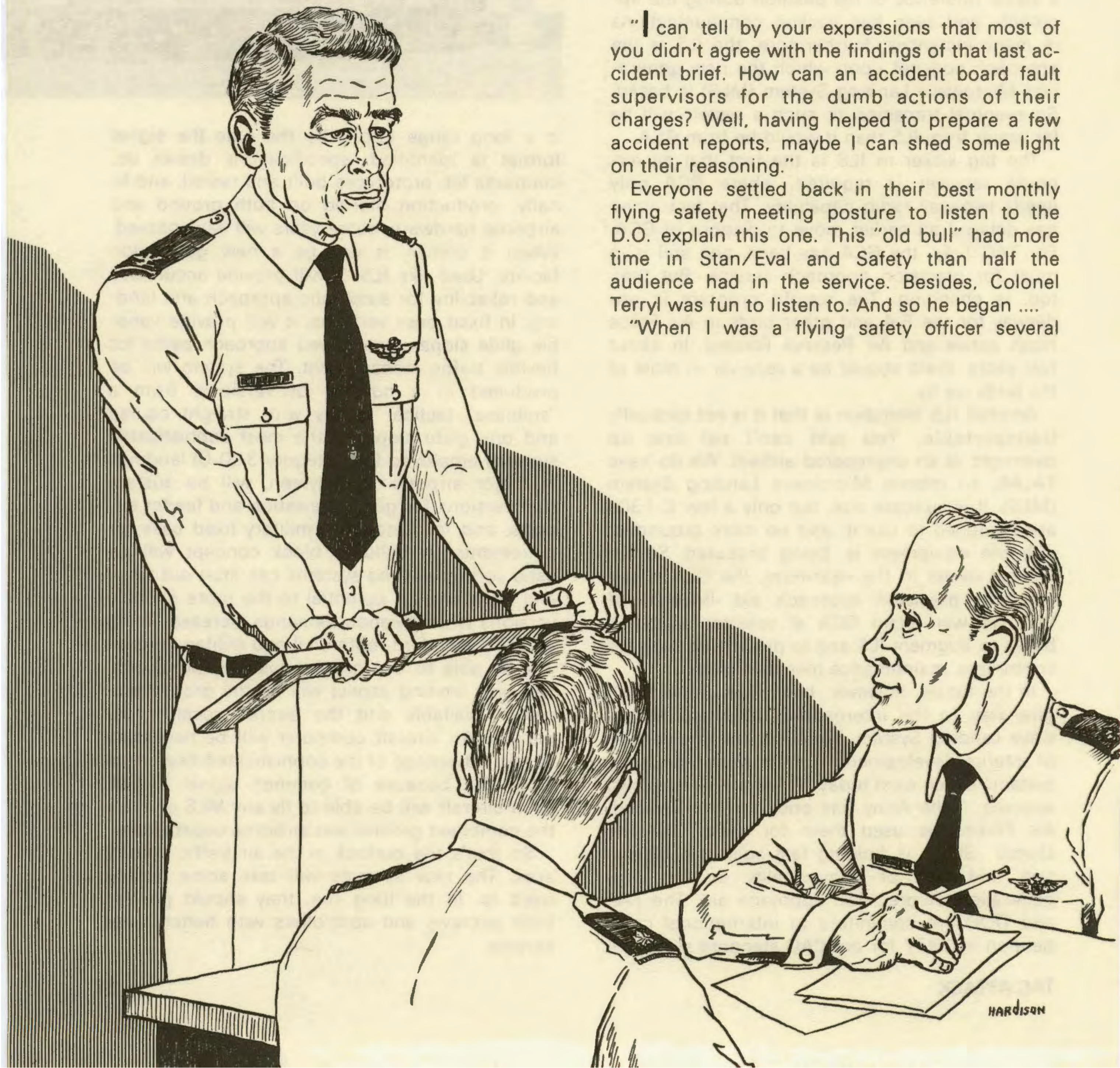
DO THE JOB...

