

TAC ATTACK

MARCH 1969



YOUR ACHING TOOTH...Page 4

for efficient tactical air power

TAC ATTACK

MARCH 1969
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TACTICAL AIR COMMAND

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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.

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Angle of ATTACK



the vital ingredients...

Working around lethal equipment on the flight line is a routine operation in the Tactical Air Command. Take a look around — jet intakes, propellers, liquid oxygen, high pressure air and on and on. Add complacency or unfamiliarity to this environment and your accident toll will begin an insidious build-up. These are the vital ingredients which can wreck the best laid safety program.

The nature of our problem is two-fold. On one hand we have trained crew chiefs and maintenance men who work on the line day after day. On the other, we have munitions personnel, transportation personnel, security police, etc., who work primarily in other areas.

The system fails when our well trained and qualified flight line personnel are lulled into a false sense of security by days of repetition. The results may be a LOX spill on a man who is not wearing his protective equipment, a man bashed and bruised by a flailing hose venting 3000 psi from an air bottle or compressor, or a man being drawn inexorably into the screaming maw of a jet engine intake.

The system fails when a guard walks into a propeller, or when the trailing edge of an aircraft wing slices into the cab of a roving patrol truck driven by a dozing airman. It fails when a bomb-lift with a hydraulic leak gives up and crushes a load crew member's hand, or when a wing tank, thought to be empty, crashes to the ramp spewing J-P4.

These are accidents which have happened, they are accidents that this command does not need, they are all preventable accidents! The cure? . . . SUPERVISION plus TRAINING and EDUCATION.



R. L. Liles

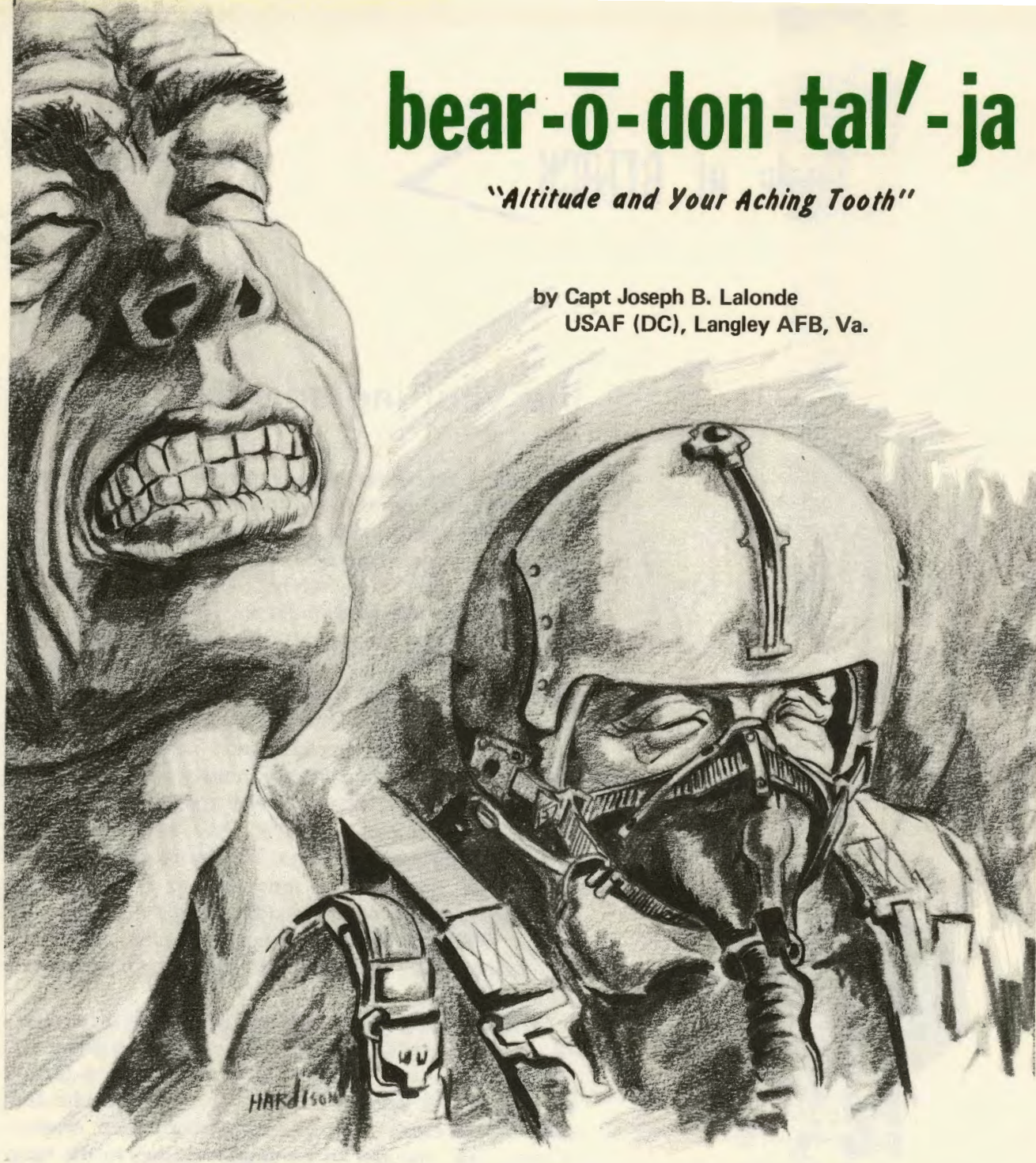
R. L. LILES, Colonel, USAF

Chief of Safety

bear-ō-don-tal'-ja

"Altitude and Your Aching Tooth"

by Capt Joseph B. Lalonde
USAF (DC), Langley AFB, Va.



Toothache at altitude is a fairly new phase of the dental profession, and is therefore still being researched and analyzed. Much still remains to be learned. Most of the information now available consists of educated speculation and generalizations based on experience from treatment of past cases.

Barodontalgia (formerly called aerodontalgia) is the medical term used to describe toothaches at altitude. Any flyer who has had a toothache, or

any other dental problem while on a mission, knows what a miserable experience this can be.

Fortunately, barodontalgia — ground-level pressure, confined by non-porous tooth walls, equalizing to altitude pressure through tooth pulp and root canal — is not very common. However, its infrequency of occurrence does not decrease the possible seriousness involved.

At one time we believed that trapped air or gas bubbles under fillings could cause pain due to gas

expansion at high altitudes. Perhaps you have even heard the story of fillings exploding at altitude. Although there is no concrete evidence to disprove this, it is none-the-less no longer considered to be a causative factor in barodontalgia.

As for the "exploding filling" tale, there is a much more likely explanation. Many individuals when under stress, tend to clench their teeth together very tightly. Since aircrew members are quite often subjected to a great deal of stress, they would definitely qualify on this point. In so doing they may also grind their teeth harshly, though unconsciously. If this occurs, there is a definite possibility of fracturing a filling or even a portion of a tooth. Incidences of this have more than likely provided the seed for conception of the exploding filling stories.

Symptoms of barodontalgia generally occur between 5,000 and 35,000 feet. Reduction of barometric pressure is the causative factor, whether in an actual flight or during an altitude chamber ride. Most frequent symptoms occur during climb. When pain occurs during ascent, the tooth is considered to be vital — that is, the tooth is still alive and the nerve and blood supply have not yet been destroyed.

That dull pain that occurs between 9,000 and 12,000 feet can be caused by one of three separate problems. One of these is a long standing inflammation of the dental pulp, which contains the nerve and blood supply of the tooth. Cavities, cracked fillings which allow the acids of the mouth to irritate the underlying tooth structure, deep fillings, teeth upon which an unusual amount of stress has been placed; any of these reasons (and more unnamed) would be sufficient to cause this inflammation.

There is a large sinus located on either side just above the upper posterior teeth which could also be responsible. If an individual has a history of sinusitis, this maxillary sinus would certainly have to be considered as a source of the pain. Except for people trained in dentistry, a maxillary sinusitis would most likely be indistinguishable from a common toothache.

The third possible reason for a dull toothache at this altitude is pyorrhea. The exact terminology for this particular disease is a "lateral

periodontal abscess." This is an abscess involving tissue surrounding the tooth, though not actually the tooth itself. The end result however, is the same, in that you acquire an aching tooth.

If sharp pain occurs on ascent, say in the vicinity of 30,000 to 35,000 feet, you must consider the possibility of a large cavity, which can cause an acute or severe inflammation of the pulp. This particular symptom can also be caused by a new filling. This filling may have been rather deep because of extensive decay. In some cases it may take approximately 72 hours for a dental pulp to quiet down after filling. In extensively decayed teeth requiring very large and deep-seated silver fillings, it may take several weeks for this quieting down or stabilization of vital tissues.

Toothaches during descent are less frequent than those occurring during ascent. Again sinusitis would have to be considered as the possible offender. Another would be an abscess or some other pathology involving the apex or root tip of the tooth.

If pain persists following descent, it is very likely a periapical abscess. This would involve actual degeneration of pulp tissue. You should immediately consult your dental officer in this instance. Inadequately filled root canals can also be a source of trouble.

Inflammation of the gum around a partially erupted tooth is another source of pain at altitude. Unerupted or impacted wisdom teeth can also be considered a possible trouble zone.

Certain ulcers which occur in the mouth, may cause quite a bit of aggravation. Especially if they are located in areas where pressure from an oxygen mask affects them. Oxygen flowing directly over these lesions can bring about rather severe pains. Although this does not actually come under the heading of barodontalgia, it can still be a very real discomfort.

No doubt many commanders have at one time or another, been somewhat disgruntled to find one of their aircrewmen grounded for a period of time following dental treatment. Flying can be hazardous following certain dental procedures, particularly if surgery is involved or certain types of medications administered.

Most dentists or oral surgeons will recommend

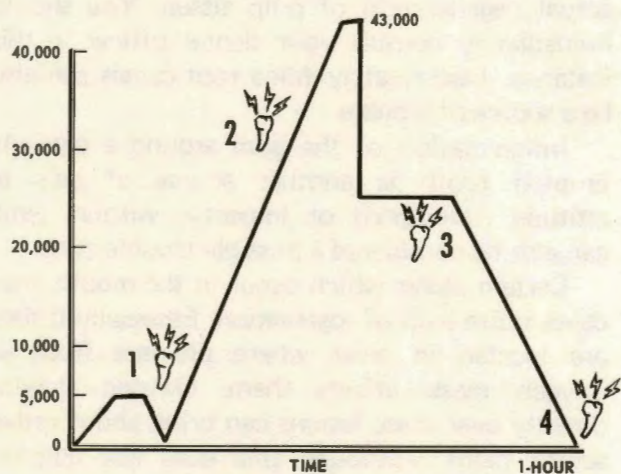
Your Aching Tooth...

a flying restriction of 48 to 72 hours for aircrewmembers following any oral surgery. In these cases medication is generally required which will hamper efficiency of the individual — which compromises safety.

