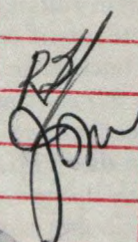


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TAC ATTACK

MAY 1985

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K. Taylor

ANGLE OF ATTACK



Recent mishaps and incidents highlight a need for us to look again at spatial disorientation (SD). Over the years, we have thought of SD as something that occurs only at night or in the weather, exacerbated by flying on the wing. In my career, I've experienced everything from a slight case of the leans to the feeling of hanging on the boom while the tanker and I did barrel rolls over the Med. The fix was a good instrument crosscheck—or seeing the horizon pop back into view.

While SD continues to be a real hazard in night/weather, we now understand that it also occurs in day/VMC. We've all experienced problems with flying over the water with haze obscuring the horizon, the milk bottle effect. But a similar phenomenon can exist despite a usable horizon when limited ground features reduce the distinction between sky and ground. Combine these environmental factors with the absence of canopy rails and bows and airframe protrusions that pilots have used in the past to keep them oriented to their aircraft's flight path. Add high maneuverability, self-trimming or digital flight controls, and lack of perceptive clues and a hazardous equation rapidly develops.

Even in a turning, burning engagement, you must maintain not only situational awareness, but also an understanding of where your flight vector is pointed. Your seat-of-the-pants perception that you are looking down on an adversary and climbing may be wrong—you may be looking up and pulling down.

For you air-to-ground guys, a similar situation occurs in a high bank, high G turn while looking over your shoulder to score your bomb or find the

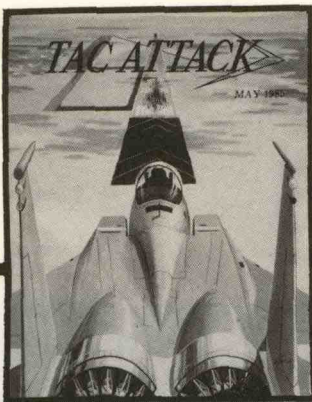
tank hidden under the trees. The rule of thumb is: turning, crosscheck altitude and attitude every couple of seconds.

While some of our HUDs have excellent capabilities, they require more interpretation than primary instruments. There is no substitute for a strong, regular crosscheck of the primary instruments.

You will soon be receiving an excellent video tape made by an F-15 pilot who experienced an extreme case of SD while in an over-the-water BFM engagement and recovered. He explains what happened and you see it from the cockpit on his VTR tape. Look for it at your local flight safety office.

We are approaching the season that historically has had higher mishap rates. There are probably several reasons—high personnel turnover, lots of deployments, thoughts turning to PCS moves, kids graduating, etc. Last year we experienced eight mishaps in six weeks which precipitated a “knock it off” for TAC Safety Day. Let's get ahead of the season and the *Grim Reaper*. Flight commanders need to be sensitive to these stresses in their aviators, and all of us need to conduct a periodic *self-test*. If we are planning ahead and executing smart, we will be safe.

HAROLD E. WATSON, Colonel, USAF
Chief of Safety



HON VERNE ORR
*SECRETARY OF THE
AIR FORCE*



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MAY 1985

DEPARTMENT OF THE AIR FORCE

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TACRP 127-1

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Distribution F(X) is controlled by TAC/SEP through the PDO, based on a ratio of 1 copy per 10 persons assigned. DOD units other than USAF have no fixed ratio; requests will be considered individually.

Subscriptions for readers outside DOD are available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. All correspondence on subscription service should be directed to the superintendent, not to TAC/SEP.

