TAC ATTACK

TAC Attack April 1976

AUGUST 1976

HARRISON

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An open letter to a-10 drivers... page 4

AN OPEN LETTER
TO A-10 DRIVERS...Pg 4

TAC ATTACK August 1976 VOLUME 16 NUMBER 8

TAC ATTACK

FOR EFFICIENT TACTICAL AIR POWER

FEATURES

DEPARTMENTS

TACRP 127-1

Angle of ATTACK

FOD...a people program

Last year, there were 106 Foreign Object Damage (FOD) mishaps in TAC. These mishaps were costly, not only in terms of dollars and manhours expended in returning the engines and aircraft to operational status, but also in degradation of our combat capability. Review of the statistical data for this year makes it obvious that something more is needed to stop the needless Foreign Object Damage.

TAC has averaged approximately eight foreign object related mishaps each month during 1976. Although this is slightly less than our 1975 FOD experience, this year's mishaps have been most costly. We spent $3,402,911 to repair engine damage caused during the first six months of this year . . . compared to the $4,622,157 for all of 1975. Another sobering fact is that the causes of 52 percent of the mishaps were undetermined . . . we don't know who or what caused them. We must answer these questions in the investigations and get to the root causes. One of this year's mishaps was caused by a $1.50 fastener -- it resulted in a major ground accident and put a combat aircraft out of commission. That's our track record.

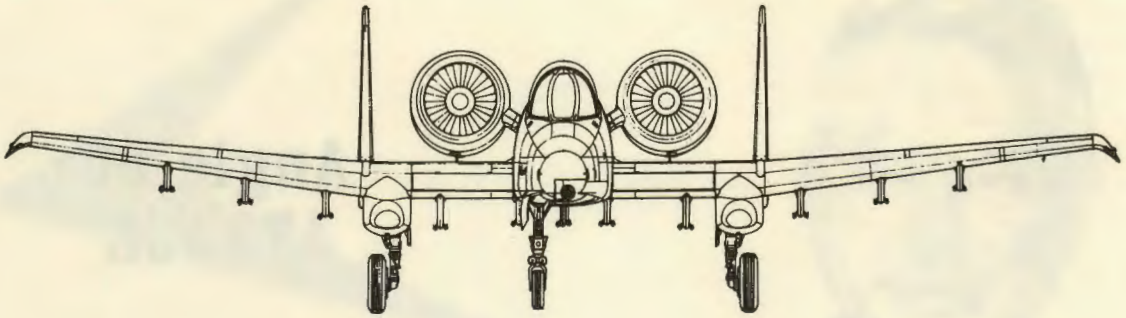
FOD also causes longer manhours and an increased risk of injury to personnel. We can't afford either. Our present FOD program places strong emphasis on preventing damage to jet engines. Foreign objects can also have disastrous effects on aircraft surfaces, flight controls, and tires. Unit FOD prevention programs must effectively accommodate all aspects of foreign object damage if we are to reverse the trend . . . and we must.

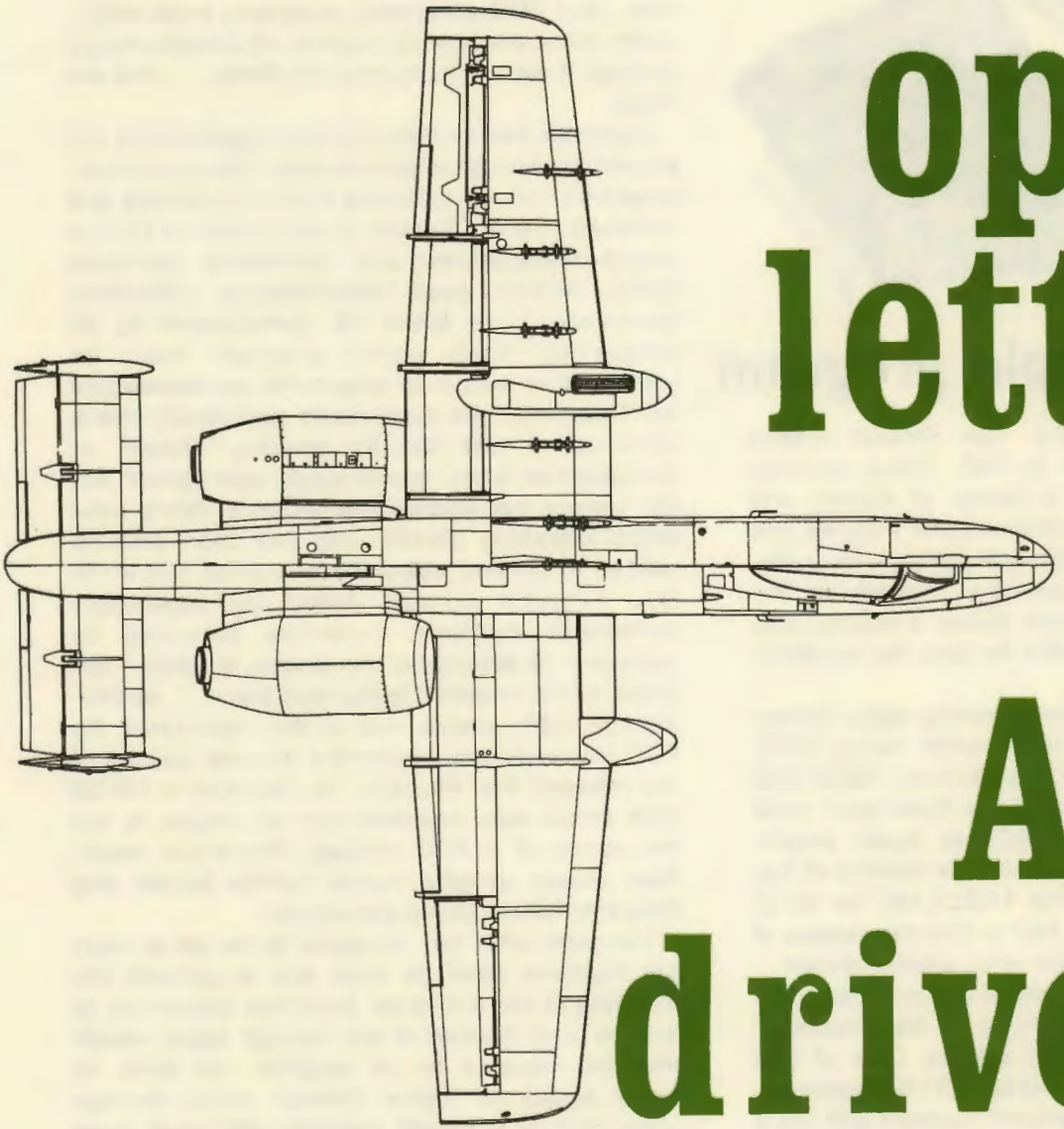
Everyone has to share in the responsibility for preventing foreign object damage. Our prevention programs may be suffering from tired cliches and standard efforts. The key to prevention of FOD is sound maintenance and operations practices which include good housekeeping, education, supervision, and above all, participation by all personnel. Each unit's program must be evaluated to insure its objectives are known and are being met. Do supervisors periodically check consolidated tool kits for missing, broken, or unauthorized tools, bench stock, and debris? Are the correct size screws and fasteners being used when installing panels? Are formation takeoffs spaced to prevent operation of trailing aircraft in lead aircraft's exhaust wake? Do supervisory personnel evaluate materials collected by sweepers to determine the source of foreign objects? Is the sweeper being kept busy . . . sweeping the right places and at the right time? Do FOD investigations determine the real causes of the mishap? For example, the fact that a 10/32 inch screw was ingested into an engine is not the cause of a FOD mishap. That's the result. Root causes usually involve human factors and failure to follow sound procedures.

Everyone who has occasion to be on or near the flightline must do their part to prevent the maiming of our airplanes. Condition yourselves to look for and dispose of any foreign object which may be ingested by jet engines, cut tires, or cause personnel injury. Foreign object damage prevention is a people program and must have the combined efforts of all personnel. Look for it, find it, bend over . . . and remove it.

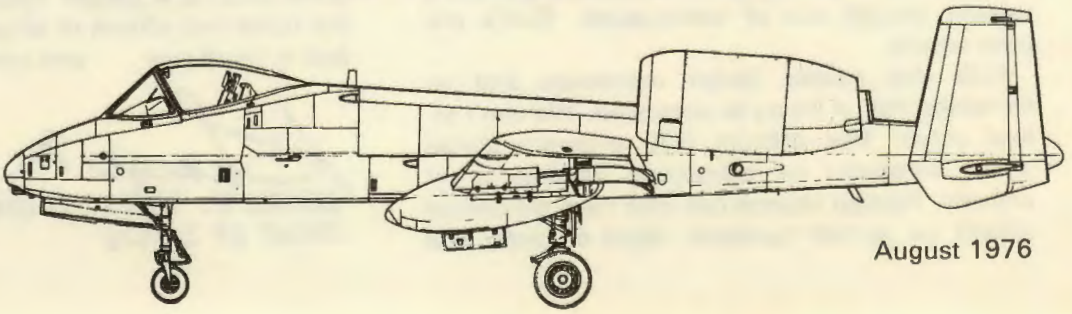
George M. Sauls

GEORGE M. SAULS, Colonel, USAF
Chief of Safety





open letter to A-10 drivers



By Lt Col Dale Tabor
4486th Test Sq
Edwards AFB, CA

As most of you know, there have been TAC pilots flying the A-10 throughout its development from the prototype YA-10 to the production version presently rolling off the line. In fact, since the delivery of the first A-10A in January 1975, five TAC pilots have logged over half of the total USAF flying time in the six preproduction and three production aircraft at Edwards AFB. We have participated in Development Testing and Evaluation (DT&E) in addition to the dedicated Initial Operational Test and Evaluation (IOT&E) sorties to assess the operational effectiveness and suitability of the aircraft. Under the Air Force Test and Evaluation Center (AFTEC), we have evaluated the A-10 in every mission that has been proposed for it as realistically as possible. It is my hope that this open letter to future A-10 drivers will answer some of the questions of both the supporters and the skeptics alike.

First, let me say that even when you see it every day, the aircraft doesn't get any prettier - or any uglier, for that matter. Once you climb in the cockpit, it looks a whole lot better. As for getting the aircraft airborne, it takes no AGE and very little time to start, taxi, and takeoff. During our recent Forward Operating Location Tests, we averaged about 3-1/2 minutes from foot-on-the-ladder to airborne for a flight of two. The bird takes off clean in less than 2,000 feet. Takeoff distance with 10 MK-82s is less than 4,000 feet. Landing distance even with 18 MK-82s 1,350 rounds of 30mm, and 8,500 pounds of fuel is under 2,800 feet.

Once you get the bird airborne, it's hard to believe it's the same big airplane you climbed into. Visibility and maneuverability are outstanding. Targets are easy to acquire and attack from overhead or pop-up patterns ... even in marginal weather. The A-10 can work under a 1,000-foot ceiling in visibility under 2 miles. In addition, dive angles of up to 30 degrees can be attained under a 3,000-foot ceiling. The A-10 is so maneuverable, you just have to experience it to believe it. What about the gut issue of performance? Like any aircraft, the A-10 does not perform as well at maximum gross weight as it does clean. Put 18 MK-82s and a ton of ammunition on any fighter and you degrade the performance. However, this aircraft does maneuver and perform better with this type of load than other attack aircraft at near-maximum weight. With parent pylon loads (up to 10 bombs) only, the low altitude performance degradation is hardly noticeable. It's strictly a matter of tailoring the load for the job and the threat.

Unlike most new airplanes, the A-10 is a simple aircraft by design and should prove to be an easy, safe aircraft for transition training. Final approach speed is 120 knots at landing weight. We have recommended that partial speedbrakes be used in the landing pattern to allow the pilot to carry a higher power setting on final and control airspeed more easily. Airspeed on initial will likely vary at different bases, but 250 to 300 KIAS will probably be the most widely used. Because of good rudder authority and wide spacing of the landing gear, we have not found it necessary to establish a maximum crosswind for landing.