Reoccurrence of bleeding due to variations in barometric pressure, is another reason for limiting activities of an aircrewman following surgery or after certain types of gum treatment. We even recommended that flying be restricted for a minimum of twelve hours after local anesthetic for a simple filling.

Again I would like to mention that the incidence of barodontalgia is very low. One of the most significant reasons is the existence of pressurized cabins in modern aircraft. This provides for maintenance of a consistent, comfortable, barometric pressure.

There is of course an obvious and simple solution to the problem of barodontalgia. It should have become apparent to the reader at this



LEGEND

1 DULL PAIN-ASCENT
INFLAMED PULP

2 SHARP PAIN-ASCENT
VERY INFLAMED PULP

3 DULL PAIN-DESCENT
PULPLESS TOOTH
OR BAROSINUSITIS

4 PERSISTENT PAIN-
AFTER DESCENT
PULPLESS TOOTH
WITH ABSCESS

Typical profile indicating approximate altitudes where personnel experience dental pain.



Barodontalgia

1. gingival abscess-dull pain-ascent
2. apical abscess-dull pain-descent
3. inflamed pulp-sharp pain-ascent (from caries or recent dental treatment)
4. inflamed maxillary sinus-associated dental pain-ascent and descent

point that a person with healthy teeth, gums, or other associated structures of the mouth, cannot and will not have the misfortune to experience toothaches at altitude — or anywhere else for that matter.

All Air Force dental officers are aware of the demanding schedule and long inconsistent duty hours imposed on flying personnel. It is doubly important therefore for rated people to take exceptionally good care of teeth and oral tissues. Brushing teeth after every meal is not as difficult a chore as it would seem, even in an airplane. This may be a little far-fetched, but if brushing isn't possible, at least rinse vigorously with water so as to dislodge any food particles which may stick to your teeth.

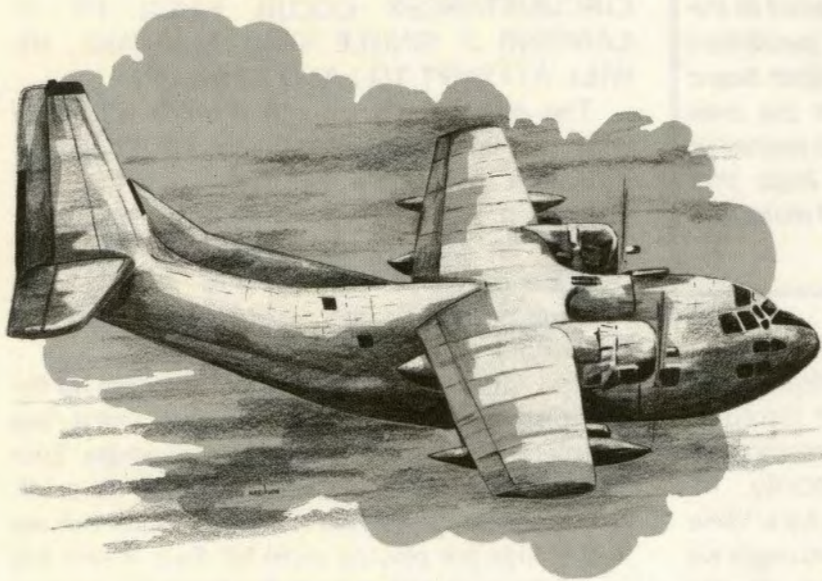
The first 15 to 20 minutes after eating is the critical period for acid formation which, in turn, leads to the initial stages of dental decay. It is for this reason that the sooner you brush after meals, the less likely you are to acquire cavities.

Proper eating and drinking habits are of course essential to good dental health as well as health in general. This plus good oral hygiene and regular visits to the base dental clinic will most certainly keep your dental problems at a minimum, whether they be at altitude or on the ground. ➤

TACTICAL AIR COMMAND

Pilot of Distinction

Capt D. O. Runco



Captain Dominic O. Runco of the 319th Special Operations Squadron, England Air Force Base, Louisiana, has been selected as a Tactical Air Command Pilot of Distinction.

Captain Runco was ferrying a C-123K from McClellan AFB, California, to Hickam AFB, Hawaii. At one hour past the point of no return a fuel leak developed in the power section of number two engine. The engine was shut down. Air Rescue Service was alerted and an HC-130 was dispatched to escort the disabled aircraft.

Captain Runco initiated a slow descent to a lower altitude compatible with single engine performance, but could not maintain altitude. He started number two jet, but was forced to shut it

down because of excessive fuel use. Captain Runco realized the aircraft would not reach land in its present configuration. He had three choices: bailout, ditching, or restart number two recip. He elected to restart the engine. Although the engine developed a heavy oil leak, it operated until the aircraft was 185 miles from Maui.

At this point he shut down the recip and restarted number two jet. With remaining fuel and oil at minimum Capt Runco made a successful landing on Maui.

Captain Runco's professionalism and determination during a serious inflight emergency readily qualify him as a Tactical Air Command Pilot of Distinction.

ACCIDENTS WE HAVEN'T HAD...for some time

LANDING GEAR UP

Beginning with this issue, we will run a series of articles concerning accidents which have not occurred in TAC for some time. As the old saw goes, we don't have any new ones — only variations of the ones which have occurred in the past. Our current accidents are publicized automatically, world-wide, as the accident board goes about it's business. Not so with the ones back in the past, we tend to forget, and sooner or later — history will repeat itself. We hope that these articles will serve as a primer and make you think about these subjects — hard.

Tactical Air Command avoided pilot factor gear-up accidents in 1968. In fact, our record is much better than a year, and for that reason, we may be very susceptible to one shortly. In January, we examined a gear-up landing by a "crew served" aerospace vehicle. On these two pages we intend to look at this phenomena from a single seat fighter pilot's office...but many-motor types, stay with us. Gear-up landings apply to all.

The cause of gear-up landings can't be pinned to any particular state of mind or omission. If it could, we would have a sound program "in being" to head off the next one. We usually discover, after the fact, that the accident was caused by the interaction of a human and a combination of factors connected with some situation, either self or externally generated.

There are some who feel that gear-up landings are inevitable as long as we fly aircraft with retractable landing gear. Rather than get involved in that tricky statement, let's say that the conditions which contribute to gear-up landings will inevitably be present. Then add this

thought — EVERY PILOT, THROUGHOUT HIS CAREER, IS SUSCEPTIBLE TO A PERSONAL, CHANGING, SET OF CIRCUMSTANCES WHICH WILL ALLOW HIM TO LAND GEAR-UP. IF THIS COMBINATION OF CIRCUMSTANCES OCCUR WHEN HE IS LANDING A SINGLE SEAT AIRPLANE, HE WILL ATTEMPT TO LAND GEAR-UP!

The onset of the situation which will cause your gear-up landing is insidious by it's nature. You do it to yourself! YOU set yourself up so a distraction will be allowed to break the habit pattern set by...who else? YOU! Once this occurs and you are on short final, nothing short of a gun position in the overrun will prevent you from trying to land.

Now let's discuss how you set yourself up for the distraction. For our purposes, we'll use complacency and apprehension to illustrate. Ever look for your house in Capehart during the break or in a pattern? Ever find it and then squint to see if the kids are playing outside? Ever watch the cars driving in and out of the base? Maybe you have smoke in the cockpit and are busy trying to determine if it is electrical or from the engine. Perhaps there's a nasty vibration bugging you, or how about an intermittent overheat light? In either case, depending on the pilot, the furthest thing from your mind could be a positive "landing gear down" notion. You are very susceptible to distraction, your mind is not set on landing. **YOU ARE NOT FLYING YOUR AIRCRAFT, YOU ARE RIDING IN IT.**

There are many things which will distract a pilot not intent on his work. A beeper on guard channel, concentrating to make the pattern spacing look good to the troops on the ground, a wild ride through jetwash — we could go on all day. We have all experienced many distractions in

the pattern and have many more to come. After missing the gear lowering step, you are just about cooked. As you turn base and automatically call your gear check to the tower, all you can hope for is that gun position in the overrun because you have just made up your mind to land gear-up.

You will note that the control tower and mobile control have been omitted from this discussion. The tower and mobile are crutches, and discussing their role would only muddy the water. You may not have a mobile officer on duty when you land. The tower personnel may or may not see you screaming down final with your gear up. The crux of the problem is in the cockpit — with you. It would be like depending on a drag chute or a barrier to stop you after landing. Nice if they work, but don't depend on anyone but yourself.

Now, how can we prevent gear-up accidents? Is there a way to beat this system in which we entrap ourselves? Perhaps not in all cases, but there are many things we as pilots can do to reduce the possibility. First, and this may sound funny, you must believe that it CAN happen to you. Second, you must personally determine your own susceptibility to the situations in which you will be "set up" for the distraction to strike. And third, what indications will your aircraft give you that the gear is not down.

There are pilots who believe that they cannot have a gear-up accident. Obviously, if this is your situation, you will ignore what has been said here and a friend will probably be telling you this, NO PILOT IS IMMUNE FROM A GEAR-UP LANDING. It's very simple. You have no protection from landing gear-up because the cause has no bearing on your flying skill, your flying time, your rank (or lack of it), your knowledge of your aircraft, or your opinion of yourself. You have good days, you have bad days — somewhere, sometime, it will all jell and you'll get the scare of your life. Perhaps you will get away with an "almost," perhaps you won't — luck to you. It's too bad in a way, that all pilots can't be exposed to an "almost." ATC probably wouldn't buy it as a part of the training program at any rate.

How can you determine what you will be susceptible to in this business of gear-up landings? As a start, new pilots or someone new in an

aircraft would probably be more prone to apprehension. Flip the coin and we have the man with many hours in the bird or an "ice man" falling prey to complacency. We each have our own thing, we are all made differently. Standardization can only go so far — then the man takes over. You must each probe yourself for the ultimate answer to what will get you set up. An objective appraisal of your skills, faults, and fears will go a long way toward preventing your very own gear-up accident.