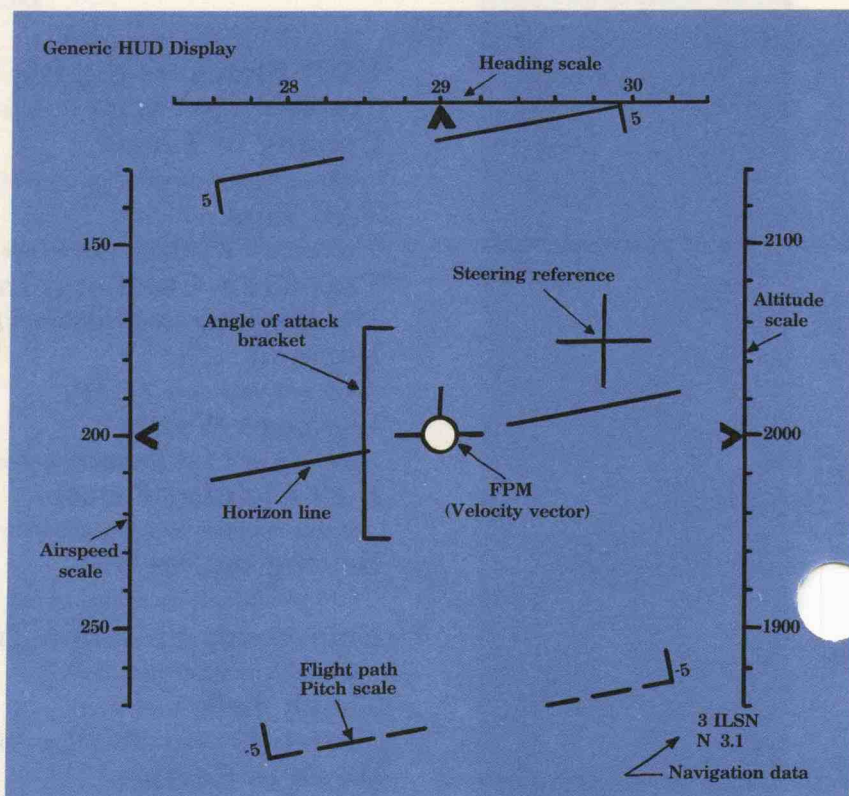
TAC Attack (ISSN 0494-3880) is published monthly by HQ TAC/SEP, Langley AFB, VA.

POSTMASTER: Send address changes to *TAC Attack*, TAC/SEP, Langley AFB, VA 23665-5001.

Second-class postage paid at Hampton, Virginia, and additional mailing offices.

HUD Flying vs the Big Picture

Maj Bob Keeney and
Maj Rich Grinnell
HQ TAC/DOV



Ed note: A common complaint of some *TAC Attack* readers is that they don't understand much of the pilot lingo contained in some of our articles. For those of you not familiar with the abbreviations, acronyms and jargon common to fighter pilots' vocabulary, some translations appear on page 7.

Finding 4: (Cause) The pilot failed to recognize his extreme nose-low attitude on final approach, possibly because of—
a) failure to maintain an instrument crosscheck;
b) failure of the inertial navigation system or heads up display; or
c) fixation on HUD symbology.

Spatial disorientation accidents continue to happen in modern fighters in spite of improved cockpit layout and instrumentation. Some of these mishaps are linked to HUD flying, but often the pilot isn't

around to give us the real answer to "What happened?"

We HUD flyers know that the HUD is great for weapons delivery and when breaking out from a low ceiling. We also know that the techniques used by pilots incorporating the HUD into their instrument crosscheck are varied. TAC hosted a TAF-wide HUD/instrument conference in June 1983 to determine how the HUD should and should not be used in instrument flight. The consensus of that conference has been used to rewrite the HUD section for the next revision of AFM 51-37. Here it is in a few simple rules:

1. DON'T USE THE HUD WHEN YOU NEED THE BIG PICTURE.

The HUD's FPM (flight path marker) (velocity vector for Eagle drivers) and pitch lines provide only a *partial picture* of aircraft attitude. If you attempt to use the HUD to confirm an unusual attitude, you may find only a blur of lines and numbers, or you may mistake positive pitch lines for negative pitch lines. For this reason the main ADI should be used anytime an immediate attitude picture is needed. *Don't use the HUD to make large attitude corrections, when spatially disoriented, during recovery from unusual attitudes or during lost wingman situations.*

Additionally, the HUD is best used for fine corrections, not big changes. For a level of from a 15-degree climb angle, for instance, use the ADI to get

a ball-park level off, then use the HUD to wire level flight. Use the ADI/HSI to establish yourself on final, then use the HUD (with other instruments) to refine course and glide path.