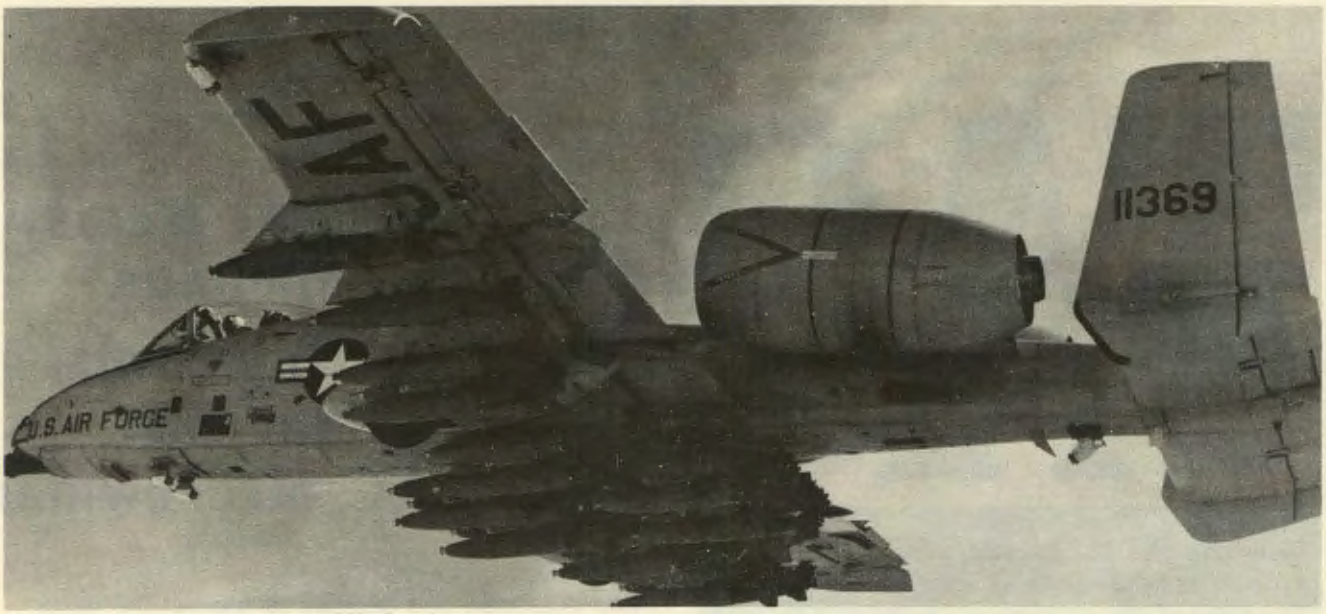
The A-10 engines and aircraft systems are reliable, and redundant features provide ample margins for safety. We have found no way to foul up the fuel system and the fuel quantity indicator tells the pilot not only how much fuel he's got, but exactly where it's located. The center nose location of the refueling receptacle makes air refueling the A-10 an easy task. The airplane handles honestly and will not spin unless pro-spin controls are held for several seconds. Once a spin or departure is entered, the pilot needs only to neutralize the controls to recover.

Lt Colonel Tabor is this month's Fleagle T-shirt winner.

open letter to A-10 drivers...

Although learning to take off and land the A-10 is easy, proper employment of the aircraft requires considerably more pilot skill. To start with, the pilot must learn to navigate on his own. This may sound ridiculous since we all navigate each time we fly, but the fact is the A-10, at least at this point, has no inertial navigation system to assist the pilot in finding the target. In the target area, pilot skill becomes a factor in accurate delivery of ordnance. The HUD provides necessary information (airspeed, altitude, pitch angle, pipper) for accurate manual bombing. With BDUs, we have demonstrated a 13.6 mil accuracy with the system here at Edwards AFB, but that was done on a controlled range with known winds. Absence of any type computer makes accurate delivery of unguided ordnance a challenge for the pilot, especially in poor weather. The A-10 has excellent visibility and maneuverability to attack targets - it's up to the pilot to take advantage of it. Of course, there's always the GAU-8 (30mm gun) and while it is very accurate even at long slant ranges, the pilot should track for a second or more to increase the probability of killing a tank on a single pass. Hitting with the GAU-8 is easier than with 20mm guns because there is less gravity drop and/or wind drift, and the pilot need not concern himself as much with achieving precise parameters. All that's required is to put the pipper on the target and fire. It's really an impressive gun. On one of our test flights, I carried two SUU-23s(20mm gun pods) to check A-10/gun pod compatibility; and even though both pods were fired at the same time, they were like toys compared to the GAU-8.

For those of you who may be frustrated air-to-air jocks, the potential to maneuver against an adversary aircraft is there in the A-10 - we proved this during our tests against T-38s and other aggressor aircraft. As with any visual engagement, the pilot must keep the attacker in sight to defend himself. However, it was impressive to note that even when an attacker approached the A-10 from 6 o'clock, an overshoot was imminent. The A-10 must turn only enough to rotate his tail cone sufficiently to defeat the IR missile threat, and if the attacker presses for a gun attack, the A-10 must break out of the attacker's plane to prevent a high deflection gun



shot. Since it is already known the attacker is going to overshoot, an A-10 reversal can begin as soon as the gun attack is countered, and when the attacker repositions for another attempt, the A-10 can maneuver to meet him in a head-on aspect. I'd be happy to trade head-on gun passes with anyone!

Against a T-38 type threat, the chances are the A-10 could retain external ordnance and still accomplish survivable defensive maneuvers. However, against slower threat aircraft, the problem becomes tougher. With loads of up to 10 MK-82s on parent pylons, the A-10 will probably not have to jettison ordnance if the engagement remains at low altitudes. One other note about jettisoning ordnance - the A-10 still has a lot of firepower on board (1,350 rounds of 30mm) after external ordnance is dropped. Although the A-10 cannot disengage from most air-to-air fights, it can run most attackers out of fuel in a short time. There is no question in my mind that the A-10 will get some air-to-air kills while defending itself in combat.

In summary, I would like to issue two challenges to TAC jocks who will fly the A-10. The first challenge is dictated by the aircraft itself. The A-10 has outstanding capabilities. Though relatively slow, it is a simple, honest and safe aircraft with super visibility and maneuverability. It is equipped with one of the finest airborne weapons in existence - the GAU-8. It will require a highly skilled, well trained, aggressive fighter pilot to exploit the aircraft's full capabilities. The A-10 fights only as well as the pilot who flies it.

The second challenge has a historical precedent. When another Republic aircraft, the F-105, first came into service, it received its share of unjustified criticism. Yet, when the time came to prove itself in a combat arena, both the "Thud" and the jocks who flew it earned the respect of the fighter pilot community. Because it does not fit the image of sleek, fast fighter aircraft, the A-10 may be subjected to similar unjustified criticism that will surely be reversed when it goes to war.

Providing close air support for the Army in a European weather and threat situation will be tough. NOBODY SAID IT WAS GOING TO BE EASY! My challenge to you is to refrain from prejudging the A-10 because it's not sleek and super fast. Once you fly it, then say what you wish. In other words, don't knock it until you've tried it.

Lieutenant Colonel Tabor is presently assigned to the 4486th Test Squadron (TAC) at Edwards AFB. He began his tactical fighter career with F-100 assignments in Europe and Vietnam. In 1970, he was assigned to TAC/DR as operational staff officer, responsible for guided munitions. In 1974, he was one of four pilots selected by TAC to fly the A-7 and the prototype YA-10 in a comparative flight evaluation. Prior to his present assignment, he was an F-4 instructor pilot at George AFB. Lt Col Tabor is a Fighter Weapons School graduate and holds a Masters Degree in aeronautical engineering. He is presently current in both the F-4 and the A-10. As of the printing of this article, he had over 120 hours in the A-10.

TAC TIPS

interest items, mishaps with morals, for the TAC aircrewman

They that give up essential liberty to obtain a little temporary safety deserve neither liberty nor safety.

B. Franklin

TEAMWORK

After 10 minutes of flight, the F-4's external fuel tanks stopped transferring. Because this normally occurs approximately 20 minutes after takeoff, the WSO checked the aileron trim to determine if the aircraft had a fuel transfer problem. Trim was normal, so the pilot assumed he had a short fuel load (there are no fuel gauges in the Fox Four for the external tanks). A rig check was made prior to entering the range and this was also normal.

Two level simulated nuclear delivery passes were made without incident, but a slight wing drop was noticed on the third. After this pass, a rig check was again performed and an out-of-trim condition (two to three inches of down left aileron) was discovered.

The mission was aborted and return to base was uneventful until setting up for landing. A straight-in approach was flown. With the landing gear and flaps down, the left wing dropped and could not be raised when the airspeed decreased below 210 knots. A go-around was performed and a no-flap approach was attempted . . . an identical roll-off occurred at 210 knots. Full right stick and rudder would not hold the wings level. Tower notified the pilot that fuel vapor was coming from the aircraft. The pilot concluded that the aircraft's external fuel tank was deformed and decided to jettison the tanks. Once the tanks were jettisoned a controllability check was performed.

The culprit in this incident was a faulty pressure regulator in the wing. When the regulator failed during fuel transfer, no air pressure entered the external tank and approximately 1,000 pounds of fuel became trapped. This trapped fuel would cause less than one inch of down aileron at 350 knots and the aircrew assumed there was a shortage of fuel in one of the external tanks. On the third pass at 480 knots, the pressure differential caused the tank to collapse. Drag produced by the deformed wing tank was sufficient to cause the roll-off during the approach.

The incident, with the successful recovery of the aircraft, doesn't tell it all. Besides the skillful handling of the emergency by an aircrew that had it all together, there was excellent coordination with the SOF and an alert tower crew. They worked as a team and it paid off. Good on ya'.

NO BRAKES

During landing rollout, at approximately 4,000 feet remaining, the F-4 pilot applied the brakes, but there was no response. The anti-skid system was disengaged and the brakes were reapplied . . . still no response. The emergency brake handle in the front cockpit was pulled, but since no braking action was observed, the rear cockpit emergency brake handle was also pulled. This did not help, so the hook was lowered and the departure-end BAK - 9 was engaged at ap-

proximately 20 knots. The Phantom stopped straight ahead in the overrun with no further difficulty.

Flight and maintenance troubleshooting could not duplicate the brake failure, and the brake accumulator gage and all hydraulic gages checked OK. Most probable cause of the malfunction was internal failure of the anti-skid control valve. If this flapper valve sticks or fails closed, the emergency brake system cannot overcome the normal hydraulic pressure to initiate braking. It is also possible for the anti-skid-out light not to illuminate under this condition when the malfunction is momentary.

Things can go from bad to worse very quickly when you're flying . . . in fact, it's very rare that emergencies don't complicate themselves. Be prepared for any eventuality. Know your aircraft and procedures . . . beforehand.

WEATHER SUPPORT CHANGE

Prepared by Air Weather Service
Scott AFB, IL

Pilot weather briefings should be enhanced by changes that will take place later this year in CONUS base weather stations. A new weather communications system will replace the old teletype networks for delivery of weather reports and forecasts. Implementation of the new system, the CONUS Meteorological Data System (COMEDS), will begin in Texas in early July 1976. The entire COMEDS is scheduled to be completed by December 1976. It will operate at 1200 words per minute and all network operations will be controlled by a computer located at Carswell AFB. Terminals in the weather station will consist of a page copy printer, a keyboard and an electronic screen visual display.

This new system will impact the forecaster/briefer routines and the amount of weather data displayed. As a result, far fewer files of "teletype sequences" will be posted in the weather station. Chances are that the weather report or forecast you wish to see or use during your briefing won't be there. In this event the forecaster/briefer will query the central data file in the Carswell computer by punching a few keys on the terminal of the new communications system and in a few seconds the information you need will be flashed on an electronic screen similar to your TV picture screen. This "soft copy" not only will save time and resources in the weather station, it will also insure that you are getting the latest weather information in the system.