Finally, we mentioned the indications your aircraft will give you when the landing gear is not down on final. You might as well forget the warning horn and light hooked up to the landing gear system. We have had those since the year one. All they manage to do is tell you when a malfunction has occurred in the gear lowering system. We pilots manage to "tune them out" every time we decide to land gear-up anyway. In some aircraft you don't need to use the speed brake for landing. If your left thumb flicks the switch, there is a warning. How about rpm? You should all know what thrust setting you use on final — you all look at it — does it register? That brings up another question, what thrust setting will you hold with gear up? Ever tried it? You may be amazed at how hard it is to stay on your desired glide path and maintain airspeed with gear up, especially in an overhead pattern. Every aircraft has its idiosyncrasies, learn yours. If the throttle is against the idle stop during the pattern — wonder why. Look around, every aircraft must have at least three good indications in the pattern when the landing gear is not down.

To close this discussion, let's run this statement through, "PILOTS DO NOT FORGET TO LOWER THEIR LANDING GEAR — THEY ARE TRICKED INTO IT." A distraction which can get you is all relative — relative to your goal. Pilots roll in daily on some of the heaviest flak concentrations in the world — but does that keep them from delivering their ordnance? Not hardly. Would you call a situation like that full of distractions? You bet you would! So where do we end up? The simple law of priorities says, "first things first." When you get back to the home patch or wherever you plan to land, WHY CAN'T LANDING HAVE THE FIRST PRIORITY? ➤

TAC TIPS

...interest items, mishaps

A USAF FIRST ??

Here's a new one for those of you who have heard them all: Following a normal landing at a base in England, this F-100 troop pulled his chute, felt a tug, but no deceleration. Using maximum braking he stopped without having to use the far-end barrier. The investigator found that the drag chute had caught in the approach-end BAK-9 which was in battery. The risers on one side of the drag chute were cut, causing the failure. Portions of the drag chute bag and pieces of risers were found attached to the BAK-9 pendant cable. It was evidently a good pull because the drag chute cable was pulled into the AB eyelids, bending three sections upward.

FOD (X TWO)

The second flight of the day was a night ground attack mission firing rockets and 20 mm. The rockets were expended but the gun would not fire. Foreign object damage to number one engine was discovered during post-flight. Additionally, the left main gear tire also had foreign object damage and had to be replaced. The aircrew had no indication of damage. Thread imprints from a 1/4 X 28 bolt were clearly imprinted on the aft side of a first stage compressor rotor blade.

The aircraft and engine were inspected for missing hardware with negative results, no maintenance had been performed in the areas of the air intakes, the aircraft had flown 24 sorties since the last phase inspection about a month before. THE ORIGIN OF THE ENGINE AND TIRE FOD REMAINS UNKNOWN!!!

It would be redundant to go into the moral of

this story but it's safe to say that the bolt and whatever caused the tire damage had help from some inconsiderate human. Let's face it — a night ground attack mission is tough enough, surprises we don't need. PICK IT UP!

AERO CLUBBERS...

Any one for

"WHEELBARROWING"

FAA has called attention to a number of accidents where "wheelbarrowing" was the identified cause (AC 90-34). This is a condition where an aircraft with tricycle landing gear rolls down the runway on its nosewheel. The mains are either lightly loaded or, in some cases, airborne. This can cause dangerous control difficulties as we all know. Many of the reported accidents occurred in a crosswind — the bird ground-looped like a conventional geared cub . . . T-6 or A-1.

The only reason an aircraft "wheelbarrows" is *too much airspeed* on landing, especially when full flaps are selected. (Full flaps help give you a nose down attitude.) "Hot landings" result from low pilot proficiency or complacency. This may be aggravated by the pilot holding forward stick in an effort to keep the aircraft on the ground.

It is accepted technique to hold forward stick pressure during short field landings or maximum braking. This gives you a negative lift and helps put more weight on the main wheels. But land fast and all kinds of things can happen — "wheelbarrowing," porpoising, nicked props, scraped wing tips, overshoots, and a host of unpleasant things.

Call it what you like, but each year our TAC Aero Clubs have at least one. Stay proficient and land at the proper speed!

with morals, for the TAC aircrewman...

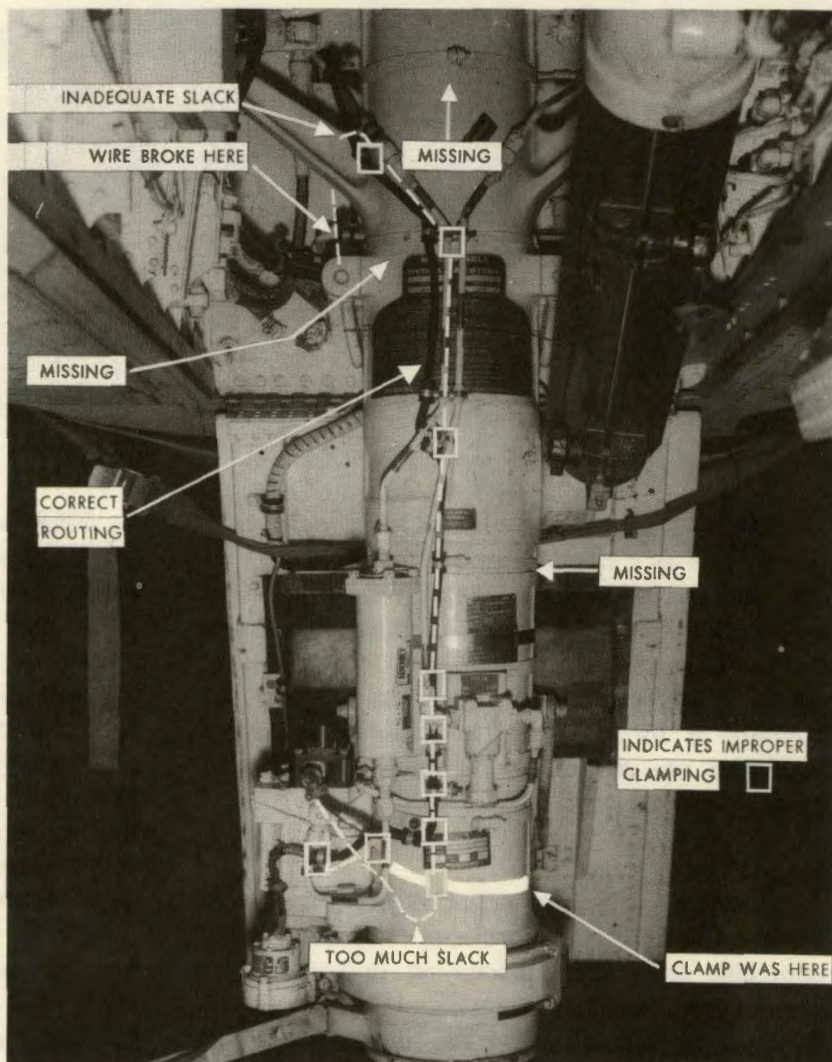
LACK OF SLACK...

Another non-believing Phantom Phlyer took a wild ride while rolling out after a normal landing. When nose wheel steering was engaged at about 40 knots, the aircraft swerved hard left. The pilot countered with braking, aileron and power on the left engine but was unable to prevent his bird

from running off the side of the runway.

The cause of the hard over was a misrouted wire bundle as pictured below. But there is more to the incident than just this, the Dash One is explicit in this area. "... Avoid engaging nose wheel steering above taxi speed when possible to preclude possible malfunction and/or hard over engagement."

The culprit. Basic photo shows the proper routing of the wire bundle with the actual routing at the time of the incident indicated by the white dotted line. Wire bundle P/N 53-79601-204 was found routed to the left rather than to the right and behind line assembly P/N 21-45302-4. No slack was left in the bundle where it was routed through the trunnion assembly. The slack intended for this area was left at the bottom of the strut. Lack of slack at the top of the trunnion assembly caused the wiring to be pulled in this area when the gear was up. It was determined that a wire in the misrouted bundle separated in the trunnion assembly area causing the hard over.



at home...

— ON THE RANGE —



by Major Richard S. Hudgins
113th TFW Academics
Myrtle Beach AFB, S.C.

Upgrading modern Fighter Pilots in the ground attack role is a demanding and difficult task at best. The problem stems primarily from the need to graduate "shooters" who can move right into a tactical unit—and do it safely. The following article is pointed primarily at the student and contains a lot of good, timeless information regarding the dainty art of hurling one's pink body at the ground. Ed.

Prior to entering the ground attack phase, each student should become proficient in performing a complete sight check, locating and operating every switch essential for weapons delivery, and handling his aircraft under the high performance dictates of the gunnery pattern.

Weapons delivery switch operation and gunsight use must not be new experiences in the gunnery pattern. The student must be aware that either low speed roll-ins as in dive or rocket passes, or high G roll-ins as in strafe or skip deliveries present high angle of attack, maximum performance situations.

Extra emphasis should be placed on roll-out technique with G loads on the aircraft. In the F-100, large aileron movements under these conditions may result in a hard roll underneath — with possible fatal results. Angle of attack must be emphasized. In the F-100 for instance, one G at 140 knots, 2 G at 190 knots, 3 G at 250 knots and 4 G at 290 knots each produce about 17 degrees angle of attack depending on aircraft weight and air temperature.

If you introduce any aileron at all under these conditions — away you go.

Brief the mission with a sharp eye on weather and an abiding concern for the student's safety. Allow ample time to brief each gunnery pattern. Carry the student verbally through the entire pattern. Brief for anticipated conditions of the day such as forecast crosswind, sheer, haze, or turbulence. Don't cover every weather phenomenon in general terms, be specific about today's conditions.

Range weather and its possible effect on your mission must be analyzed. Crosswinds induce overshoot finals, which cause late, high G turns, which may result in high speed stalls or adverse yaw. Tail winds steepen final approach causing dive recovery to eat up greater chunks of altitude. Head winds may lead to late sight pictures and low pull outs. Clouds may restrict planned events and require alternate delivery methods. Reduced visibility may disorient flight members and cause pattern confusion.

Flight leaders must prepare briefings with full knowledge of each student's capabilities. Read their grade folders! Look at their gunnery film. Talk with their recent instructors. Do not go to the gunnery range unbriefed on any student's prior tendencies.

Know your assigned range. Range elevation, gradient changes, obstacles, boundaries, layout, communication facilities, crash facilities, tower heights, significant landmarks and nearest emergency facility are the basics.