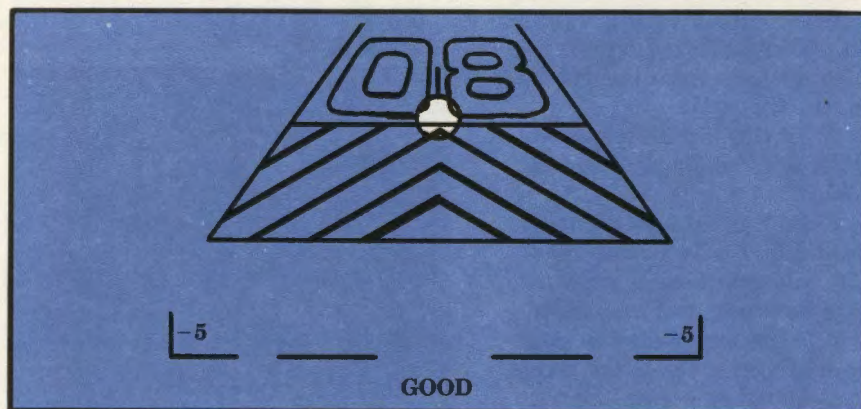
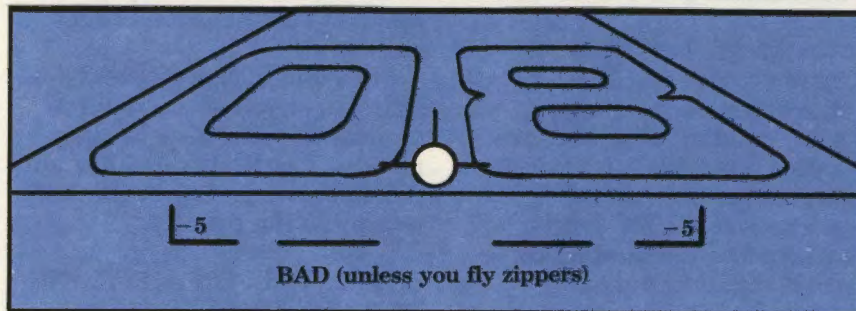
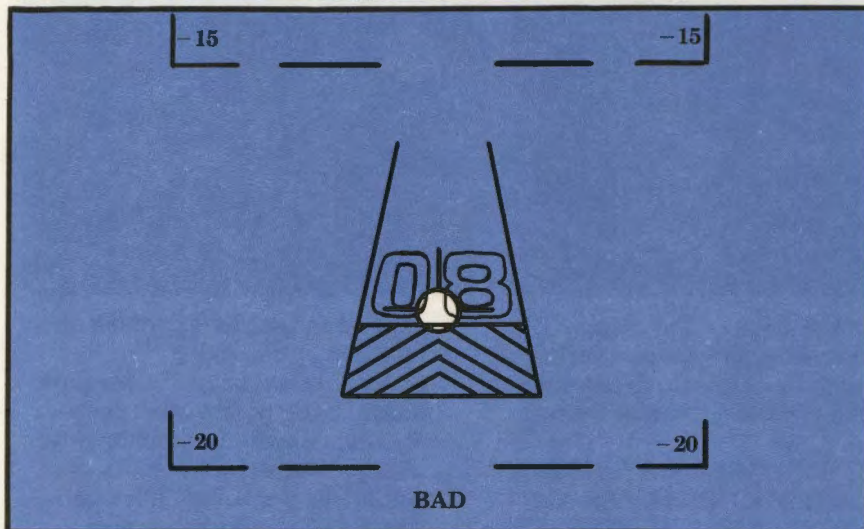
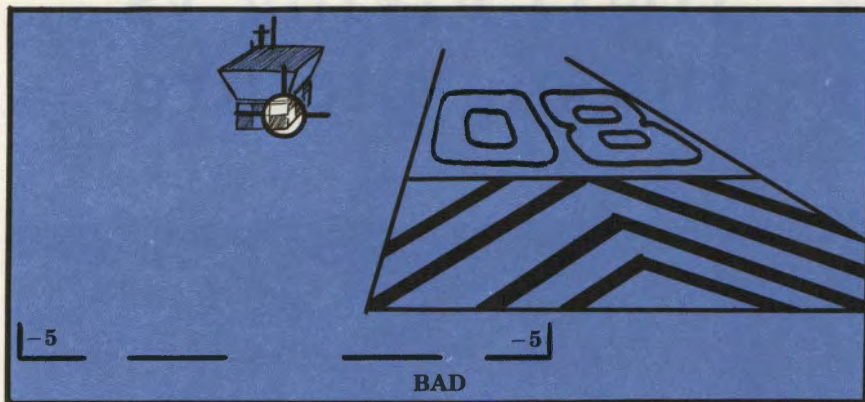
2. DON'T USE THE HUD AS YOUR ONLY REFERENCE.