ARTCC FORECASTER UPDATE

By Col Wesley E. Robb
TAC/WEO

During the past year, the Federal Aviation Administration (FAA), the National Weather Service (NSW) and the Air Force's Air Weather Service (AWS) tested a joint concept of weather support within the Kansas City Air Route Traffic Control Center. The final test report is being prepared, and preliminary results indicate an unqualified success.

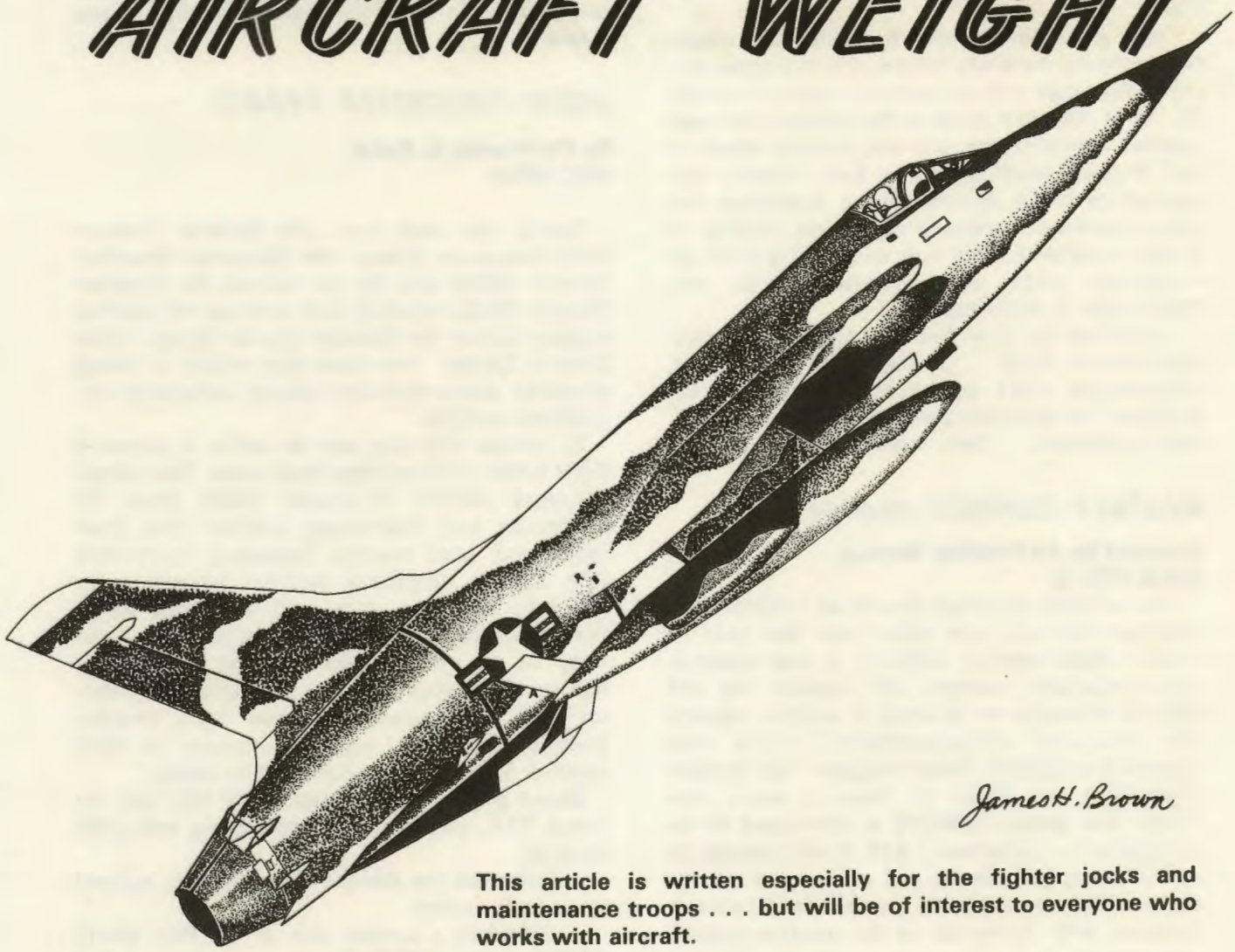
To review, this test was an effort to enhance flight safety in three important areas. The round-the-clock ARTCC forecaster (AWS type) (1) monitored and interpreted weather data from radar and pilot reports, providing controllers with current hazardous weather advisories for relay to enroute pilots (2) solicited additional pilot reports from airborne pilots, particularly in or near hazardous or potentially hazardous weather areas in the Kansas City sector, and (3) assumed nighttime flight weather briefing and related support functions for AWS weather stations in the Kansas City sector.

Based on the positive results of this test, Air Force, FAA, and NWS are proceeding with their plans to:

- Continue the Kansas City program, subject to periodic review.
- Establish a similar unit at the Fort Worth ARTCC early in 1977. Together, the Kansas City and Fort Worth units will cover much of "tornado alley."
- At the Washington ARTCC, try a somewhat different concept. Beginning in early 1977, a test will evaluate the utility of a small cell of weathermen, operating part time, supporting an ARTCC with a collocated FAA Flight Service Station (FSS). The FSS will be augmented with Enroute Flight Advisory Service (EFAS).

Comparison of results from Kansas City and Fort Worth ARTCC modes of weather support with the upcoming test at the Washington ARTCC will help determine the future of weathermen in other ARTCCs.

AIRCRAFT WEIGHT



This article is written especially for the fighter jocks and maintenance troops . . . but will be of interest to everyone who works with aircraft.

By Maj John E. Freitas
35th TFW, George AFB CA

How often have you come across statements in aircraft "Dash Ones" stating: "... for additional weight and balance information, refer to TO 1 -1B-40 and the aircraft DD Form 365F for determining a given aircraft's center of gravity (CG)?" Or, when you fill out a flight plan and come across the little block on the DD Form 175 annotated "DD Form 365F, Weight and Balance" ... do you immediately put NA, even though you're probably not sure if this is the correct thing to do? For those of us who have been flying fighters for a few years, and spent a tour or two in SEA, there's hardly a configuration we haven't seen or had loaded on our aircraft. Besides, Big Ugly, the Sluf, and the Hun can be loaded with lots of stuff and still be relatively stable and not overgrossed. Well, now I'll tell you folks a few "little known" facts about weight and balance, how it applies to the aircraft you fly or maintain, and where you can go to find out all there is to know about the subject.

and BALANCE

The "word" begins with TO 1-1B-50, which is the basic technical order for USAF Aircraft Weight and Balance. Its purpose is to provide "... the necessary information to govern and control the weight and balance of heavier-than-air aircraft, and supplements the weight and balance control program contained in TO 1-1B-40 ...." TO 1-1B-50 contains some very basic aerodynamic data, definitions of terms, clearance and filing procedures, and also categorizes all Air Force aircraft into three specific classes based on whether or not the recommended weight or center of gravity can be exceeded. Briefly, these classes are:

CLASS 1A: Aircraft are essentially training type aircraft whose recommended weight or center of gravity limits"... cannot be exceeded by loading arrangements in tactical operations and therefore need no loading control." Typical aircraft would be the T-37 and the T-38.

CLASS 1B: Aircraft in this group are those whose recommended weight or center of gravity "... sometimes can be exceeded by loading arrangements normally employed in tactical operations and therefore need loading control." This class represents the greatest portion of the fighter "herd." They are as follows:

A-7D	RF-101A/B/C/G/H
A-37	F-104
F/RF-4C/D non-LES Es	F-106
F-5 series	F/FB-111
F-15 series	O-1
F-100	O-2
	OV-10

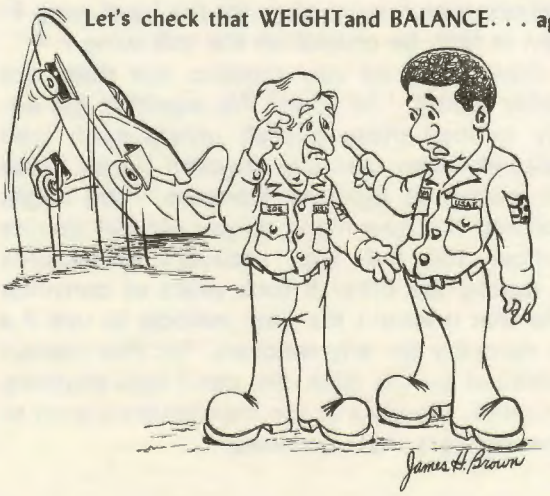
Most of these aircraft have been around for a long time and their standard load configurations have become well known to most of the jocks. Now and then a new weapon or load configuration will come up and the crews are required to be briefed on the effects this may have on the aircraft's handling qualities.

CLASS 2: These are aircraft "... whose recommended weight or center of gravity limits can readily be exceeded by loading arrangements normally employed in tactical operations and therefore need a high degree of loading control." Now, for those old heads who have been flying the F-101 and F-105 series aircraft, this is nothing new. But, because of recent modifications to the F-4E (addition of slats) and with the arrival of the A-10, special attention should be given to weight and balance and how it affects aircraft stability. For our aspiring "tank killers," watch out! However, let's discuss the F-4E with leading edge slats, since it is one of those critters that can easily be placed into the red part of a C.G. chart, or overgrossed. For the jocks just getting checked out in this machine and for the gents who learned to fly "Big Ugly" when it had the hard wing, look alive ... this bird is different in many ways. What the major means to say is: "what was good for the goose, may not necessarily be good for the gander" or, "configurations which were okay for the hard wing F-4: may, in fact, be critical on the soft wing F-4."

By now, many of you skeptics out there are probably saying, "So what? We wouldn't get authority to load these aircraft unless each load had already been carefully checked out by those smart fellows at Eglin or Edwards." You might be correct, but how many of you old F-4 drivers remember the F-4 spin recovery procedures used during the 60's? It took years to convince people that it wasn't the best method to use if a rapid recovery (or any recovery, for that matter) was desired by the pilot. So, don't take anything for granted. Simply ask the maintenance guys to get the answers that you need.

AIRCRAFT WEIGHT AND BALANCE

I will now share with you all a "true to life" war story which is a good example of how Murphy's Law is never late for work. Once upon a time, an F-105G was written up for being extremely sensitive in pitch during the takeoff and landing phases of flight. Suspecting a possible C.G. problem (the bird had received extensive nose damage in SEA) the 1-1B-40 was reviewed to determine if something was amiss. Sure enough it was. What happened was this: the last time this "Thud" was overhauled at the depot, the chap who filled out the weight and balance forms (365s) made a slight error in his arithmetic and cleverly moved the C.G. (on paper) 6 inches further forward than what it should have been. But this story gets better. Now along came a TCTO that restricted the forward C.G. of the F-105 until the TCTO was complied with. Because of this still unknown error in computing the Thud's weight and balance, this aircraft was now out of the forward limits of the center of gravity with respect to the TCTO. To correct the apparently excessive forward C.G. problem, it was decided to remove the ammo drum, which was summarily done. This eliminated about 830 lbs. of weight from the nose section and effectively moved the C.G. approximately 8 inches aft. This meant that the bird really had a center of gravity 8 inches further aft than it should have been. To us "non-Thud" drivers, this may not seem like much, but to them it was just one more problem they really didn't need. When maintenance found out about this pitch sensitivity problem, it was immediately brought to the attention of the Quality Control weight and balance troops. Once they got the word, they found the original errors, reweighed the aircraft and determined that it did not have the unique forward C.G. problem after all. So now all is well in Camelot.



Let's check that WEIGHTand BALANCE. . . again.

Here are some things you can do to prevent similar events from happening. First, if you jocks are curious about the validity of the data that you presently have on hand, just make a phone call to your friendly maintenance Quality Control people, or take a stroll across the street and visit them in person. Just ask for the weight and balance experts. These people are easily recognizable -- they usually have poor eyesight, squint a lot and have cramped hands from printing endless amounts of numbers. Regardless of their surly expressions, these folks will be delighted to talk to you and answer all of your questions. For your reading pleasure, they have TO 1-1B-50, and TO 1-1B-40, including the DD Forms 365 on each aircraft assigned to your organization.