And don't forget to cover safety items explicitly:

1. Never change or check switches except on downwind. A quick look on final can be fatal.
2. Make fuel checks on downwind.
3. Check the position of all aircraft prior to turning downwind.
4. Obtain clearance to fire on every pass.
5. Adhere to delivery minimums and G restrictions on recovery. "Pressing" will put YOU 12 o'clock, unscorable.
6. Recover, wings level, until the nose is 10 to 20 degrees above horizon before starting the turn to crosswind.
7. Remember, inadvertent release means safe it up and go home.

8. Rock your wings with radio out and switch to back-up frequency.

9. Discontinue the attack if a flare is fired or an emergency develops. Cover every item every briefing.

Error analysis should be briefed as a working tool. For example, if the pipper arrives at the desired aiming point in a hi-angle delivery while the aircraft is 1000 feet above release altitude, how do you salvage the pass? If your dive angle and airspeed are correct, allow the pipper to track to a point one-half as long as the computed short error for 1000 feet high, pip — and take your shack. Emphasize the cumulative effects of errors. Too high, too shallow, too slow, or positive G at release will all put your ordnance short. Too low, too steep, too fast, and negative G all push your bombs long.

Preflight presents another opportunity to improve scores and assure safety. Start by using a detailed checklist. If any item deviates from the checklist, pursue it fully. **DON'T BE LOOSE ON YOUR STANDARDS!** Now is the time to prepare for carrying the big ones. Don't neglect the cockpit, check your armament switches, pylon load switches, gun switch, and trigger safety pin. Look at the pylons, bomb rack and bombs. All should be level with the wing and undamaged. Bent bombs don't fall straight.

Check every arming and safing feature and physically test bomb movement and cannon plug connection. Make sure safe wires are anchored at all appropriate points. Check rocket pods for alignment and proper setting, check safing features and electrical contacts to each rocket. Do the job right on the ground and you can do it right in the air.

Enroute to the range, check your aircraft trim and damper systems. Think through the various deliveries and visually review each switch setting. This kind of preparation makes the twenty to thirty minutes of range time really pay off.

Arrival at the range is another critical point. An ordnance check must be performed to assure that no off-range release has occurred. Your flight line-up information and sequence of events must be given to the range officer. He will assign targets which must be acknowledged. Aircraft should be trimmed for release conditions and the echeloned

at home on the range

for pitch out. Avoid rushing these procedures so that each pilot can be fully ready for the first event. If something unexpected makes range entry hectic, call the first pass dry and allow each student to settle down. The order of events should be set to minimize switch and pattern changes. Low angle or level bomb events are good starters for a heavy weight condition as pattern airspeeds are higher and dive recovery is not as likely to require maximum performance maneuvering. If heavy weight is not a consideration then the optimum sequence might be strafe, low angle bomb, high angle bomb, and rockets.

Strafing is the sporting event of air to ground gunnery and a nickel a hole is not an uncommon price to pay for being introduced to the fraternity. A few hints may keep the initiation fee down. Pick a landmark for base leg spacing and for starting your base to final turn. Make the first half of your turn level, then drop in a little bottom rudder as you increase bank to bring the aircraft into the desired final. Plan your base leg to give you the optimum dive angle. Now pick up your aiming point and place your pipper slightly low and upwind (in a no wind condition place the

pipper on the bottom of the target). The pipper will tend to ride up the target as range decreases, however placing the pipper on or very near the target early in the run tends to establish good tracking on a steady plane. When the pipper reaches the desired aim point hold it there. Use stick, rudder, aileron, and profanity if required, but hold the pipper where you want it.

Check your range by foul line position, target relative size, four foot bullseye matching your two mil pipper (2000') or any combination of these guides. Now fire a half-second burst, but only if you still have the pipper on the target. Recover wings level with a smooth application of G until your nose is 10 - 20 degrees above the horizon before executing a turn to crosswind. You may see the dust of your hits as you pull off but don't delay your recovery in order to see how you are doing. Range is critical in strafing because bullet dispersion, wander of aim, and bullet drop all increase with distance. Effective firing can be accomplished between 2500 feet and the foul line. So don't push for that last hundred feet at the risk of a foul or a brush with the target. Be particularly alert if the range is experiencing below freezing temperatures, frozen ground will prevent effective range policing and substantially increase the risk of ricochet. I mentally move my



foul line to 1800 feet under winter range conditions so I can be around to shoot on a lovely spring day.

Skip bomb qualification usually comes easy. Major concerns include making a smooth coordinated base to final turn with a gradual loss of altitude. Roll out on final 200 - 300 feet above the ground, maintaining visual acquisition of the target while establishing a crab that will bring you over the target on airspeed and altitude. Once you get the feel, it's hard to miss. Don't push below minimums because those skip bombs can skip right into you. Besides, your wing tip vortices or jet blast will tear down the target and botch up the mission for everyone else.

Low angle bombing is successfully accomplished by setting up a base leg to assure the computed dive angle. On roll-in, check your attitude indicator for a dive angle 2 - 3 degrees in excess of desired, as the aircraft accelerates it will fly up. Don't pull your sight up or you will lose your dive angle and drop way short. If you haven't achieved the desired sight picture by minimum altitude, go through dry and move your base leg in on the next pass. Releasing below minimum altitude is out — both for safety reasons and because releasing low in combat may leave insufficient bomb arming time, giving the enemy a supply of duds to use against our troops. If you arrive at your aiming point too soon (above computed release altitude) let the pipper drift long while you continue descent one-half of the way down from your high position toward computed release altitude. Your long pipper position should then offset your slightly high release.

Rocket and dive bomb deliveries will prove the man. All the parameters are in a constant state of change. Dive angle, airspeed, drift correction and G loading must all be brought into harmony at or near the desired release point with the pipper at the desired aiming point. Base leg positioning, taking account of winds at roll in and at release, is essential to good results. Roll in techniques must be perfected to assure positive aircraft positioning without incurring buffet, adverse yaw, or other high angle of attack performance deterioration. Necessary corrections on final must be recognized early and made smoothly and rapidly to allow

time for tracking and checking airspeed, altitude and dive angle.

Every dive recovery is a perfect opportunity for instant error analysis. Compute recovery altitude for a 4G pull out at the applicable dive angle and airspeed and brief this figure. Once pull out is established and the aircraft is pointed up, glance at the altimeter. It will bottom out with some lag but will indicate the lowest altitude reached at its reversal point. Computing the figures in advance will permit instant error analysis on release altitude. Air speed can also be checked at the bottom out point. It will register 20 to 30 knots above actual release airspeed. Now, before the range officer calls out your score, figure your own estimate from dive angle, which you check on roll-in, pipper position at release, and altitude and airspeed which you confirmed on pull out. If you and the range officer agree, you are well on the way to putting the ordnance where you want it.

Ground attack training missions expose the upgrading fighter pilot to an assortment of new experiences in a demanding and unforgiving environment. The task can be accomplished without accidents, and without jeopardizing our mission - to teach effective weapons delivery. Careful preparation, thorough planning, precise briefing, and skilled air leadership can make ground attack training both pleasurable . . . and safe.



Major Hudgins graduated from pilot training in class 57C and attended gunnery school at Luke AFB flying the F-84F. In June of that year he was assigned to the 79th TFS, Woodbridge, England, where he flew the F-100. In July, 1960 he was transferred to the 678th AC&W Squadron at Tyndall where he served as a Weapons Controller until his release from active duty in September of 1962. He then joined the D.C. Air Guard and flew the F-100 while attending George Washington University Law School. After graduation in 1965, he transferred to the New Jersey Guard and began practicing law.

Recalled with the New Jersey Guard in 1968, Major Hudgins received instructor pilot upgrading at Luke AFB and was posted to Myrtle Beach. He is currently instructing with the 119th TFS and teaching Air Combat Maneuvers, AIM-9, and SEA Tactics with the 113th TFW Academics Section.

the JENNY



HARDISON

FLIGHT LEADERS

by Lt Col Carl E. Pearson

An instructor pilot's life has never been easy... or dull. It has always carried heavy responsibility for other people's lives and equipment. So, IPs checking out the flood of pilot volunteers in the American-built JN-4 "sweated out" students then, as they do now. Not that the Curtiss "Jenny" was treacherous, or unforgiving. In many respects it was the Gooney-bird of its day. And in 1917 it represented a giant-flight forward in American training planes. It actually proved superior in performance and reliability to combat planes of the 1914 to 1916 period.

One of the few American designed, built, and powered airplanes flown by American pilots in World War I, the JN-4 A thru D series featured the reliable Curtiss OX-5 engine. A V-8 design, it cranked out 90 hp, giving Jennies a top speed of 80 mph at gross weights up to 1920 pounds. In 1918 the follow-on "H" series sported a 150 hp Hispano A model V-8, manufactured by Wright-Martin. Heavier by 300 pounds, JN-4Hs cooled their exposed cylinder heads with a top airspeed of 93 mph at full throttle. Comparing costs, the price tag jumped from 5500 dollars for an "A" to 8042 dollars for the more powerful, sophisticated "H" series of bombing and gunnery trainers. In all, over 5,000 JN-4s were delivered from June 1917 to October 1918.

From upper squared wingtip to wingtip, Jenny spanned 43 feet, 7 inches in all series. Several feet shorter in span, the staggered lower wing managed without ailerons, but made good use of its wingtip skids. Narrow gear tread, low ground clearance, single-aileron response, and clanked cadets gave wings a hard time during takeoffs and landings. Bicycle-type wire wheels were replaced by heavy-duty steel wheels when operating off rough terrain. Drawn up to her full height (before

the day's first hard landing), Jenny stood proud at 10 feet, 6 inches on her pneumatic toes. Rugged and reliable, Jennies took a lot of student-pilot punishment and came back for more. That's why they barnstormed around the country for many postwar years.

Before Jenny came along with its tandem cockpits, students checked themselves out in early single-seaters. Underpowered and unable to lift two pilots, early trainers were little more than learn-by-yourself flying kits. Jenny changed the do-it-yourself routine. A student's first hop was a "dollar ride," an introduction to flying's new sensations. Next he followed thru on "wing-warping" and turned slowly in gentle banks. From there you moved elevators and progressed to the subtleties of takeoff and landing. When you satisfied your IP that you could get the bird off and down and walk away, you soloed. So far, you're flying no higher than traffic pattern altitude.

From there on you gained self confidence in solo flights. Your IP briefed you on practice maneuvers, how high and how steep, Through practice alone, you improved steadily, flying higher, steepening bank angles, and tightening turns to a minimum radius. But you kept within briefed limits... or suffered the consequences.