By Maj Mike Frenzel
9th AF/Flight Safety Officer
Shaw AFB, SC

"I can tell by your expressions that most of you didn't agree with the findings of that last accident brief. How can an accident board fault supervisors for the dumb actions of their charges? Well, having helped to prepare a few accident reports, maybe I can shed some light on their reasoning."

Everyone settled back in their best monthly flying safety meeting posture to listen to the D.O. explain this one. This "old bull" had more time in Stan/Eval and Safety than half the audience had in the service. Besides, Colonel Terryl was fun to listen to. And so he began ....

When I was a flying safety officer several



all of it !!!

years ago, I was required to make the often times difficult distinction between plain findings and the actual cause of the accident. So what's the difference? A 'Finding' is a significant step in the sequence of events that leads to the accident itself. A 'Cause' is a finding which, if eliminated, would probably have stopped the accident sequence. If my memory serves me correctly, I think the safety manual reads something like .....

"' ... A cause is an act, omission, condition or circumstance which contributed to the accident and which, if corrected, eliminated or avoided would have prevented the accident ...' This also summarizes the charter of an accident board. The name of the investigative game is to find the root cause of the accident, the accident stopper.

"It's not hard to discover that the airplane crashed ... we have a smoking hole for that. Hopefully, we have the pilot who can tell us what happened ... but this doesn't tell us why it happened. Suppose the pilot was clearly at fault. How does this bleed over into the supervisory area? Simple. Answer this question. Did the supervisor, by some act, omission, condition, or circumstance, set the pilot up for this accident? In too many cases the answer is yes. About this time some of you are saying to yourself - 'I'm glad I'm not a supervisor.' But you are ... some are more responsible than others, but you're all supervisors. Remember the gear-up landing? Does anyone have a problem faulting the mobileer who left the RSU early? I don't think so ... what about the IP who popped late, placing the student in an unfamiliar environment? Not quite as clear-cut but, if the IP had done what he briefed he was going to do, a major accident may not have happened. By the same token, the flight lead who observes sloppy wing work but doesn't critique the individual really wasn't a flight lead ... he was just up front. The simulator IP who runs a boring 2-hour period or terminates early just copped out on his responsibility. The duty desk officer that gave a sloppy out-brief and failed to catch an unsigned FCIF item; the flight commander who knew one of his pilots stayed up past crew rest and let him fly anyway ... and so on. The list is endless. And, yes, it's a 'what if' list. But 'what if' your act, omission, condition, or circumstance actually contributed ....

"Now, turn it around. 'What if' we accepted the heavy responsibility placed on us by virtue of ... 'what if' we demanded perfection of ourselves and others, 'what if ----------?' We could do a great deal to reduce accidents, both directly and indirectly, by just doing what's expected ... by doing our jobs ... all of it."

As the D.O. started to sit down, a question came from the back of the room. The youngest pilot in the wing timidly asked, "What is the individual pilot's responsibility?"

"That's easy," replied Colonel Terryl. "Exactly what you just did ... ask questions. Look for the 'what if ...' situation. Don't assume that the IP or flight lead will stop you before you go too far. Know or find out your limits ... in advance. There is a lot we can do for ourselves. Not one of us is immune to mistakes. The other day at the simulator, I was a little sloppy on my crew coordination. I knew it and so did my other half, as well as the SEFE console operator. Yet nothing was said. I didn't accept my responsibility to critique myself, my crew, or my operator. I was totally wrong. I hope I'm smarter next time.

"I guess I've talked too much already so I'll stop on this one last thought. Do your job ... all of it. Make sure you have an answer for the question, 'what if ...?'"

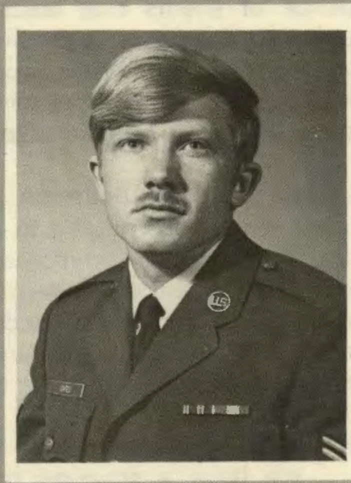
As the D.O. sat down, the audience knew he had hit close to home. He laid the blame right where it belonged, on the shoulders of everyone there. All crew members have a responsibility in the prevention of their own accidents and in the prevention of the accidents of others.