Secondly, your squadron weapons folks should get with the weight and balance people to see that the standard loads used by your organization are really all up tight. This is especially true if your U.E. aircraft were formerly hardwing F-4s and you now have the slatted birds.

Last, but most important of all, are the maintenance troops who seldom get the glory, but sure do get the work heaped on them. You folks must carefully review the 365Bs on each possessed aircraft to make sure the information is not wrong. Many TAC aircraft flew in SEA and have been worked on by people throughout the world. Sometimes the paper work may not accurately reflect what was actually done to the aircraft. I suspect there are probably no two F-4s or F-105s exactly the same, particularly when you consider all of the various modifications performed on these aircraft over the years. Every day someone is flying or working on one of these aircraft and may not really know what has been done to it in terms of modifications. To me, it is important that I know what has been done to the aircraft I fly. How about you? If and when you receive one of these aerospace machines at your base, take a real close gander at the weight and balance data in the 1-1B-40 and correlate that information with what is actually on the aircraft. You may be amazed at what you will find.

So ladies and gents, I hope this article has stimulated your curiosity enough to get you to look a bit further into this subject. For some it is just a job, but for others, it may mean their lives. Don't let someone else ruin your whole day!

AIRCREWMEN of DISTINCTION

Capt Victor G. Grahn
481st TFTS/17th TFW
Cannon AFB, NM

Lt Col Clarence R. Reed
481st TFTS/17th TFW
Cannon AFB, NM

The mission was a syllabus training sortie. The navigation and bombing portions of the mission had been accomplished and the crew had entered a local training area for proficiency maneuver training. As the third maneuver, a chandelle, was being completed, the crew observed a wheel well hot light. While the crew was completing boldface procedures for this emergency, the left engine over-speed caution light, and the left engine fire light came on. The engine was shut down and the crew maneuvered the aircraft towards the nearest available airfield, Cannon AFB, 140 NM away. The crew determined that if they lowered the landing gear, as recommended by the flight manual for the wheel well hot procedures, they might not have enough fuel to reach Cannon. Also, if they did have a fire, as indicated, they would not have time to reach Cannon at gear-down cruise airspeeds. Because of these factors, they elected to vent the wheel well area with the speed brake and did not lower the landing gear. The wheel well hot caution light and the left engine fire light did not extinguish throughout the remainder of the flight. Captain Grahn established radio contact with the 27th TFW Supervisor of Flying 69 NM from Cannon and declared an emergency. As the aircraft approached the base, fumes were detected in the cockpit. Captain Grahn informed the Supervisor of Flying of their compounding emergency situation and that they were configuring the aircraft for landing. At this time, the aircraft utility hydraulic system failed, forcing the crew to attempt emergency flap/slat and landing gear extensions. The flaps and slats extended properly; however, the landing gear would not extend. The aircrew then decided to carry their approach straight through at altitude to a visual downwind in order to make further attempts to lower the landing gear. At this time, a chase aircraft joined with Captain Grahn and Lt Colonel Reed's aircraft and confirmed that the landing gear was not down. After further attempts to lower the gear were unsuccessful, Captain Grahn requested that the runway be foamed for a single engine, gear-up landing using the approach-end barrier. This would be the first time that an F-111 would land with all the landing gear retracted. As the aircraft approached final, the chase aircraft reported smoke from the left engine area and the crew experienced some momentary uncommanded flight control movements. The flight control malfunctions increased in intensity and duration, and the chase aircraft reported smoke and flames erupting from the main wheel well area. Captain Grahn requested the runway be cleared of the foaming equipment for an immediate landing. The aircrew realized that F-111D Tech Order procedures recommended aircrew ejection for a sustained fire; however, they were over the outskirts of Clovis, New Mexico, a populated area and within 8 miles of the air base, only a few minutes from landing. The aircrew elected to remain with the aircraft and land. Captain Grahn turned the aircraft to final, cleared the area visually, and instructed Lt Colonel Reed to prepare for ejection, if necessary. Lt Colonel Reed confirmed that all emergency procedures had been accomplished and cleared the cockpit of loose equipment. On short final, the chase aircraft informed the crew that the fire was increasing in intensity and pieces were falling from the underside of the aircraft. Captain Grahn determined that the aircraft was still under positive control and in a safe position for landing, and the crew elected to continue. With touchdown imminent, the aircraft experienced a sudden pitch-up maneuver which Captain Grahn quickly controlled. The aircraft successfully engaged the barrier in the center of the runway on the foamed area. Upon sliding to a stop, the crew immediately shut down the remaining engine and egressed the burning aircraft. The aircraft fire was quickly extinguished by the Crash Recovery Unit and the aircraft incurred only minor damage as a result of the gear-up landing.

The superior airmanship and professionalism displayed by Captain Grahn and Lt Colonel Reed resulted in the recovery of a seriously disabled aircraft and prevented possible injury or loss of life. Their actions during this critical emergency qualify them as the Tactical Air Command Aircrewmen of Distinction.

chock talk

...incidents and incidentals with a maintenance slant.

AIR BURST

During level delivery of MK-106 practice bombs, the ejector gun of SUU-20 station #3 malfunctioned. It allowed the bomb on that station to strike the bomb behind it, setting off the spotting charge.

Teardown of the SUU-20 revealed that the #3 ram assembly was jammed in the retainer guide preventing downward ejection of the MK-106. Airflow around the SUU-20 probably forced the free-falling practice bomb into the bomb behind it. A missing ejector pad allowed the ram assembly to be jammed into the retainer guide - most likely during loading. Loading personnel must be alert to detect this deficiency during preload checks. Thorough equipment inspections prior to loading will aid in preventing recurrence of this type malfunction.

NONREPORTABLE ACCIDENT

By TSgt Fred Whiting
TAC/SEG

Close only counts in horseshoes and hand grenades, right? Wrong. Close sometimes counts in maintenance too. Recently, TAC had a close call with an F-4 that ended up as a nonreportable accident.

The aircraft was in phase for scheduled maintenance. The crew removed the right speed brake and before replacing it, checked their tools and noted a 10" screwdriver missing. They conducted a search and located what they thought was the missing screwdriver. Their portion of the phase maintenance being complete, they left the area. A different maintenance crew arrived and applied hydraulic pressure to check out another aircraft system. The speed brake snapped and caught another 10" screwdriver that was lying on the forward lip of the right speed brake.

The unsafe condition created by someone leaving a screwdriver on the speed brake can be controlled. Insure that your tools are accounted for before completing an assignment. We can't depend on luck in the aircraft maintenance and flying business.

BENT THUD

The F-105 returned to the pattern to make a full-stop landing after an instrument flight. The pilot used speed brakes in the pattern to control airspeed in accordance with the Dash One. The pattern and landing appeared normal. However, and there's always a however, the runway supervisory officer called the pilot to tell him that the lower speed brake pedal was hanging down. Postflight inspection revealed that the bottom speed brake pedal was scraped.

Pilot error? Not this time. Investigation revealed that the ground-test speed brake switch in the aft portion of the fuselage had shorted, allowing all speed brakes to extend when the pilot selected the open position. Normally, only the side speed brakes extend with the landing gear down. This switch is located inside a plastic case with a small drain hole in the bottom. This case was installed, at an undetermined time and place, upside down. This allowed the

case to fill with water; when the water level reached the switch, it shorted out. Murphy strikes again.

A "minor" mistake caused this incident. Each part of an aircraft is designed to perform a specific function. When one is installed incorrectly, it can cause an incident or accident. It may take a month or a year, but sooner or later, something will happen. Do each job as if you were going to fly the aircraft. It may take a little longer, but it is worth the time.

BLOWN BULLET

The A-7D was on the trim pad following an engine change. During engine run preparation IAW the tech order, the operator noted the gun gas purge door closed, but failed to insure that the door actuator was connected. After the engine was run for approximately 40 minutes, smoke was observed in the area of the gun gas purge door. Gun maintenance personnel were notified and arrived at the trim pad. They determined that purge air was the source of the smoke. The engine was shut down and fire department was notified. Approximately two minutes after shutdown, one 20MM TP round exploded in the loader transfer unit at the gun entrance due to the heat buildup. An engine technician who was standing near the aircraft at the time of the explosion suffered a partial hearing loss, with subsequent ear and head pains.

This explosives accident was the result of more than one failure to follow tech order guidance. At some unknown time prior to the accident, the gun gas purge door actuator had been disconnected and was not reinstalled IAW TO 1A-7D-2-13. Additionally, the engine technician failed to insure that the actuator was connected prior to the engine run.

Tech orders were developed for two reasons. One is to insure the work performed is accomplished correctly. The other is to protect you, the maintenance worker, from injury. Do yourself a favor ... use tech data.