There are definite advantages in using the HUD as an aid to instrument flight. It can be used to make small, precise corrections, and it gives you the earliest glimpse of the runway environment when breaking out. HUD references are most successfully used in an integrated crosscheck with other instruments. This technique will allow you to discover discrepancies or failures in the HUD, and it will keep your eyes moving to avoid fixation.

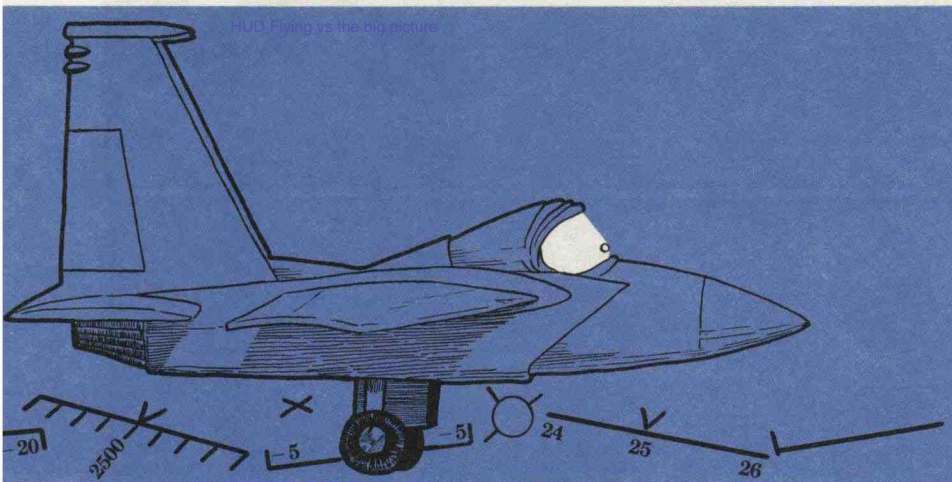
KNOW WHAT YOU'RE GETTING WHEN YOU USE THE HUD'S FPM/VELOCITY VECTOR.

The FPM provides an accurate aircraft vector (assuming a properly functioning INS) and may be used to set a precise course or flight path angle relative to pitch lines displayed on the HUD. When you use the FPM to change pitch, you are using it as a *control* instrument in the control/performance crosscheck you learned in UPT. Be aware, though, that it is also a *performance* instrument, providing a drift-corrected representation of where you are going at any time.

A PAR approach demonstrates a big advantage of the HUD FPM, maintaining a constant glide path angle regardless of groundspeed. There are times, however, when the FPM will not give you the true picture, most commonly when—
 a) unnoticed INS drift or failure makes the FPM invalid;
 b) wind drift pushes the FPM



HUD Flying vs the big picture



to the edge of the display (it then becomes invalid either in pitch or azimuth, depending on the type of jet you're flying).

4. THE GREEN SYMBOLOGY IN THE HUD MAKES A POOR LANDING SURFACE.

The world's best HUD picture won't save you if you're not lined up on the runway. Several landing mishaps have resulted when the pilot failed to transition from an IMC crosscheck to a VMC crosscheck and proper landing picture. If you are an inexperienced pilot, you may have difficulty establishing a proper aim point and flight path angle without help from the HUD. If so, try this:

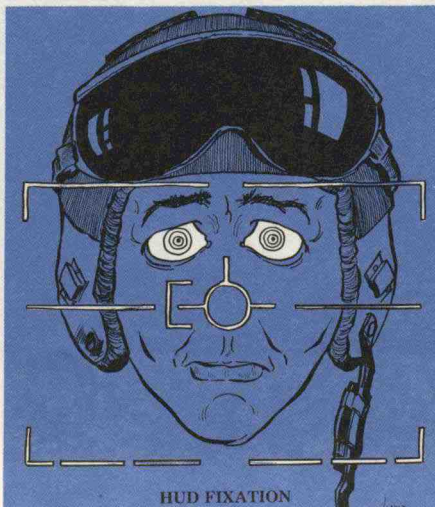
- a) Turn the intensity of the HUD symbology all the way down.
- b) Establish an aim point on final using only visual cues. The aim point (well known to dive bombers and transition IPs) is the only point in your field of view that is not moving. All other points are

expanding as you approach the runway.