Although flying by yourself, you were never really alone. Your IP was there in the recall of his briefings, training, techniques, corrections, "cussings," and habits... both good and bad. It's a heavy burden that your IP carries when he decides you are capable of launching for a trip around the pattern. He's asked himself questions like, Is he ready? Have I done my job? Does he really know the bird? In answering their own questions IPs have made the great contributions to flight safety thru the years. Without the professional IP, flying would regress to World War I's unofficial slogan, "Any landing you walk away from is a good one."

CHOCK TALK

chock talk

...incidents and incidentals

pickpocket

After a number one engine change, an engine trouble-shooter was running it to accomplish operational and leak checks. Another engine man stationed himself below the left wing to visually check for leaks. No leaks were detected, he then moved to a position slightly forward of the nose and to the left of the aircraft. Meanwhile, the engine man in the cockpit started number two and advanced both engines to 92% for a throttle alignment check. While adjusting the throttle linkage between the seats, he heard one engine rumble and felt a shudder. He retarded both throttles, discovered that the other man had moved to a position directly in front of number two engine, and shut them both down.

It was determined that the man outside had moved in front of the number two engine to observe the engine instruments in the cockpit. The intake suction pulled him toward the engine, partially blocking the intake. A high suction area was created around the right trouser pocket of his fatigues. His watch, ring, knife, keys and other objects were ingested into the engine.

errant rivet

Following a supersonic dive to 34,000 feet, a test pilot in another command found his stick could not be moved with normal force. By using excess force he got some response which resulted in pitch oscillations. During these gyrations the stick became free and a gentle descent was made to FL 240. Level off was attempted, the stick froze again, and the pilot went through the same series of events. When the stick became free again he kept moving it throughout the descent and landing.

Investigators found scoring of the outboard leading edge of the horizontal stabilizer output

quadrant. A search for foreign objects turned up two thin one-half inch washers (not contributing) and a one-half inch rivet. The rivet had fresh scars and had obviously been recently marked. Evidence indicated that the rivet had bound between the stabilizer quadrant and adjacent bulkhead. Sheet metal work involving rivet replacement had been done four months and one month previous to this incident, the errant rivet could have been left behind during either of these operations.

with this ring...

Utility hydraulic pressure dropped to zero in the holding pattern. The pilot lowered the gear with the emergency system and landed out of a Tacan approach. The emergency brake handle was pulled after landing and the right main tire blew immediately. The left tire was blown to maintain directional control and the aircraft stopped 7000 feet down the runway with no further damage.

An oversize "O" ring seal had been installed between coupling half, P/N 015088-12, and elbow P/N 939-12 in the number 2 engine utility pump pressure line. The oversize seal prevented the elbow boss and the coupling body from mating properly and the seal failed causing loss of hydraulic fluid.

zap

After completing the cockpit pre-flight on a big one, the crew chief pulled the APU line without turning the generators off. He moved the power unit from the left side of the aircraft to the right side and, as he started to reconnect the plug, the wires shorted and sent an electrical flash into his face causing first degree burns. ANY QUESTIONS???

with a maintenance slant.

cotter pin caper

When power was added following a practice approach, number two throttle moved too easily indicating loss of throttle control. The pilot was unable to regain throttle control so the engine was shut-down and a single-engine landing accomplished with no problems.

The loss of engine control occurred when a castellated nut backed off a bolt at the outboard end of the throttle bellcrank. It is suspected that a cotter pin made of a metal other than stainless steel had been used to secure the nut.

The unit involved checked their bench stock and some other engines. They found aluminum cotter pins mixed with stainless steel pins and a cotter pin of an unknown alloy installed in the throttle linkage hot section of one aircraft. This pin was brittle and broke under light thumb pressure. Might be worth the time for a supervisor to check your quality control of items of this nature which are installed in critical components.

calling Dr. Kildare !

Maintenance malpractice... pretty sophisticated term. It makes shortcut, shadetree procedures sound more like a contagious disease than a deliberate act. It suggests something on the order of a virus infection caught by airplanes while butterflyflying around Oriental areas. A symptom of maintenance malpractice follows:

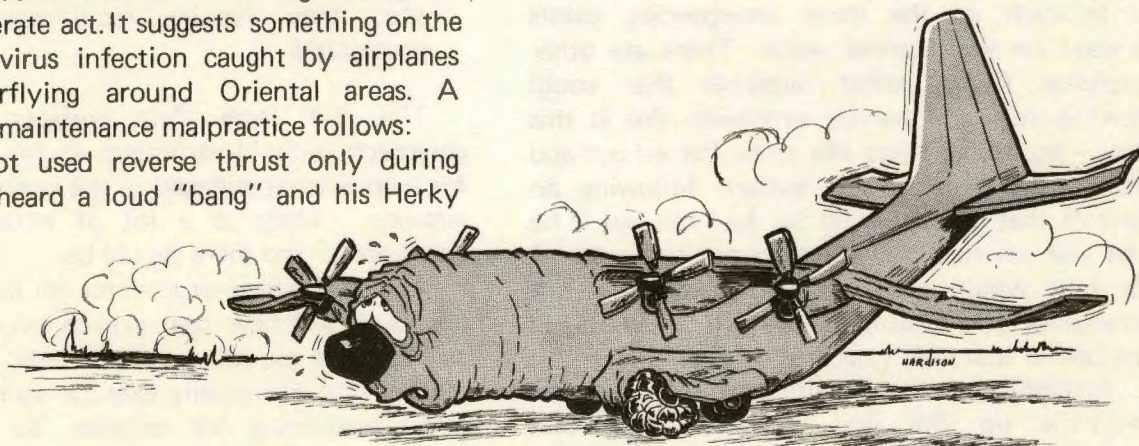
"The pilot used reverse thrust only during rollout. He heard a loud "bang" and his Herky

swerved sharply left. He regained control before his bird left the runway and managed to stop on the macadam. Shortly after the tire blew, his crash position indicator abandoned ship, putting out beeping complaints. He shutdown, unloaded his passengers, and requested diagnosis of his bird's ailment.

Treating the malpractice infection ran up quite a hospital bill for the normally hardy Herky. It's sickness included: forward left main gear turned out about 40 degrees; flat tires; normal and emergency brake lines broken; weight and balance sensor wiring torn loose; anti-skid detector and touchdown switch broken; inner gear door and fairing damaged; horizontal torque strut broken. Specialist surgery and doctoring consumed 85 manhours. The bill could've reached catastrophic proportions if the pilot had panicked and lost control.

Diagnosticians isolated the germ and named it JIP (Jacking, Improper Procedures). Here's how it bites you. While changing flat tires you use a jack adapter to raise the gear. Then hold the bird up with a chock shoved under the horizontal torque strut, while you reposition the jack under the normal jacking point on the landing gear. Not stressed for this rude treatment, the torque strut eventually cracks.

How do you treat malpractice? If it's not at epidemic level use proven home remedies described in your Herky bird's baby book. If the sickness is widespread, use a long-needed hypodermic syringe and inoculate maintenance types with large doses of tech order toxin. It'll stamp out malpractice!



a second look at...

Dash One Procedures

Three significant TAC incidents were reported during a two day period in February, in which the pilots involved refused to follow prescribed Dash One procedures. Two involved fuel controls, the third anti-skid. All that was required from each pilot was to flick one switch. In the first two cases, it would have solved the emergency. In the other, since the pilot didn't even try manual braking, we don't know. A barrier engagement wiped out some of the wheel brake components making it impossible to determine what his problem was. In each case, the emergency experienced has cost us lives and aircraft in the past.

There is one other factor common to the three incidents. In each case, the pilot involved had a reasonable idea that they could end their flight successfully. In their minds, RECOVERY WITH THE EMERGENCY WAS PREFERABLE TO ELIMINATING IT!

The cross section of pilot actions went as follows:

- Diagnosed problem incorrectly, so did not perform emergency procedures.
- Did not perform emergency procedure but had pilot in rear cockpit standing by to do it if ordered.
- Did not perform emergency procedure for fear of causing directional control difficulties.

In each of the three emergencies, pilots pressed on with tunnel vision. There are other airplanes flying, other airplanes that could develop real and serious problems. Put it this way — how would you like to be flamed-out and be number two in the pattern following an aircraft that could fly till his fuel ran out if he had just switched to his emergency fuel system? Or how would you like to recover in a full emergency on a runway tied up with an aircraft in the barrier that didn't need to be there?

Incidents of this nature are disturbing to everyone up the line. They indicate that somewhere in our chain, somebody isn't doing

their job properly. When a pilot refuses to perform his emergency procedures it's usually for one of two reasons. Either he doesn't trust his systems, or he doesn't know them.

It's food for thought, and as always, what can we do about it? From a pilot's point of view, there isn't much you can do about unreliable aircraft systems. Just hope they get fixed. Along that line, you can be sure there are other people who care and are, in fact, probably working to fix some things that haven't even bothered you yet.

There is one area, however, that belongs exclusively to the pilot — systems knowledge. This doesn't mean a smattering here and there, nor does it mean a crash course in airplane building. If you don't know why you flick a switch and what you are accomplishing, you don't know your systems. Knowledge in this area is your responsibility. It can't be pushed off on the training officer, stan eval, or anyone else.

Our Dash Ones are permissive in the area of procedures with the exception of those on the facing page. The following paragraph can be found on page ii in all of them.

SOUND JUDGMENT. This manual provides the best possible operating instructions under most circumstances, but it is not intended to be used as a substitute for sound judgment. Multiple emergencies, adverse weather, terrain, etc., may require modification of the procedures.

The F-4 Dash One prefaces the above paragraph with "Instructions in this manual are for a crew inexperienced in the operation of this airplane." There is a lot of latitude in that paragraph — and there should be.

The emergency procedures in the Dash One are sound and have been proven through use. We, as pilots are expected to use them. We are also expected to continually exercise sound judgment when recovering our cripples. So let's do it.



LEST WE FORGET.....



WARNING

Operating procedures, techniques, etc., which will result in personal injury or loss of life if not carefully followed.

CAUTION

Operating procedures, techniques, etc., which will result in damage to equipment if not carefully followed.

Note

An operating procedure, technique, etc., which is considered essential to emphasize.



30 SECONDS MORE

by Lt Col T. J. Slaybaugh
Hq TAC (OS)

Thirty seconds more could have saved the lives of nine TAC pilots last year. The nine were ejection fatalities.

In the accident reports, investigators, reviewers and indorsers continue to attribute ejection fatalities to "too low." Don't be misled. These nine punched out at altitudes up to 500 feet. But one pilot, flying level 25 feet above the ground, held his fighter steady with one hand, actuated his egress system with the other, and made it — uninjured.