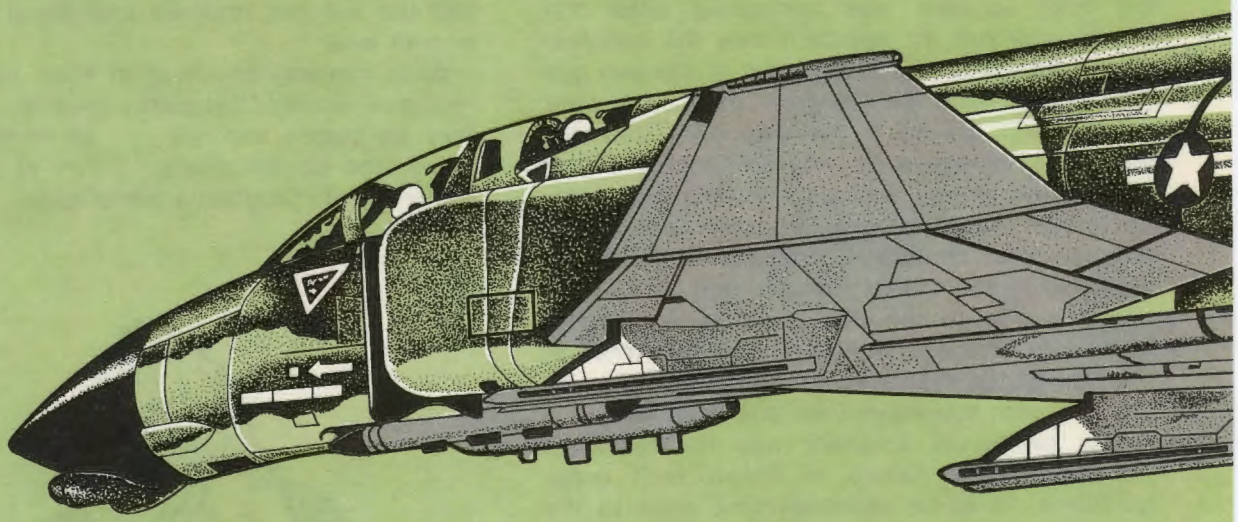
FERD FODGOTCHA...AGAIN

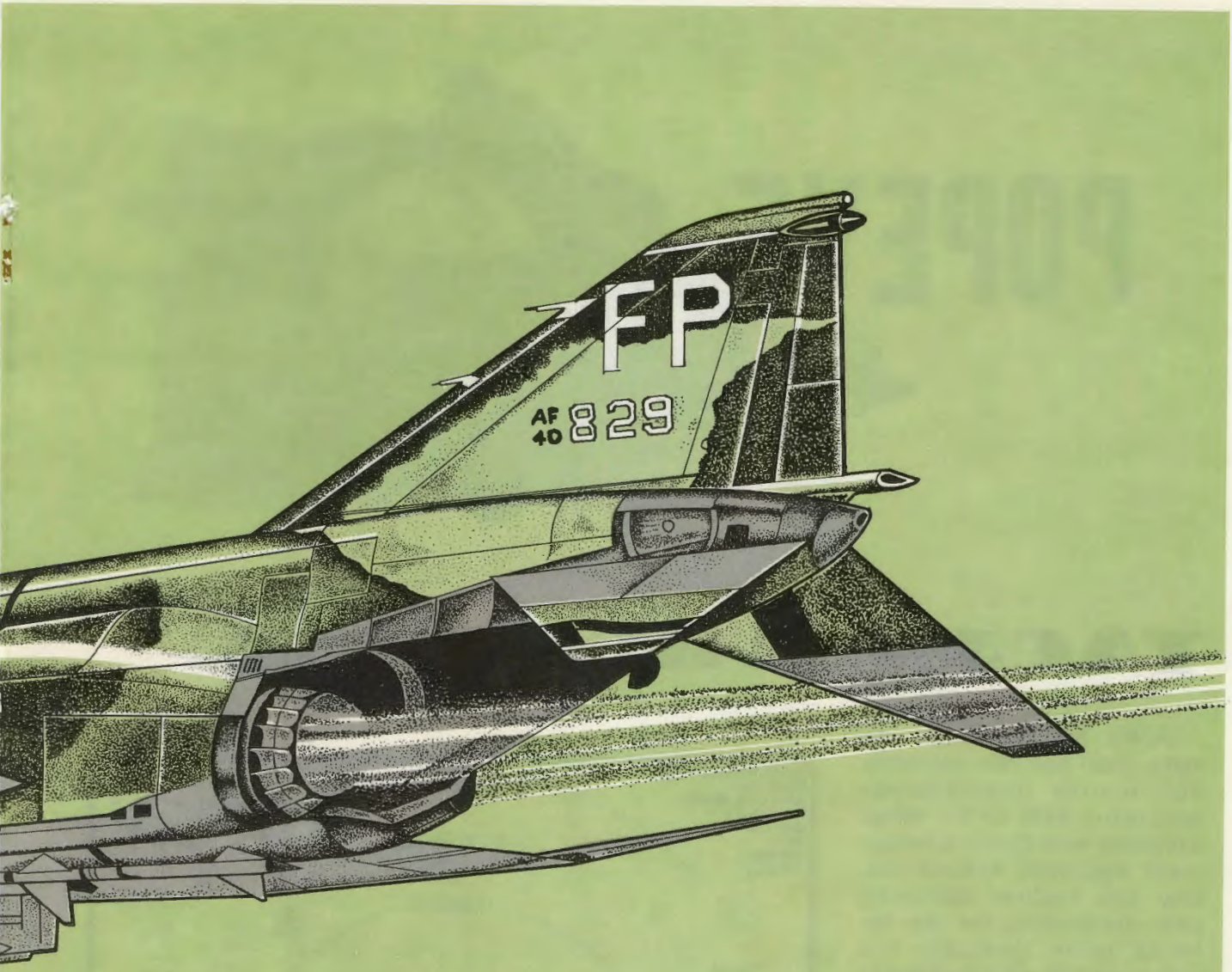
Ferd raised his ugly head once more. This time he put the bite on an F-4E. The mission had been completed without incident, but postflight engine inspection revealed the unmistakable calling card of Ferd FODgotcha . . . damage to the third thru tenth stages of the engine compressor, and complete destruction of all compressor blades on the fourteenth thru seventeenth stages. Cost? $5,000. The culprit? A screw from panel 6R (located forward of the engine intakes).

An inspection of all the wing's aircraft had been conducted in January 1976 to ensure that correct size screws were installed in panels 5, 6, and 9. There was no record of panel 6R having been removed since that inspection. However, the size of screws found in this panel after the incident ranged from 13/32-inch screws (the proper size) down to 9/36-in screws. Because of this, all the wing's aircraft were reinspected. As dangerous as a FODed engine is, we might lose more than an engine. The problem of incorrect screws and fasteners is not peculiar to just the F-4 but involves just about every TAC aircraft type.

What can you do about it? First, use the correct size screws/fasteners. Second, make sure they are tightly secured . . . all of them. Then, check and double-check . . . all of them. Let's run ole Ferd FODgotcha out of town.

F-4 PHANTOM II



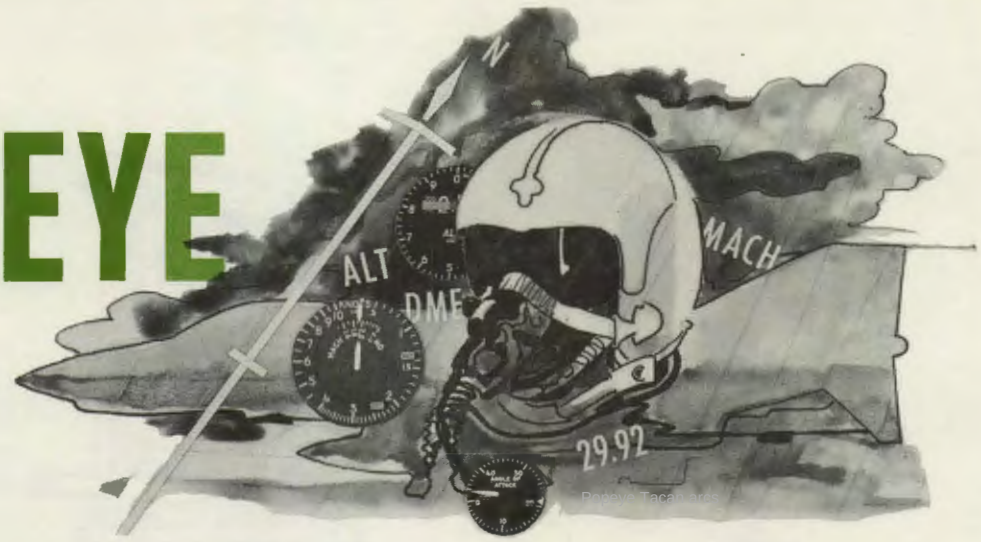


By Capt Mike Byers
TAC/DOXBL

Perhaps the most versatile fighter ever built . . . in such a short time, a classic of the fighter line . . . still the mainstay of our fighter force and those of so many allied nations . . . ask the Wolfpack, the Gunfighters, the Triple Nickel who flew them well . . . men like Ritchie, DeBellevue and Feinstein who cried "Tallyho!" and hammered enough MIGs to lay claim as aces . . . ole double ugly is a mean motha when she's riled.

James H. Brown

POPEYE



TACAN ARCS

Capt M. C. Kostelnik
Test Project Officer
4485th Test Squadron
Eglin AFB, FL

TACAN Arc Maneuvers are more than just the mundane 90° course interceptions depicted in AFM 51-37. When combined with Terminal Instrument Approach Procedures, they can become interesting and challenging for the Air Force pilot. Consider the following TACAN approaches and see if your present techniques are compatible with the examples presented.

In order to intercept the 7 DME Arc in the example shown, a leadpoint which allows for the turn radius of the aircraft should be determined in order to avoid excessive overshoots. There are many techniques from which to choose, but one accurate timing technique you may not have considered is presented below.

10% of True Airspeed

Time the DME change for 10% of the TAS (in seconds)

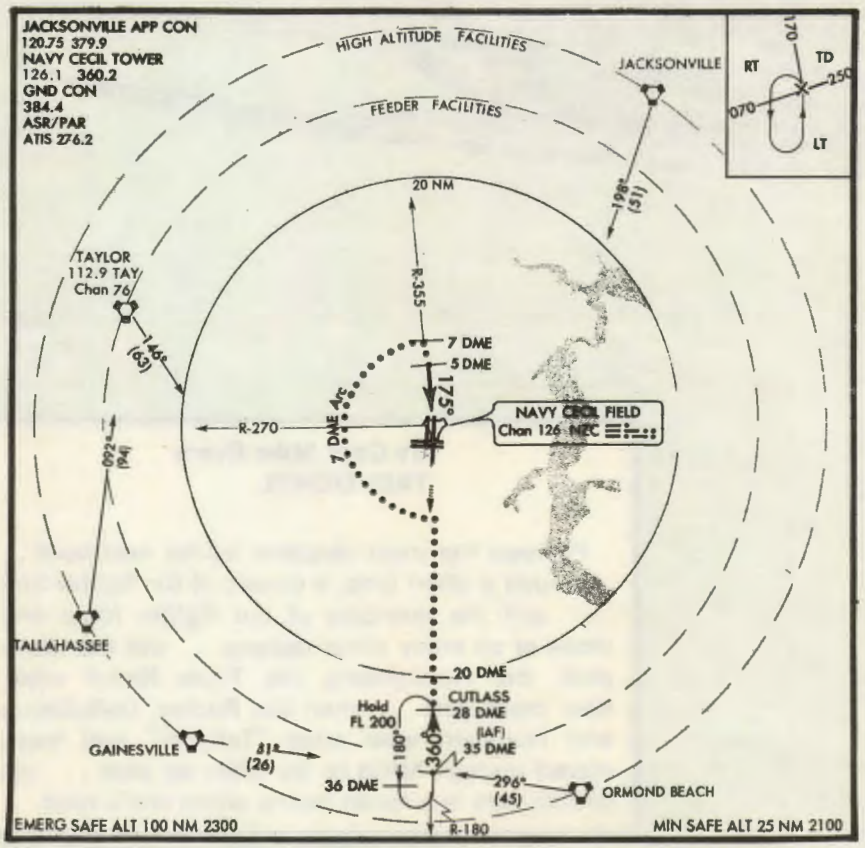


Figure 1: Radials to Arcs

and use this DME change as your leadpoint. For example, an F-4 in the problem above at 240 KTAS would have the following start turn point: Since 10% of 240 is 24, the DME change should be timed for 24 seconds. With no wind, the DME change will approximate 1.6 NM, so our leadpoint is 1.6 NM and our start turn point is approximately 8.5 DME for the 7 DME Arc. This technique is already wind corrected and provides excellent results during strong wind conditions. However, timing should be accomplished as close to the arc intercept point and airspeed as possible. This will provide the most accurate lead distance possible.

Most of us are familiar with the technique of flying a series of short legs to maintain an Arc, but have you ever tried flying a constant angle of bank? For small Arcs where flying a series of short legs becomes tedious, try the following technique. The angle of bank required to maintain an Arc will vary with the radius of the Arc, wind, and the aircraft TAS. As a technique, the following formula can be used to estimate the required bank angle to maintain the Arc:

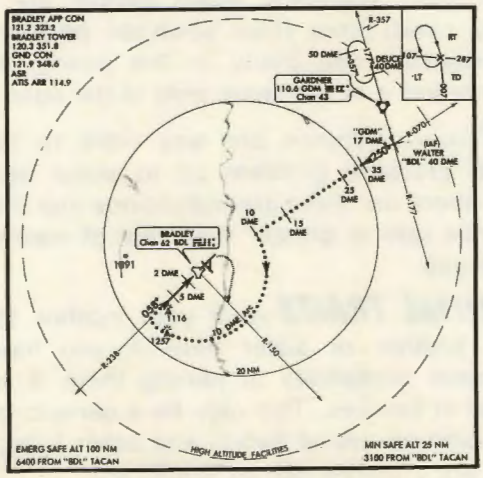
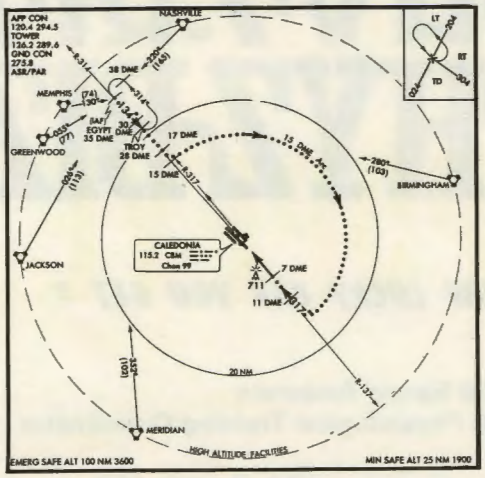


Figure 2: Maintaining the Arc

Figure 3: Arcs to Radials



$$\text{BANK ANGLE} = \frac{\text{TURN RADIUS (IN NAUTICAL MILES) X 30}}{\text{DESIRED ARC (DME).}}$$