After that little talk from the D.O., everyone seemed to perform a little better. The Stan/Eval minor discrepancy rate went up for a while, but then came back down; not because of complacency, but because the aircrews got better. Rumor has it the D.O. had some corrective action on his last check ... and thanked his SEFE for it.

TAC SAFETY AWARDS

Maintenance Safety Award

Airman First Class Jett Cates, 35th Organizational Maintenance Squadron, 35th Tactical Fighter Wing, George Air Force Base, California, has been selected to receive the Tactical Air Command Maintenance Safety Award for this month. Airman Cates will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.



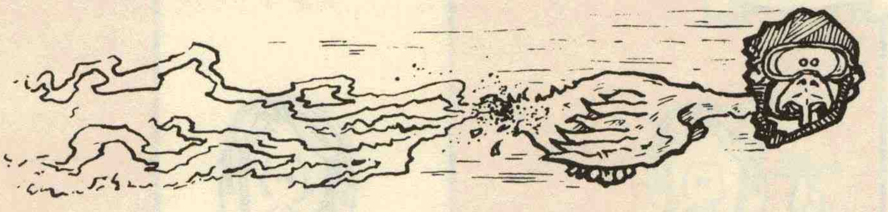
A1C Jett Cates

Crew Chief Safety Award

Sergeant Teddy L. Conners, 35th Organizational Maintenance Squadron, 35th Tactical Fighter Wing, George Air Force Base, California, has been selected to receive the Tactical Air Command Crew Chief Safety Award for this month. Sergeant Conners will receive a certificate and a letter of appreciation from the Vice Commander, Tactical Air Command.

Sgt Teddy L. Conners

TAC TALLY



	TAC			ANG			AFR		
	Dec	thru Dec 1976	thru Dec 1975	Dec	thru Dec 1976	thru Dec 1975	Dec	thru Dec 1976	thru Dec 1975
TOTAL ACFT. ACCIDENTS ►	1	33	28	1	11	17	1	4	2
MAJOR ACFT. ACCIDENTS ►	1	31	26	1	10	14	1	3	2
AIRCREW FATALITIES ►	2	17	20	0	5	7	0	1	0
TOTAL EJECTIONS ►	0	25	18	1	6	9	1	2	4
SUCCESSFUL EJECTIONS ►	0	18	13	1	6	9	1	1	4

TAC'S TOP "5" THRU DEC

TAC FTR/RECCE	
accident free months	
14	4 TFW
12	1 TFW
9	366 TFW
8	474 TFW
7	57 FWW

ARF FTR/RECCE	
accident free months	
57	127 TFW
25	132 TFW
23	156 TFG
18	122 TFW
18	117 TRW