Time is the most essential factor — about four to five seconds minimum with most egress systems. Therefore, had it been possible to proportion 30 seconds as needed among these nine pilots, they could have survived.

Nothing can be done about last year, but a look at some of the experiences, and then some pre-analysis might pay 1969 dividends.

First, since it so often comes up in ejection discussions, let's clarify zero-zero. Zero-zero has become a catch phrase that relates to zero altitude, zero airspeed. With zero-zero you could be sitting in a cockpit, on the ground, in a parked aircraft, punch out and get a good chute before ground impact. Such escape systems have been developed, but they aren't prevalent in TAC aircraft. Even had they been, it's doubtful that they would have prevented even one of the nine fatalities.

The danger of zero-zero thinking is that some may construe a static ground ejection to be the worst possible ejection environment, and that altitude in excess of zero and airspeed in excess of zero really give the aircrew a safety margin.

There is another zero that must be considered. This one is zero sink rate. This is the life saver. This is the "zero" that saved the pilot who punched out at 25 feet and made it.

Time is important. Altitude is not, except as altitude relates to time. The basic law that applies in the "time" consideration of ejections was discovered three centuries ago by a guy watching apples fall from trees in his grandmother's garden. Sir Isaac's rule says that the force of gravity is 32 feet per second per second. At the end of the first second the speed will be 32 feet per second, a second later it will reach 64, at the end of three seconds 96, and so on. An object is going to fall 16 feet the first second, 48 feet the second, eighty the third, etc.

The distance things fall is the average velocity multiplied by the time. For the pilot who punched out at 25 feet we can see that he had:

$$D = \frac{1}{2} a t^2$$

$$25 = \frac{1}{2} 32 t^2$$

$$t^2 = 25/16$$

$$t = 5/4 = 1.25 \text{ seconds}$$

This 1.25 seconds was augmented by rocket thrust. Gravity at 32 ft/sec/sec had to work against rocket thrust until vertical acceleration stopped. Then gravity had to accelerate

the body toward the ground. All this took time — over four seconds worth — during which all escape system functions were completed.

In one of the nine fatal cases, investigators determined that the pilot ejected at 500 feet in a 200-knot vertical dive. We can soon compute his chances. A 200-knot rate of descent is equal to 337 feet per second. Rocket seat thrust can be discounted, as in a vertical dive the energy would be in a vertical plane and of no help. In this case, since the pilot was already exceeding free fall terminal velocity of 200 feet per second, acceleration can be discounted. Simply divide the 500 feet available by 337 feet per second, and we note that he didn't have more than about two seconds — even if we consider deceleration because of Q.

In another case, investigators concluded that the ejection decision was made at 175 knots, 300 feet, and a sink rate of 2000 to 3000 feet per minute. The seats left the aircraft at approximately 100 feet (5 seconds is given as the normal time spread from decision until seat separation). The aircrews got out one second prior to aircraft impact, but again, because of sink rate, they had no chance. In this accident it appears there was an attempt to raise the nose immediately prior to ejection. But the aircraft was already in a stalled condition, the stall was further aggravated, causing the aircraft to roll.

One of the near successes occurred at 75 feet from an

aircraft that continued to rotate to a near-vertical attitude on takeoff. All systems functioned up to partial inflation of the main chute canopy. Successful ejections have been made from similar emergencies, but they must be made while the aircraft is still climbing.

What can aircrews do to better their chances?

● If the aircraft is out of control, get out not later than the Dash One specified altitudes. Minimum ejection altitudes have been established for one reason — to provide minimum *time* for all ejection events to be completed.

● If the aircraft goes out of control below the Dash One specified ejection altitudes, get out immediately. Don't try to recover or improve aircraft attitude. Time lost in such attempts can make the difference.

● If the aircraft is controllable, zoom. A simplified example will show the payoff. First, using Newton's Law, we note the following time-distance relationships for an object dropped from level flight:

<u>Time</u>	<u>Velocity</u>	<u>Total Distance</u>
1 sec	32 feet/sec	16 feet
2 sec	64 feet/sec	48 feet
3 sec	96 feet/sec	80 feet
<u>4 sec</u>	128 feet/sec	<u>112 feet</u>
4 sec ——— Total ———		256 feet

A 30° dive at 200 knots works out to be a rate of descent of 168 feet per second. The initial rate of descent must be added to acceleration of

THIRTY SECONDS...

gravity until terminal velocity is reached. Now the time-distance relationship is:

Time	Velocity	Total Distance
1 sec	$168 + 32 \text{ ft/sec} =$	184 feet
2 sec	$168 + 64^* \text{ ft/sec} =$	200
3 sec	$168 + 96^* \text{ ft/sec} =$	200
4 sec	$168 + 128^* \text{ ft/sec} =$	200
4 sec	—— Total ——	784 feet

* Limited by terminal velocity of 200 knots

Converting the 30° dive into a 10° climb at 180 knots equates into an effective vertical rate of climb of 53 feet per second for the released body. Now, before descent can begin, rate of climb must be bled off to zero by gravity's 32 feet/sec/sec force. If we discount variables such as drag and air density, we find that the four-second pattern is about as follows:

Time	Velocity	Total Distance
1.0 sec	$53 - 32 =$	37 (up)
.7 sec	$21 - 21 =$	7 (up)
1.0 sec	32	16 (down)
1.0 sec	64	48 (down)
.3 sec	74	30 (down)
4 sec	—— Total ——	50 feet (down)

When the vertical component provided by the seat is added, the time margin provided by zoom becomes even more significant. Rate of climb is the critical factor, not aircraft attitude. To zoom, three things are necessary:

(1) An aircraft under control.

(2) Airspeed (energy) above stall that can be traded for a rate of climb.

(3) Sufficient maneuvering room to change the flight path from descent to climb.

Obviously, the ideal ejection attitude is upright and wings level. All the seat thrust will be in the vertical. However, if time is critical, it is better to punch out than to spend time trying to achieve a level flight attitude. At a 45° pitch or bank angle 70% of the seat thrust is straight up. Even at 60° of bank half the upward thrust remains.

To sum up, time continues to be the critical factor in most ejections. Lack of time accounted for nine of ten ejection fatalities in 1968. (One didn't make it due to injuries

suffered while separating from the aircraft.)

Sink rate eats up available time faster than any other factor. In sink rate conditions the aircrew has one of two possible choices to help insure ejection success:

(1) Get out, ASAP

(2) Convert sink rate to climb, provided he has a controllable airplane, maneuvering room and excess airspeed.

Last year's ejection success record — 58 out of 68 attempts for an 85% success rate — was about par with the Air Force average, but down nearly 10% from the 1967 success rate. Time was the killer in 90% of the cases. ➔

30° DIVE
AT 200 KNOTS



LEVEL FLIGHT



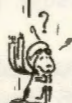
10° CLIMB
AT 180 KNOTS



784'

256'

THIS ILLUSTRATION GRAPHICALLY APPROXIMATES THE DISTANCES A BODY (200 KNOT TERMINAL VELOCITY) WILL FREE-FALL IN 4 SECONDS.



Tactical Air Command

Unit Achievement Award

Our congratulations to the following units for completing 12 months of accident free flying:

186 Tactical Reconnaissance Group, Key Field, Miss.
1 July 1967 through 30 June 1968

4435 Air Transportation Squadron, Hamilton Air Force Base, Calif.
1 July 1967 through 30 June 1968

840 Air Division, Lockbourne Air Force Base, Ohio
30 August 1967 through 29 August 1968

464 Tactical Airlift Wing, Pope Air Force Base, N. C.
27 October 1967 through 26 October 1968

779 Tactical Airlift Squadron, Pope Air Force Base, N. C.
27 October 1967 through 26 October 1968

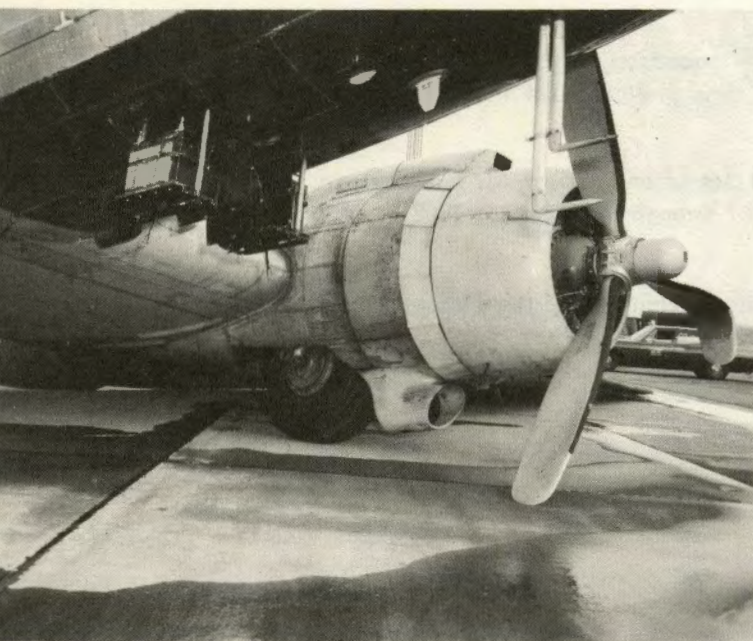
62 Tactical Airlift Squadron, Sewart Air Force Base, Tenn.
21 November 1967 through 20 November 1968

4409 Support Squadron, Homestead Air Force Base, Fla.
1 January 1968 through 31 December 1968



FANCY FEATHERING...

A STORY OF A WILD RIDE ON FINAL



"Hey, Orville, where've you been? If you don't quit drifting around with cloud cherubs, you'll flunk your Standboard-in-the-sky."

"Aw, Wilbur, I wasn't..."

"Orv, you've got to get with your guardian guide books; you'll never make senior spirit. Don't you want that star on your wings? Are you going to be a slick-winged patron saint all your celestial career?"

"Will, you've got it all wrong. I've been briefing a Visitors-In-Purgatory group on divine directives. They're starting their orientation program."

"Oh, that's different, Orv. I was afraid your halo slipped again. While you were gone, a bedeviled gooney bird IP really needed a patron saint... his regular sponsor must've been out to lunch. If you could've saved him it meant a cinch celestial spot promotion, or below-the-tropozone selection next time."

"Wow! It must've been hairy."

"Sure was. When Standboard Supreme heard about it he fired his gooney bird SPO. 'No compassion for innocent IPs,' he called it."