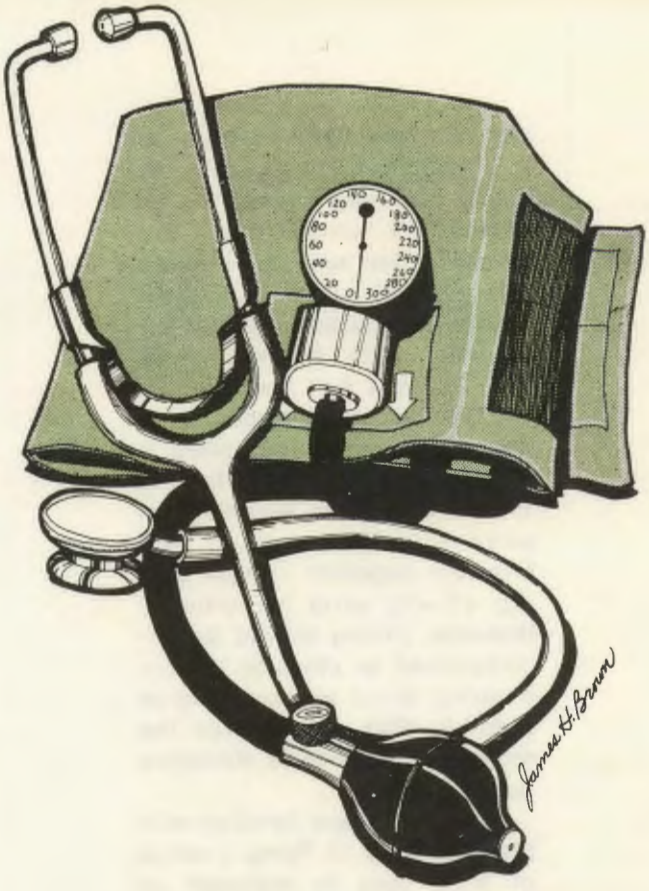
Maintaining the 10 DME Arc at approximately 180 KTAS would require a 3° angle of bank as shown below:

$$\text{TURN RADIUS} = \text{NMPM} - 2 = 180/60 - 2 = 1 \text{ NM}$$

$$\text{BANK ANGLE} = \frac{1 \text{ X } 30}{10} = 3°$$

The 10% of True Airspeed technique will also apply to the interception of a radial from an Arc. Accuracy of all timing techniques, however, depends on where the timing is actually conducted. So try to do the timing within 30-40° of the radial you intend to intercept. In the example shown in Figure 3, start the timing somewhere around the 100° radial and time the bearing pointer change for 10% of the TAS. Use the degrees of change as the leadpoint. Remember that especially demanding approaches may require the leadpoints to be computed prior to flight. If so, use the techniques outlined in AFM 51-37 and crosscheck your leadpoints with timing to determine the effects of wind.

PHYZ-BIZ



HOW LUCKY CAN YOU GET ?

By Lt Col Harold Anderson
HQ TAC Physiological Training Coordinator

There are some 107 "lucky" TAC aircrews. Why lucky? Because they are currently undergoing treatment for hypertension (high blood pressure). What's so lucky about that, you ask? Well, not because they have hypertension -- but because their hypertension has been discovered and is being treated. Many people in the general population are less fortunate. For example, it has been estimated that there are 23 million hypertensives in the US, but only about one-half (or 11.5 million) have been identified. Of the 11.5 million who are known, only about one-half are being treated, and one-half of these (roughly 2.9 million) are not being treated adequately. All of which means that only about 2.9 million out of 23 million hypertensives are as lucky as our TAC aircrews. That's less than 13 percent of the total!

The main reason that this percentage is not higher is probably due to the fact that, unlike most other disease states, hypertension is painless in the early stages (the first 15 or 20 years after onset). Generally, aches and pains are the body's "early warning" mechanism; pain usually indicates that something is out of whack, and we go to a physician for medical advice. But, by the time hypertension begins to cause worrisome symptoms (headache, dizzy spells, shortness of breath, chest pains or heart palpitations), the victim may be a prime candidate for a stroke, heart attack or kidney failure. Our lucky TAC aircrews stand only a slight risk, comparatively speaking, of progressing to one of those severe disease states . . . if they follow the prescribed program and take prescribed medications. Periodic physical exams (e.g., annual physical) will most likely uncover the problem, but hypertension is a sneaky type of disease. At first, the blood pressure may occasionally be abnormally high; and this might not be detected on your annual physical. Over a period of years, the tendency is for blood pressure to be abnormally high more frequently. Finally, if unchecked, the blood pressure remains at high levels all the time.

There are a number of factors which tend to predispose the individual to hypertension: aging, sex (M or F, not the act), familial traits, obesity, race, smoking, diet, etc. Let's take a look at some of these:

AGE ..... Generally, older people are more likely candidates than younger people; but hypertension can occur in the young, so we can't brand it as a disease only of the aged.

SEX ..... Women are less likely to have a blood pressure problem up to about age 50; from there on, there are indications that their incidence rate is greater than that of men of the same age.

FAMILIAL TRAITS ... If your mother, father, older brother or sister have it, you have an increased probability of joining them. It seems to run in families. This may be a genetic factor but common eating habits and other living patterns are probably just as significant.

OBESITY..... Fat people tend to have higher blood pressure levels than their slender compadres. However, if a "skinny" gains substantial weight, his risk of developing hypertension is drastically increased.

RACE ..... An important factor since blacks are twice as likely to be victims as are whites. Not only that, but it has been observed to develop earlier, to be more severe, and cause a greater number of deaths at a younger age.

SMOKING & DIET ..... May be causative factors. The ability of cigarettes to raise blood pressure quickly and to high levels is well known. Diets which are high in saturated fatty acids, salt, and rich in cholesterol are considered by many researchers to be a prime factor.

LACK OF REGULAR EXERCISE.. May be an important consideration. The role of exercise is far from clear, but it is part of a composite picture which looks something like this: the non-exerciser tends towards overweight (obesity) with faulty dietary habits and generally is a cigarette smoker of greater or lesser intensity. As he (or she) gets older, this picture becomes more clearly focused.

What's your blood pressure? That's not as simple a question as it might seem, because blood pressure is not a fixed value. It can change, literally from minute to minute, depending on your activities; such things as exercise, excitement, fear, smoking, sleeping, posture, pain, etc., can cause significant fluctuations. Blood pressure is usually measured indirectly with a blood pressure cuff. The cuff is inflated until the blood flow in a prominent artery (which is near the surface in the hollow of the elbow) is stopped. The operator reduces the pressure in the cuff until blood is again heard to flow in the artery. This is the point called "systolic" pressure. The air is further released until no sound of blood flow can be heard through the stethoscope. This is the point called "diastolic" pressure. In recording these pressures, the systolic is always written first, followed by a diagonal line, or slash, then the diastolic pressure is recorded. A systolic reading of 110 mm of mercury, and 70 mm of mercury diastolic pressure would properly be written as 110/70 and read as, "One hundred-ten over seventy." The diastolic pressure is the more important of the two in identifying hypertensives. Remember, diastolic pressure is the pressure remaining in the arteries when the heart is relaxed between beats. If this lowest, constant arterial pressure exceeds 89 mm of mercury, hypertension is present. Values below that figure are considered normal. Diastolic pressures may climb to values in excess of 140 in severe hypertension.

Flight surgeons have several drugs available for use in reducing blood pressure. A number of these are approved for use by aircrews while on flying status . . . you need not necessarily be placed in a DNIF status while undergoing treatment. But don't try practicing medicine without a license . . . see the flight surgeon.

The earlier treatment is begun, the more effective it is likely to be. Pressures of 160/95 are regarded as elevated and requiring treatment by both military and civilian physicians alike (AF uses 140/90). An elevation to 140/90 is also cause for concern and insurance companies' statistics clearly indicate that blood pressure above that level increase mortality at a younger age.

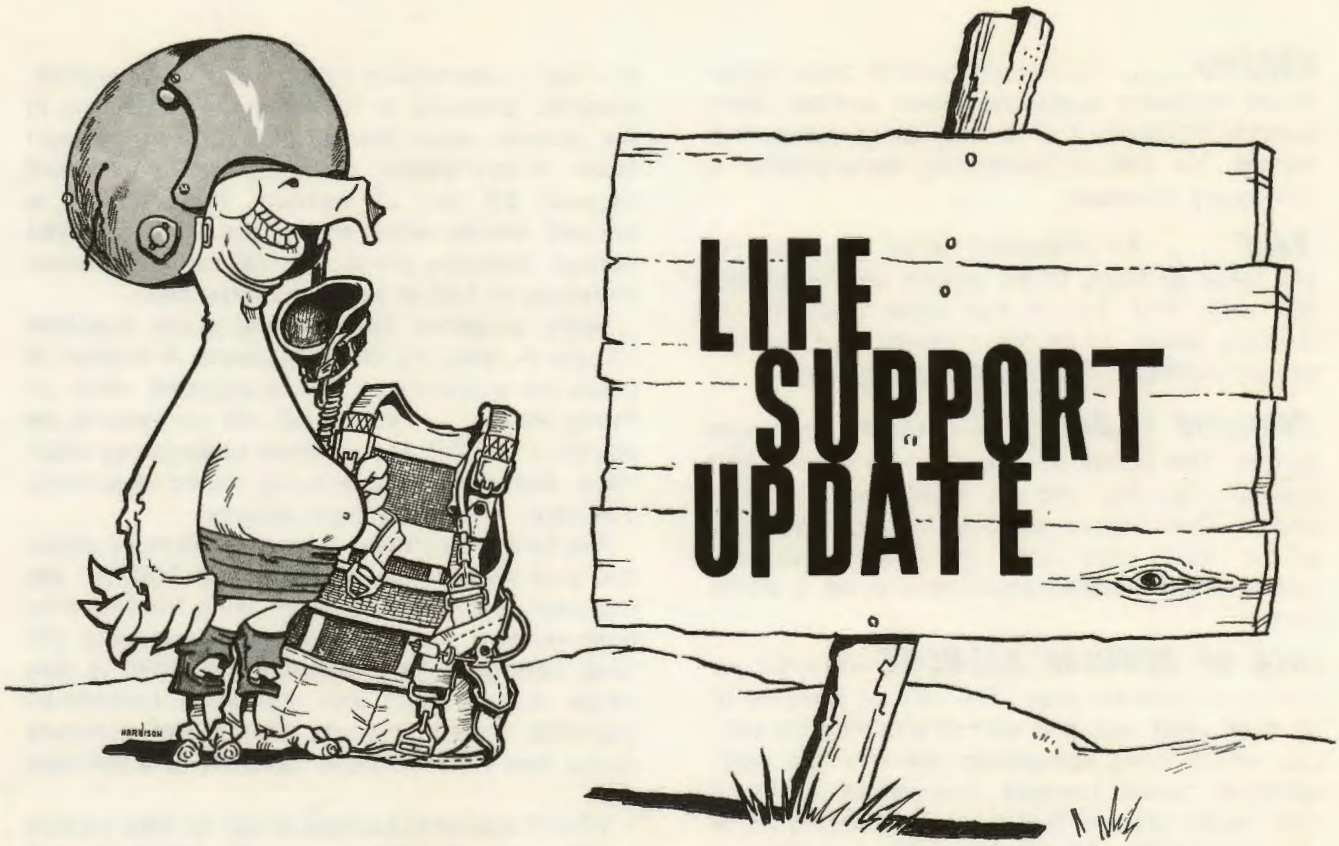
What's available besides drugs to help control blood pressure? This is where the list of "don'ts" comes in. The drug therapy will be more effective if the patient observes these prohibitions:

- Don't smoke.
- Don't overeat.
- Don't use excessive amounts of salt.
- Don't eat saturated fats and cholesterol.
- Don't lose your cool -- avoid anger, frustration and anxiety.

Naturally, there are some "dos" that should be observed, and which will give a positive approach to your treatment:

- Do exercise moderately and regularly.
- Do maintain a tranquil mind.
- Do take medications as prescribed.
- Do follow your physician's advice.