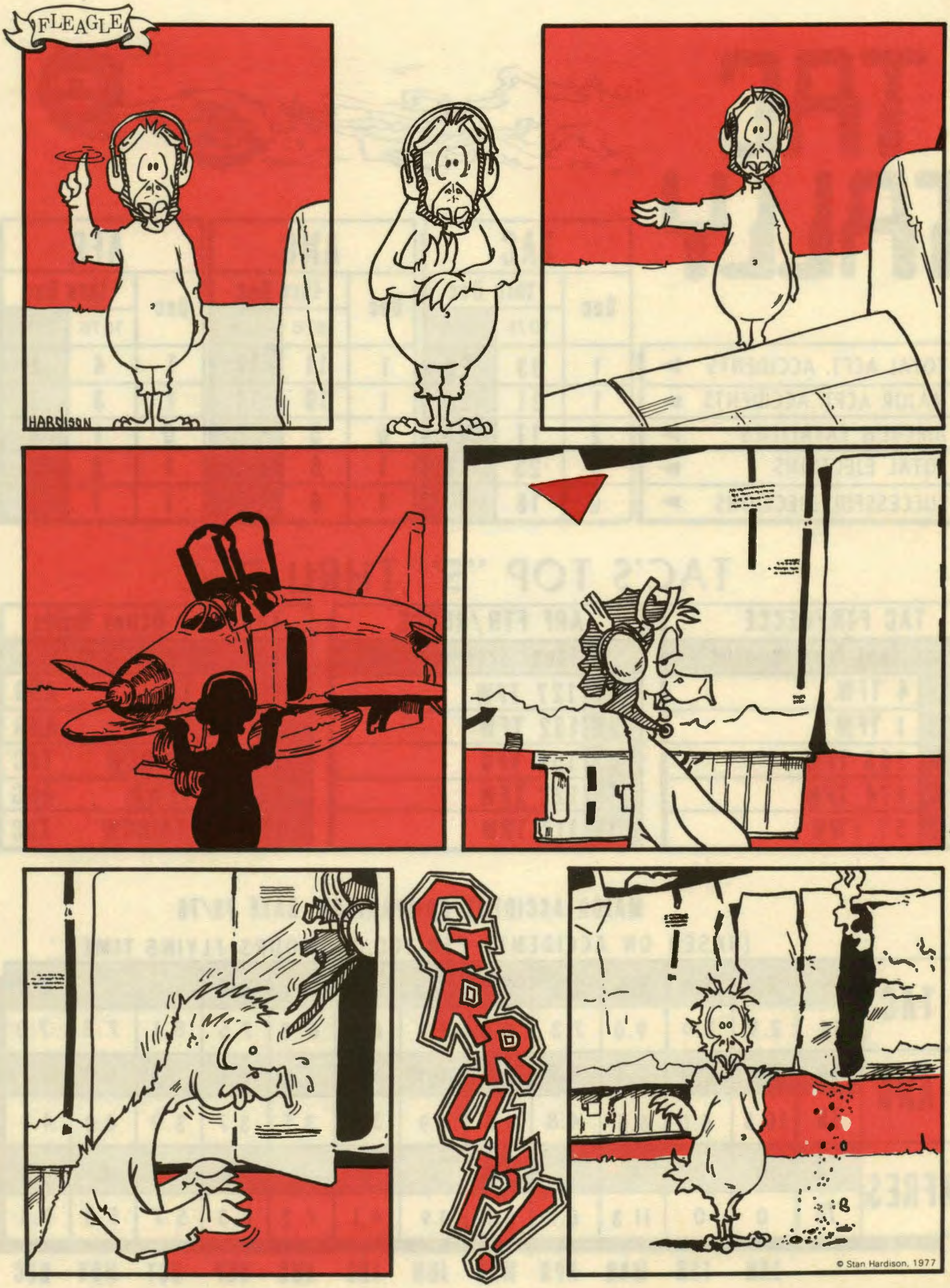
TAC/ARF Other Units		
accident free months		
113	182 TASG	ANG
93	135 TASG	ANG
85	507 TAIRCW	TAC
82	193 TEWG	ANG
80	602 TAIRCW	TAC

MAJOR ACCIDENT COMPARISON RATE 75/76

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

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	75	7.9	5.4	3.6	2.6	3.1	3.5	5.3	6.4	6.0	6.6	6.3	6.1
	76	2.9	8.6	9.0	7.3	8.0	8.1	6.9	6.8	7.5	8.1	7.3	7.0
ANG	75	5.3	2.8	5.3	3.7	4.7	6.8	5.8	5.1	5.1	5.5	5.4	5.4
	76	10.5	5.0	6.5	4.8	3.8	3.9	3.3	3.5	3.7	3.9	4.0	4.1
AFRES	75	0	0	0	0	0	0	0	0	0	0	0	4.9
	76	0	0	11.3	8.1	6.1	4.9	4.1	7.2	6.3	5.7	5.3	7.3

★ U.S' GOVERNMENT PRINTING OFFICE: 1977 735 - 023/4


FLEAGLE
HARDISON
GRULP!
© Stan Hardison, 1977