"Get on with it, Will. Brief me."

"Well, Orv, our IP had an old field grade type in the right seat for his first copilot ride. He demonstrated a takeoff and stayed in traffic, briefing copilot duties as they tooled around the pattern. They completed the Before Landing Checklist on downwind. Turning final, tower cleared them for a touch-and-go. The IP called for a gear recheck at 400 feet AGL on final and the student copilot complied. Unfortunately, Orv, he was too enthusiastic with his visual signal."

"How's that, Will?"

"His generous gear-down gesticulating hit the

fan . . . literally. Somehow, his swinging left hand punched Number Two feathering button. It worked "as advertised."

"Wow! Feathering with finesse."

"There's lots more, Orv. Our IP felt the yaw and power loss and pushed both throttles forward. Assuming a go-around, the copilot asked, 'going around?' and raised the gear without waiting for our IP's response.

"You're kidding, Will!"

"Nope. Dead serious, Orv. Now knowing his gear's retracting and he's committed to a single-engine go-around, our abused IP adds max power on his good engine. Still controlling his griev'd gooney and thinking too, he directs his flight engineer to unfeather Number two.

"Cool customer, Will. He recovered well from a bad show."

"Wait, Orv, . . ."

"There's more?"

"It gets worse! Instead of unfeathering Number Two, his excited engineer feathers Number One engine. Now our IP's piloting a gooney glider."

"His engineer turns on him too?"

"Just clanked, Orv. Our besieged IP didn't surrender, though. Nearly out of options, altitude, and airspeed, he called, 'Gear down.' And remember, this sequence started at 400 feet on final. Well, adding insult to injury, the confused copilot lowered flaps instead of gear."

"Will, our host doesn't tolerate fiendish fables. If you're faking it, you might be reprimanded."

"Orv, who could dream up this one? I know it sounds like a satanic satire on the life of an IP, but it's true."

"Okay, Will, don't leave me hovering. He's got both engines feathered a few feet off the ground on final, flaps down, and no gear hanging. What did our ill-used IP do? I think I know what he said."

"I admire him, Orv. Busy, burdened, beset, and almost boxed, he lowered the gear himself . . . about this stage of the game I doubt that he'd ask any one for help. He started his landing flare and touched down smoothly 4500 feet down the runway."

"He made it, Will, in spite of his crew?"

"Nope, Orv, but he almost battled them to a standstill. After touchdown his flight engineer recovered his composure enough to notice the landing gear latch lever in spring lock position. He put it in positive lock, but it didn't help. Left main gear wasn't down and locked; didn't have enough hydraulic system pressure remaining to do it. So, weight of the bird collapsed the left main gear and wrinkled left wing tip and prop. It's about 340 man-hours worth of damage to the game gooney."

"Amazing accident, Will! Our IP deserved better treatment from his crew."

"A little more time, or altitude, and he would've made it, Orv. Our IP had about 250 feet and forty seconds from accidental feathering of Number Two to touchdown. He compressed about four years of actual emergencies into forty seconds on final."

"Will, I'm glad I missed this one. It could've meant spot demotion as well. It's a tough save for patron saints when crew coordination and communication breaks down completely . . . or didn't have a chance to begin. Making wrong assumptions and taking independent action without pilot direction; taking wrong action when ordered to do something; moving hurriedly without thinking during an emergency; panicky response degenerates into cockpit confusion that's contagious. Once it breaks out, it's an instantly infectious epidemic. Especially, if the ailment's discovered close-in on final. That's why I dislike already completed checklist items repeated on short final. It's disruptive at a critical time in flight. Completing the Before Landing Check List should've verified gear position on downwind . . . at least prior to turning final. As I see it, Will, the whole serio-comic sequence of events was triggered by an extra recheck of the gear when the IP wasn't able to supervise his new copilot's actions. Following a gooney bird's normal checklist procedures wouldn't have created an opportunity for fancy feathering."

"What I think you're saying, Orv, is stick with flight manual procedures when you're flying with Ned Newguy. Let him make his mistakes where you can still recover and preach to him . . . instead of depending on Wilbur and Orville."

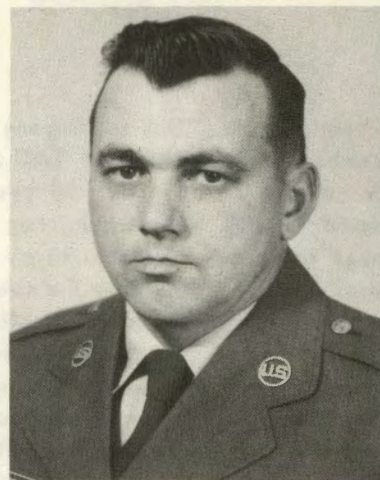
T-39 Message



SUBJ: ACFT INCIDENT REPORT INVOLVING T39A SN XX-XXX. THE SUBJ INCIDENT RESULTED IN LOSS OF ACFT GROUND HANDLING CONTROL WHEN A TIRE BLEW OUT. IMPROPER REPORTING OF ICY RUNWAY CONDITION APPARENTLY FAILED TO ALERT THE PILOT THAT OTHER THAN NORMAL BRAKING PROCEDURES WERE REQUIRED. RECENT INCIDENT AND UR REPORTS STATE THAT PILOTS, IN CERTAIN INSTANCES, ARE UNAWARE THAT AN IMPROVED BRAKE ASSY WITH HIGHER BRAKING COEFFICIENT IS BEING INSTALLED ON T39 ACFT. IN AN EFFORT TO PREVENT FURTHER INCIDENTS AND UNSATISFACTORY REPORTS, WE REQUEST THAT ALL T39 USING ACTIVITIES BE ADVISED OF THE FOLLOWING INFORMATION: AN ENGINEERING PROGRAM WAS CONDUCTED AND COMPLETED IN 1967 TO PROVIDE THE T39 ACFT WITH IMPROVED BRAKING CAPABILITY. THE TEST RESULTED IN PROCUREMENT OF GOODYEAR BRAKE ASSY, PN 9550338. THIS BRAKE HAS TEN PISTONS, THREE ROTATING DISCS AND TWO STATIONARY DISCS. THE STATIONARY DISCS, PRESSURE PLATE AND BACK PLATE HAVE RIVETED WEAR PADS INSTALLED ON THEM. AS A COMPARISON THE BRAKE ASSY THAT IS BEING REPLACED (PN 9541626A) HAS THREE PISTONS AND TWO ROTATING DISCS. THE HYDRAULIC PRESSURE AVAILABLE AT THE BRAKE HAS NOT BEEN REDUCED, THEREFORE, THE NEW BRAKE ASSY HAS PROVIDED A HIGHER BRAKING COEFFICIENT THROUGH INCREASED FRICTION SURFACE AREA. AS AN ADDITIONAL EXAMPLE OF THE NEW BRAKE CAPABILITY, COMMERCIAL SABRELINER FLIGHT TEST RECORDS REVEAL, THAT AT A GROSS WEIGHT OF 18,650 POUNDS AND EQUIPPED WITH A BRAKE ASSY SIMILAR TO THE OLD BRAKE (PN 9541626A) TOTAL STOPPING DISTANCE OVER A FIFTY FOOT OBSTACLE IS 6300 FEET. WHEN EQUIPPED WITH NEW BRAKE (PN 9550338) THE STOPPING DISTANCE IS 4300 FEET. USAF SERVICE TEST OF THE NEW BRAKE OBTAINED 517 LANDINGS BEFORE REMOVAL FOR WEAR, VERSUS 35-40 LANDINGS FOR THE OLD BRAKE. THE SERVICE LIFE STANDARD FOR THE NEW BRAKE IS CONSIDERED TO BE 400 LANDINGS ALTHOUGH 548 LANDINGS HAVE BEEN RECORDED ON ONE SET OF BRAKES PRIOR TO REMOVAL. NEW BRAKES ARE BEING PROVIDED AS REPLACEMENT ON AN ATTRITION BASIS. THEY MAY ONLY BE INSTALLED IN PAIRS. PERSONNEL OPERATING THE T39 ACFT SHOULD BE ABLE TO RECOGNIZE THE GREATER BRAKING EFFICIENCY IMMEDIATELY AFTER THE CHANGE OVER TO THE NEW BRAKES. WHEN OPERATING OFF OF WET OR ICY RUNWAYS IT WILL BE EASIER TO LOCK THE WHEELS AND THE DANGER OF BLOWOUTS AND SKIDS INCREASED ACCORDINGLY. PERSONNEL MAY BE INCLINED TO DEVELOP A HABIT OF MAKING EACH LANDING A MINIMUM ROLL LANDING. SINCE THE CAPABILITY EXISTS, WHICH WILL RESULT IN AN INCREASE IN HOT BRAKES, BRAKE WEAR OUT, INCIDENT AND UR REPORTS, ACTION HAS BEEN TAKEN TO UPDATE MAINTENANCE MANUALS WITH REQUIRED INFORMATION. A REVIEW WILL BE MADE OF THE PILOTS HANDBOOKS 1T-39(A-B)-1 AND INFORMATION CONSIDERED PERTINENT TO THE NEW BRAKE WILL BE ADDED.

CREW CHIEF OF THE MONTH

Technical Sergeant Oliver K. Fisher of the 4409th Combat Crew Training Squadron, Hurlburt Field, Florida, has been selected to receive the TAC Crew Chief Safety Award. Sergeant Fisher will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



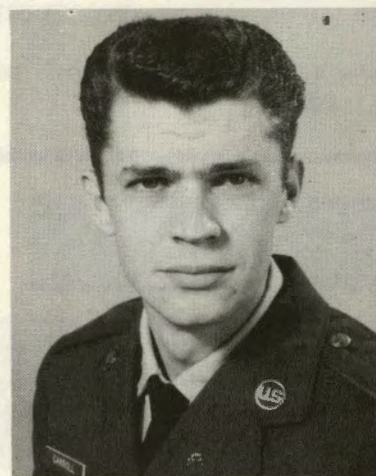
TSgt Fisher



SSgt Carroll

MAINTENANCE MAN OF THE MONTH

Staff Sergeant Creel L. Carroll of the USAF Tactical Fighter Weapons Center, Nellis Air Force Base, Nevada, has been selected to receive the TAC Maintenance Man Safety Award. Sergeant Carroll will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



Letters to the Editor

Your article "Gusted Gooney" on page 28, December 1968 issue of the TAC ATTACK is noted with interest. Throughout the years the C-47 has suffered through many windstorms and has incurred damage to control surfaces. In my opinion failure of control gust locks has been the culprit all along. The gust locks are designed in an off-set condition, so that winds cause gust locks to work loose. The new gust lock you talked about is the answer. If controls were streamlined that would also help. Everyone is of the opinion that the controls are offset to prevent aircrews from taking off with gust locks installed. This obviously is not the answer since aircrews still take-off with locks installed. Early notice about severe weather would also help. Keep up the good work.