If you're one of those 107 TAC aircrews we mentioned in the first sentence, and you've been avoiding the "don'ts" and observing the "dos," you have an excellent probability of returning to a normal blood pressure without a continuing requirement for medication. The rewards are significant and range from an intangible (but statistically very real) increase in life expectancy, to a tangible savings on your life insurance premiums. And, my hypertensive friend, that's how lucky you can get!! >



By Capt Mike Byers and CMS Hal Stamp
TAC/DOXBL

OXYGEN MASKS: The MBU-5/P pressure demand oxygen mask is one life support item which many aircrews take for granted: It hangs on your helmet and has the all-important microphone for communication but the actual "nuts and bolts" of the mask are seldom considered.

Oxygen enters the faceform through the valve located at the bottom of the mask, and exhaled air passes out through the same valve. The exhalation portion of the valve is constructed so that a pressure slightly greater than the pressure of the oxygen being supplied by the regulator will force the valve open and allow exhaled air to escape. The valve is a delicate mechanism - it should not be attacked with a pencil, toothpick, or an item smaller/sharper than your elbow.

Should a problem be discovered during preflight (using the MQ-1 Oxygen Mask Tester)in the life support facility, a Life Support Technician is the one to take care of it. Even technicians don't repair oxygen mask parts; they just replace all damaged parts with new parts. There is a good reason for not trying your own maintenance on the valve. Should the valve become damaged, ambient air instead of the good stuff will be inhaled (usually unbeknownst to the aircrew). With a damaged valve, a degree of hypoxia can be encountered and, as we all know, hypoxia can be fatal.

The MBU-5/P mask is manufactured in four sizes to allow us to fit almost everyone. In the rare case where standard sizes won't do the job, AFM 67-1 provides for custom construction and fitting. A sizing caliper is used to aid in determining the proper fit and choice of mask size for each individual. When was the last time you had your mask checked to insure you are still wearing the correct size? Some of us gain and lose weight (or our beaks get bigger); this can change the size of mask you need. If you have difficulty in obtaining a proper seal, or mask-collapsing in the nose area of a proper sized

mask is being encountered, check with the Life Support Technician to eliminate the problem.

Most of us enjoy breathing; it sort of grows on you. Wear the proper size mask and have it maintained in perfect working order so that breathing will be enjoyable. Have a good flight.

CAPTION CONTEST: Sgt Jim Pepper's (35th AMS, George AFB, CA) is printed below, and we're sending Sgt Pepper a photo-engraved plaque of his entry - couldn't get the ejection seat we wanted to give as first prize. There were literally hundreds of entries and we would like to thank everyone for the super response. Other "Honorable Mentions" were:

1. "That's OK - he was being RIF'ed anyway." - Cadet 1/Lt Eric Vogt, 355th Cadet Squadron #105 (CAP), Tuscon, AZ.

2. "Well, Charley, it took a licking and kept on ticking." - Lt Col Robert Harris, 193d TEW, Middletown, PA.

3. "When I said, 'Pull!' I expected a clay pigeon." - Sgt Harold Edie, Cannon AFB, NM.

4. "I say to let swing shift worry about it." - SSgt George Salamacha, PA ANG, Pittsburgh, PA.

5. "You're the cameraman. You tell him about the lens cap." - Lt Col Robert Gaughan, 108th TCF, Hancock Fld, NY.

Congratulations: The following Life Support troops recently were selected to promotion to Senior Master Sergeant. Congratulations, and keep up the good work:

MSgt John Shields, 347th TFW/DOTL

MSgt Eugene Thornton, USAFTAWC/TELO →

EMERGENCY SITUATION TRAINING

By Maj Wiley E. Greene
162d TFTG
Tucson AZ

Situation: You're number four in a two ship strike flight. (Oops, that's B+4 talk.) You've just spent 30 minutes at low level, dodging rocks, and have gotten to the target area. You reach the pop-up point (PUP), stroke the burner and pull into 4 G's when somebody yells "SAM BREAK." In the excitement, your "anti-G garment" pops the clipboard off your leg and it lodges behind the stick. Now what?

Options:

A. Squeeze the trigger and hope you get the guy who called the SAM break.

B. Flip through the checklist, looking for the pretty pictures.

C. Turn off the ADF.

D. None of the above.

Analysis:

There's a lot to be said for "A," but remember the law "NOTHING REPLACES AIRCRAFT CONTROL," and it's YOUR fault you're in a mess.

"B" would be OK, but some checklists don't have pictures and you might have one of those.

Definitely not "C." Turning off the music would be the last resort.

Yeah, "D." When discussing aircraft control, the number of variables seems to reach infinity, but most situations question the position of the nose, or the direction the nose is moving. For example, if the nose is moving toward sky, your control problem is different than if the nose is moving toward gopher holes. Recognizing that it doesn't take a mental giant to tell what he's pointed at, then we can conclude that the real discussion should concern itself with determining decision making parameters; the most important of which is ejection. Punching out becomes a viable alternative if you're looking at the ground.

There are a few constants:

1. The decision to eject is sometimes difficult to make, but is always hazardous if delayed below 2,000 feet AGL.

2. The aircraft needs more room to recover from a nose-low condition if external stores are retained.

3. Speeds in excess of 400 KTS increase the size of the maneuvering airspace.

4. Less than optimum angle of attack increases turn radius and time required to recover.

5. The rudder is effective in rolling the aircraft.

6. Using stick trim to achieve nose-up reaction takes a bit more time, but works.

7. It is difficult to think when you're scared to death. If you accept the validity of the constants, then you will strive to become so familiar with your Supersonic Super Sabre that reactions to the unexpected are instinctive.

TAC SAFETY AWARDS

Crew Chief Safety Award

Airman First Class David J. Kane, 366th Organizational Maintenance Squadron, 366th Tactical Fighter Wing, Mountain Home Air Force Base, Idaho, has been selected to receive the Tactical Air Command Crew Chief Safety Award for this month. Airman Kane will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.

A1C David J. Kane

Maintenance Safety Award

Technical Sergeant Bill J. Clinton, 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. Sergeant Clinton will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.

TSgt Bill J. Clinton

THINGS that go

in the FLIGHT...

By Maj Joe Tillman

Photo courtesy of:
SSgt Douglas W. Barton/49th TFW

So you're having troubles because of a shortage of funds? You say there are only six people in your shop doing the work nine people used to do? Your 24-hour snack bar now closes at 2300 and opens at 0600, and you're on the graveyard shift? You say supply is out of sunglasses and you're going TDY to Turkey? So you are now buying scratch pads at the BX because your office is out of legal-sized writing pads? Is that your trouble, Friend? OK, relief is in sight! I have an idea that could put about five million (count 'em . . . five million) dollars back in TAC's communal stocking every year! My idea is not revolutionary . . . it's not even original. The amazing thing is that the whole plan is logical, feasible, and viable. If you haven't guessed by now, my idea is to eliminate all Foreign Object Damage - FOD.

FOD is on the rise in TAC this year, and through June 1976, this feisty demon cost you and me over $3,000,000. That pays for a lot of manhours, sunglasses, and writing pads . . . and the year is only half over.

There are FOD programs in TAC . . . the problem seems to lie in getting people to participate. Don't look over your shoulder. By people, I mean YOU. Let's look at several of these areas and see where you fit in.

Consolidated Tool Kits (CTK) Program.

If you are not familiar with this term, you probably don't work on aircraft. Don't stop reading, though - the concept of the CTK might have some merit in your particular work area. The Consolidated Tool Kit concept is simply to organize tool kits so that it is quickly recognized if a tool is missing when the job is done. Kits are marked so that every tool has a place, and if a space is not filled, the tool is missing - and a search is begun. Like most good ideas, this one is simple, effective . . . but MURPHYable. Any maintainer who carries a screwdriver or allen wrench in his pocket can mess this system up. If the day is long and you're about ready for a Colorado Kool Aid, and you've looked for two hours for that 'damn apex bit, you may be tempted to play the ol' shell game and substitute another . . . don't do it. Find that FOD - your brew will taste a lot better afterwards.

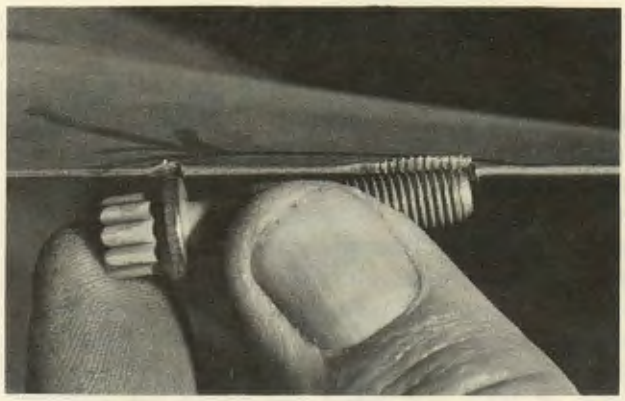
Cockpit FOD

If you are an aerospace machine driver or a maintainer whose job requires crawling around in the cockpit, this one's for you. Cockpit inspections have revealed such disparate items as nuts, bolts, safety wire, pencils, survival knives, coins, flight caps, clipboards, and flashlights. This trash is usually found under the seat, but FOD is sometimes discovered inside the throttle quadrant and even in the flight controls below the stick (sometimes after an accident). This junk can be just as dangerous as engine-ingested FOD. It can cause inadvertent ejections, jammed throttles and binding flight controls. It can produce electrical failures, fires, and distractions in the cockpit during zero and negative G conditions.

Aircrews must insure their "office" is kept clean and tidy. Anyone visiting the cockpit should do the same. Check to see that you leave the cockpit with the same number of items you had when you climbed in. If you KNOW you lost something, look for it. If you can't find it, write it up so the necessary search can be made. The next guy to fly that bird will appreciate it.

things that go bump in the flight...

Photo courtesy of:
Sgt Bellamy/35 FMS



Engine FOD

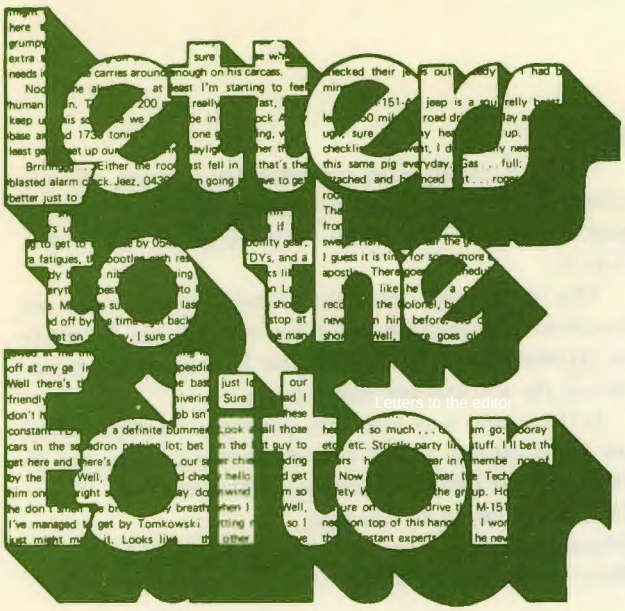
Trash gets into jet engines from many sources. Rivets and bolts forward of the intake may come loose as a result of worn fasteners or crossthreading. Screws, bolts, or fasteners improperly installed (or the wrong size) have cost us dearly. The nasty thing about this type of FOD is that it usually rears its ugly head after the aircraft is airborne - the Gs and jolts of an air-to-mud or ACM mission will quickly identify a wrong-sized or worn fastener, much to the chagrin of the unsuspecting pilot.

Another source of engine FOD is simply that old nemesis - the misplaced tool left in or near the intake. Despite the Consolidated Tool Kit, checklists, and templates, the ol' screwdriver vs turbine blade trick still plagues our FOD-proofing efforts. Our best chance against this type of mishap is the pride of workmanship and "FOD consciousness" inherent in most of TAC's maintenance people. These problems usually result from eleventh-hour rush jobs, complacency, fatigue, or weak quality control procedures.

Miscellania

Strange stuff has been pulled out of engines, flight controls, and other sacrosanct areas of TAC aircraft - wigs, eyeglasses, ear protectors, radar scope filters, flashlights, and a recorded case of one each complete set of men's thermal underwear (size large). The different ways FOD gets into aircraft is as varied as the list above - it falls out of pockets, vehicles deposit it while operating on the flightline, it is blown across the ramp by taxiing aircraft, but mainly it is left in or near aircraft by maintainers and aircrews alike. It's a people problem and requires a people solution. The name of the game is: (1) Don't leave anything around, and (2) Pick up FOs someone else accidentally left behind.

Let's put five or six million dollars back in TAC's (your) pocket. There's got to be a better way to use the money. →



FLIP REALIGNMENT IN THE PACIFIC
By Col Wallace W. Keehr
Dep Dir for Plans
Defense Mapping Agency
St Louis AFS MO

On 15 July 1976, the Pacific and South Asia (PSA) and the Australia, New Zealand and Antarctica (ANZA) FLIP Enroute and Terminal publications were combined into a single package. The title of the new publication is the same as Area Planning 3 - Pacific, Australia and Antarctica (PAA).

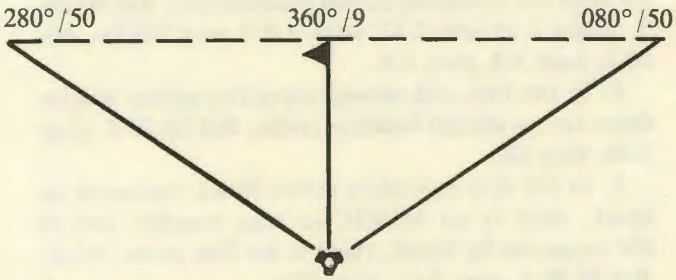
The PSA and ANZA Supplements are combined into a single PAA Supplement. The Enroute Chart coverage remained the same, but the current ANZA Charts 1-9 became PAA Charts 11-19. The charts and supplement will be published every 16 weeks with a Military Aviation Notice (MAN) issued at the intervening 8-week mid-point.

The Instrument Approach Procedure (IAP) has been combined into three high/low combination volumes. These volumes also contain the Standard Instrument Departures (SIDs) plus any existing expanded airfield diagrams and Standard Terminal Arrival Routes (STARs). The radar minima for the airfields have been moved from the Supplement to the front of these volumes. The IAP volumes will be published every 24 weeks. Two bound MANs will be published at each of the 8-week intervals between cycles with the second MAN being cumulative.

Editor

I have a question concerning the article "Tacan Fix to Fix" on page 26 of the June 1976 issue of TAC ATTACK. I applied the technique described in the article to the following problem:

a. I'm on the 080° radial at 50 DME, and want to proceed direct to the 280° radial at 50 DME. A graphic solution gives me a heading of 270°. The DME decreases from 50 DME to about 9 DME, and then increases to 50 DME.



b. The Ratio Method described in the article gives the following solution. The DME difference is 50 =50 - 0. The number of degrees between the two radials is 080° - 280° + 360°= 160°, for a ratio of 0 to 160, or 0 to 1. If this ratio is to remain constant (as required by the Ratio Method), my DME must remain at 50 DME. This results in flying the 50 DME arc to the desired point, which is not a straight line fix to fix.

Either I have completely misunderstood the article, or else the technique described in the article does not work for a fix to fix that passes inside of the arc. Please let me know if my analysis is correct.

Lt Robert E. Plaag
43 TFS
APO Seattle

You're absolutely correct. The Ratio Method described in our June 1976 issue will result in an arc being flown if you are executing a fix to fix that passes inside the arc. The ratio technique is best used for short fix-to-fix problems, i.e., when you're within 10 miles of the fix and only have a few degrees left to go. In this situation, the "pencil method" would be impractical and the Ratio Method may help you out.

ED

Letters

Editor

While reading TAC ATTACK (Jun 76), I came across an article, "You and Depot Maintenance." The article was very well done. However, the picture of the 781A was atrocious. There were many mistakes. The following is a list of errors found on page 22:

1. No rank in the crew chief block on the heading. Ref 00-20-5, page 2-14, para 2-9/3d.

2. No when discovered codes in any of the three discrepancies. Ref 00-20-5, page 2-15, para 2-9/3k.

3. In the third discrepancy, the symbol was signed off with no corrective action documented. Ref 00-20-5, pages 2-16 and 2-17, para 2-9/1 and 2-9(3)n, 00-20-1, page 3-4, para 3-8.

4. In the first and second corrective action blocks, there are no station location codes. Ref 00-20-5, page 2-16, para (2).

5. In the first corrective action block, corrected by block, there is no MIMIC or man number, and in the inspected by block, there is no first name initial. Ref 00-20-5, page 2-17, para (3)n.

There were a few others that I thought were discrepancies such as: in the first corrective action block, there is no "leak and op's check" and no F.O. and tool inv cw.

If by chance I missed some, I would appreciate your letting me know.

I would also like to know if the mistakes you printed were purposeful or accidental.

Sgt Joseph R. Miller
35 TFW
George AFB CA

We've finally found a way to get some reader response! The mistakes were intentional. Our crafty maintenance technician was attempting to find out how many eagle-eyed maintenance troops were reading our articles. You were the only one who caught all the mistakes. In appreciation of your getting involved, you'll receive the coveted Fleagle Fanny Feather of Fate Award. Keep up the good work.

ED

Editor

We have noted with considerable interest, the excellent F-100 Super Sabre drawing which appears on pages 16-17 of the June 1976 issue of TAC ATTACK.

This item, appropriately framed, would make an excellent presentation piece for our Awards Program or retirements of personnel who have flown or maintained the aircraft for many years.

Is there any way that this piece can be reproduced on good quality paper and made available to the F-100 units, in limited quantities, upon request.

Lt Col Theodore C. Wagner
Missouri ANG
Base Information Officer

The F-100 was another beautiful drawing contributed by our friend in Tempe, Dennis Kahler. We cannot reproduce his work because of its copyright. However, if you wish to contact him directly, his address is:

Dennis Kahler
3307 S. Terrace Rd
Tempe, AZ 85282

Denny's prints are approximately 20 x 24 and suitable for framing.

ED

FAC REUNION (All FACers past and present)
17-19 Sep 76
Sheraton Hotel, San Antonio, Texas

For information, contact:
Capt Gary Pointer
2102 Peachblossom Dr
San Antonio, Texas 78247
Autovon: 487-5697

Hey! pass it along... nine others are waiting.

TAC TALLY

	TAC			ANG			AFRES		
	JUNE	thru JUNE		JUNE	thru JUNE		JUNE	thru JUNE	
		1976	1975		1976	1975		1976	1975
TOTAL ACFT. ACCIDENTS ►	3	19	10	1	5	10	0	2	0
MAJOR ACFT. ACCIDENTS ►	3	18	8	1	5	9	0	1	0
AIRCREW FATALITIES ►	4	9	12	0	2	6	0	1	0
TOTAL EJECTIONS ►	4	15	6	1	2	4	0	1	0
SUCCESSFUL EJECTIONS ►	1	11	2	1	2	2	0	0	0

FIGHTER/RECCE WINGS		
ACCIDENT FREE MONTHS		
85	33 TFW	TAC
51	127 TFW	ANG
27	67 TRW	TAC
19	123 TRW	ANG
19	132 TFW	ANG

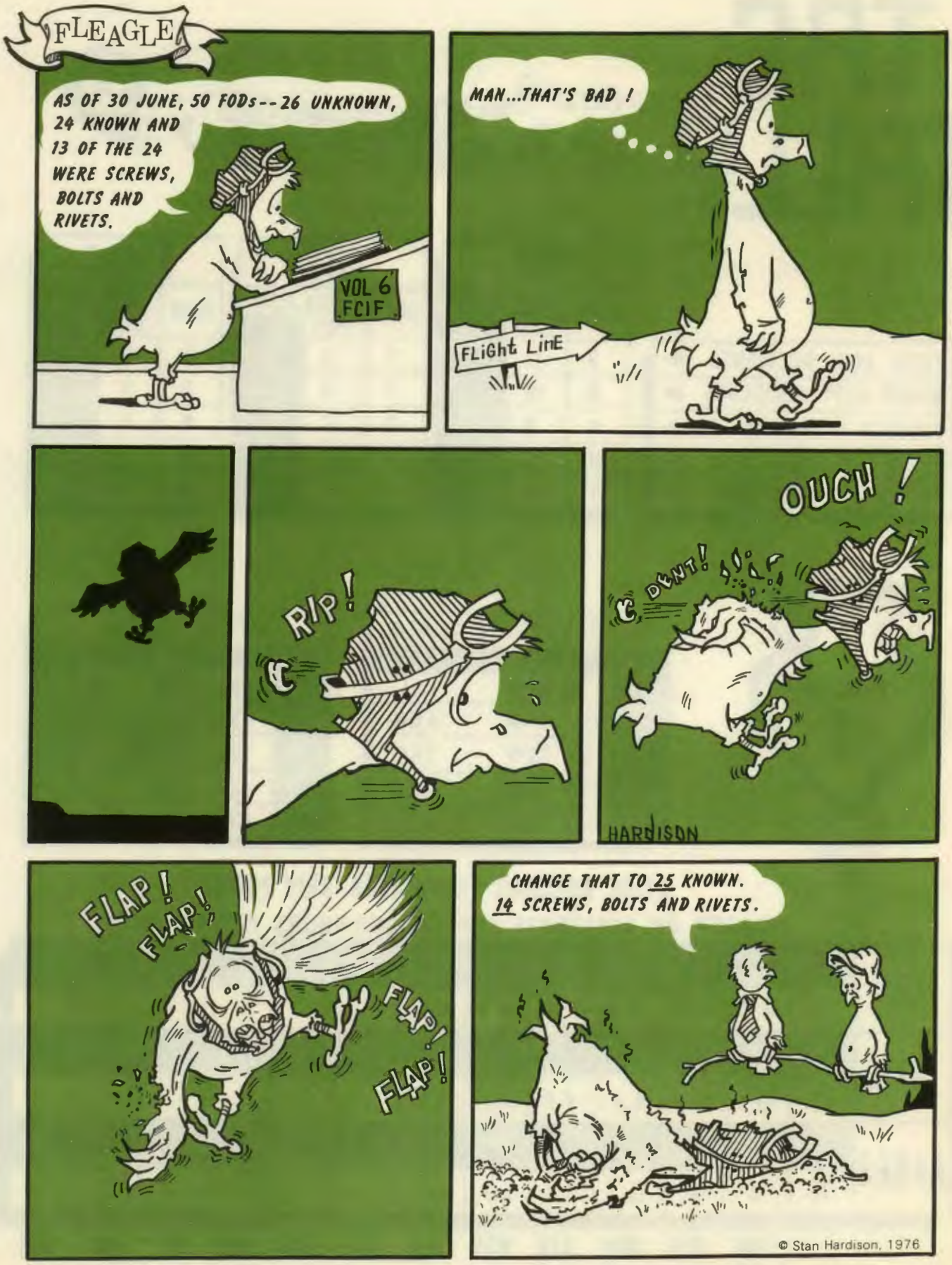
OTHER UNITS		
ACCIDENT FREE MONTHS		
131	136 ARW	ANG
87	135 TASGP	ANG
83	182 TASGP	ANG
82	126 ARW	ANG
79	507 TAIRCG	TAC

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						
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						
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						

★ U.S. GOVERNMENT PRINTING OFFICE: 1976 635-295/13


FLEAGLE
AS OF 30 JUNE, 50 FODs--26 UNKNOWN, 24 KNOWN AND 13 OF THE 24 WERE SCREWS, BOLTS AND RIVETS.
VOL 6 FCIF
MAN...THAT'S BAD !
FLiGht LinE
R/P !
OUCH !
DENT!
HARDISON
FLAP !
FLAP !
FLAP !
FLAP !
CHANGE THAT TO 25 KNOWN. 14 SCREWS, BOLTS AND RIVETS.
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