Lt Col Raymond G. Summy
Commander, Det 1, 1st SOW
Otis AFB, Mass.

Your attention is invited to TAC ATTACK January, 1969. The 49th Tactical Fighter Wing, a member of TAC since 15 July 68, is still conspicuously absent from your TAC TALLY page.

Col H. H. Moreland
Deputy Commander, Operations
49th Tactical Fighter Wing
APO, NY 09123

Our faces are red, Colonel, you're on from now on. Ed.

I would appreciate it very much if you would grant AIRSCOOP Magazine permission to reprint the article, "It Pays to Wait," by Roger Emett, featured in the July 1968 issue of TAC ATTACK. Since the article would be less effective without the accompanying photographs, request copies be furnished.

Major Richard L. Wing
Editor, AIRSCOOP
APO, NY 09633

Permission granted. In the future, requests for permission to reprint articles from the TAC ATTACK will not be necessary. AIRSCOOP has blanket permission to use any material you feel will assist you in your safety education effort. Ed.

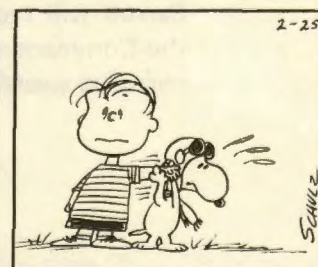
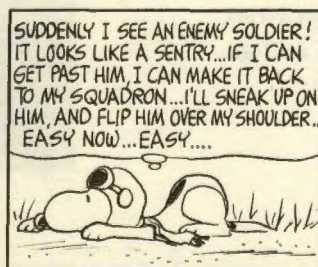
As usual, we in the 478th Tac Ftr Sq, enjoyed your January publication of TAC ATTACK. However, we did note an error on page 24 under the Unit Achievement Award listing. We find the 430th Tac Ftr Sq of Homestead AFB listed twice and believe that our squadron, the 478th Tac Ftr Sq should have one of those spaces. We are quite proud of our unit achievement award, dated 1 March 1967 to 29 February 1968 and would appreciate a nod in the next issue.

Lt Col Donald G. Woske
Commander, 478th Tac Ftr Sq
Homestead AFB, Fla

Thanks for the kind word about the mag. While checking back issues we note that the 478th received recognition in our September '68 issue. One of the 430's was a goof and should have been left out. Congratulations again... an accident free year for a fighter squadron is a top notch achievement. Ed.

PEANUTS

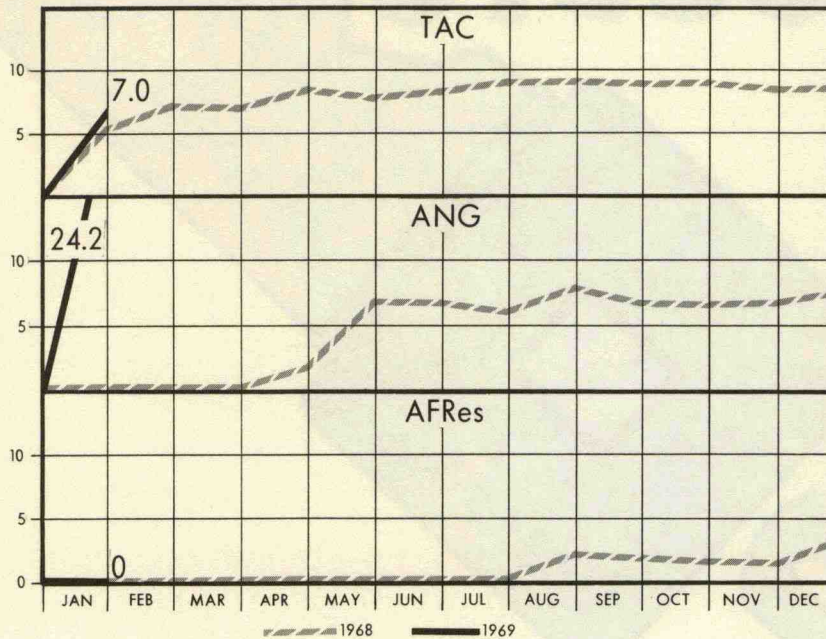
Courtesy of Daily Press, Newport News, Va.
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TAC TALLY

MAJOR AIRCRAFT ACCIDENT RATES
AS OF 31 JAN 1969 *

MAJOR ACCIDENT RATE COMPARISON (per 100,000 flying hrs)



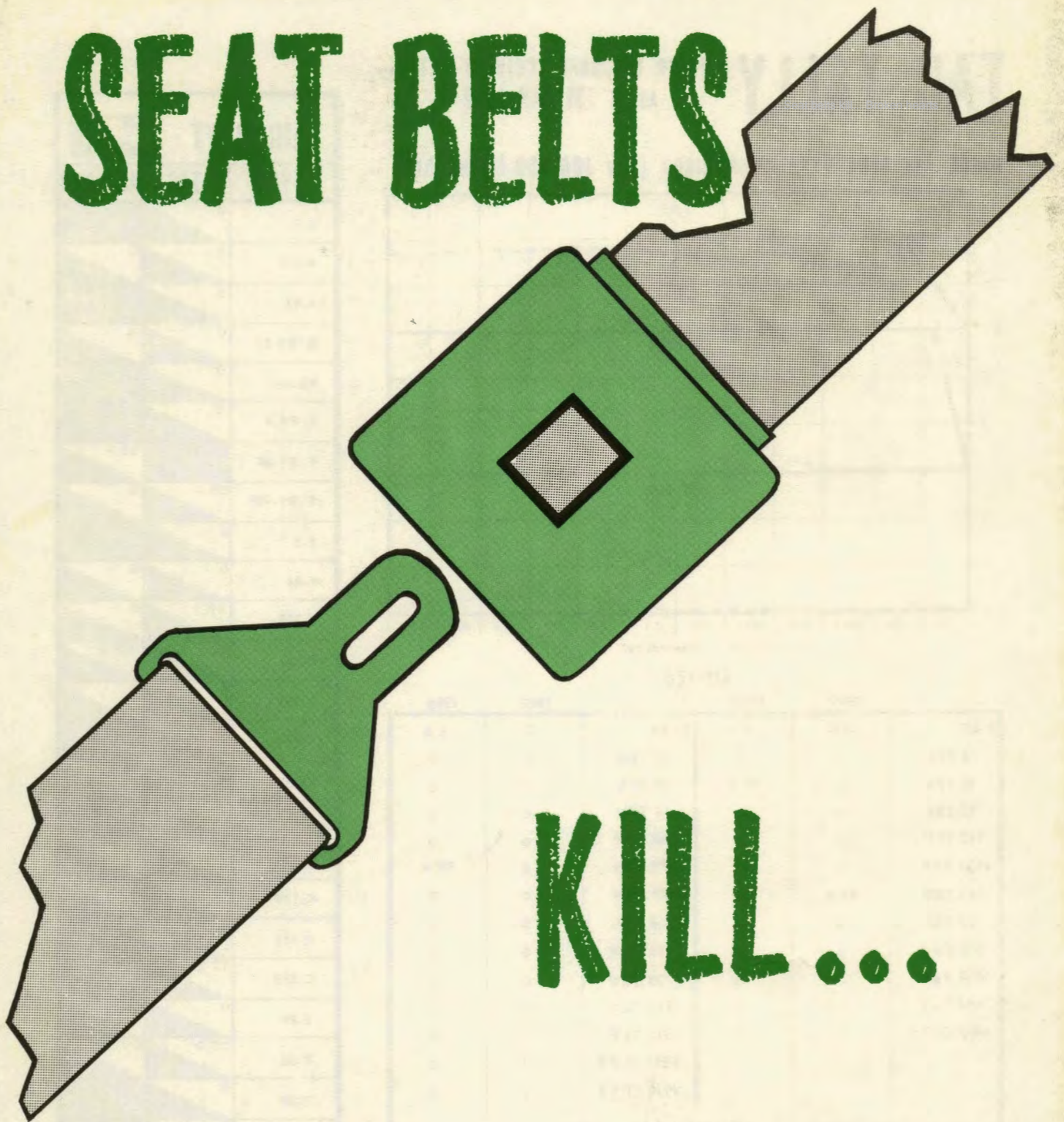
UNITS

	1969	1968		1969	1968
9 AF	4.5	3.9	12 AF	0	5.8
4 TFW	0	0	23 TFW	0	0
15 TFW	0	27.4	27 TFW	0	0
33 TFW	0	0	49 TFW	0	0
113 TFW	0	0	140 TFW	0	0
4531 TFW	0	0	479 TFW	0	35.4
363 TRW	44.6	0	474 TFW	0	0
64 TAW	0	0	67 TRW	0	0
316 TAW	0	0	75 TRW	0	0
317 TAW	0	0	123 TRW	0	0
464 TAW	0	0	313 TAW	0	0
4442 CCTW	0	0	516 TAW	0	0
			4453 CCTW	0	0
			4510 CCTW	0	0
SPECIAL UNITS					
1 SOW	72.2	0	4500 ABW	50.7	0
4410 CCTW	0	18.6	4440 ADG	0	0
4409 SUP SQ	0	0	4525 FWW	80.4	0
			4416 TSQ	0	0

AIRCRAFT		1969	1968
TYPE	TAC	ANG	AFR
A-1	0	0	0
A-26	0	0	0
A-37	0	0	0
B/RB-57	0	0	0
RB-66	0	0	0
F/RF-4	0	13.2	0
F/RF-84	0	28.4	0
F/RF-101	55.4	0	0
F-5	0	0	0
F-86	0	0	0
F-100	22.7	0	0
F-104	0	0	709.2
F-105	0	0	0
F-111	0	0	0
KC-97	0	74.1	0
C-7	0	0	0
C-47	0	0	0
C-119	0	0	0
C-123	0	59.6	0
C-130	17.3	0	0
T-29	0	0	0
T-33	27.9	0	0
T-39	0	0	0
O-1	0	0	0
O-2	0	0	0
OV-10	0	0	0
U-3	0	0	0

* ESTIMATED FLYING HOURS

SEAT BELTS



KILL...

BROKEN HEARTS