- c) Establish a proper glide path angle using only visual cues—VASIs, runway proportion, etc.
- d) Now, turn the intensity of the HUD symbology back up. The FPM should be on your aim point at the correct flight path angle.

The point of this discussion is that you should use *visual* references to establish a landing picture. The HUD should be an aid, not your primary means of getting to the runway.

5. FIXATION ON ANYTHING IN A JET FIGHTER IS NOT CONDUCTIVE TO LONGEVITY.



You know you are fixating on the HUD when you find yourself staring at the symbology with the same glazed expression you see on your kids' faces as they watch the Saturday morning cartoons. The HUD is a compelling instrument. But its constantly changing displays are designed to be looked *through*, not stared at. The tendency to fixate is heightened by too much digital information or when the HUD is too bright. You may realize you are fixating when you find yourself focusing in one area of the HUD but gaining little useful information. Avoid fixation by dimming the display and by using an organized crosscheck, making a sweep of the primary instruments and referring to the HUD only for necessary data.

Overdependence on the HUD is similar to fixation and is often associated with inexperienced pilots who may not have completely developed an interior panel crosscheck. Even seasoned pilots may find their instrument skills on the round gauges decaying if the HUD is used exclusively for certain tasks. *The HUD should be used only when you are proficient with the interior instruments.*

HUDs of tactical fighters have come a long way but are still not *complete* instrument reference systems. Rather than discouraging HUD use during instrument conditions, we encourage *responsible* use of the HUD. This means an organized, composite crosscheck which will allow you to recognize failure modes in your HUD and in your brain. ➤

Majors Keeney and Grinnell are the F-15/F-16 program managers at TAC Stan/Eval. Between them, they have years of flight experience in HUD-equipped aircraft. Major Grinnell hosted the 1983 TAF HUD/instrument conference.

COMING TO TERMS



For those of you not familiar with some of the terms that fighter pilots toss around at one another, like those found in the previous article, here are some translations:

HUD: heads-up display. A small piece of glass that sits atop the dashboard through which the pilot views the world. Projected on the HUD are various bits of information about aircraft performance.

AFM 51-37: *Instrument Flying*. The Bible of instrument procedures for Air Force pilots. The how-to-fly instruments book.

FPM: flight path marker. A symbol projected on the HUD that, in the landing phase, marks the spot where the aircraft is currently headed and will touch down unless the pilot makes changes to the aircraft's flight path.

ADI: attitude director indicator. The attitude indicator. A mechanical sphere that presents an artificial horizon that the pilot uses to determine which way is up when he can't see anything but clouds or darkness out the window.

HSI: horizontal situation indicator. The heading indicator. A round dial instrument that tells the pilot which direction the aircraft is headed. It rarely tells him he's lost.

UPT: undergraduate pilot training. Flight school. An Air Force finishing school that in one year converts many raw lieutenants with degrees in astrophysics and music into pilots qualified to fly any USAF aircraft (after extensive transition training in that aircraft).

Transition IPs: mostly senior captains with vast experience in a particular aircraft who are serving a tour (sentence) as instructor pilots (IPs) in the schoolhouse. They usually fly in the pit (the backseat of a two-seat aircraft) or on the wing. They teach UPT/UNT graduates how to be fighter pilots/WSOs and help rehabilitate older flyers returning from staff tours.

WSO: weapons system operator. The guy who normally sits in the back seat of two-seat aircraft. A WSO is a graduate of UNT, a finishing school similar to UPT where they teach aeronautical engineers and history majors how to tell the pilot he's lost.

PAR: precision approach (radar). An instrument approach where a GCA (ground controlled approach) controller, who is looking at a radar scope, directs the pilot to turn, climb or dive to intercept and maintain a glide path which leads to the runway. Unlike some movies, the controller does not say, "You're at minimums, good luck."

VMC: visual meteorological conditions. Nice weather.

IMC: instrument meteorological conditions. Yucky weather that requires flying by the gauges.

VASIs: visual approach slope indicator. A set of lights implanted on either side of the runway that tell the pilot he's too high, on-the-money or too low.

Zippers: F-104s.

TAC

tips

INTEREST ITEMS,

Stopping a thundering rhino

When an F-4 pilot raised the gear after a formation liftoff, he soon found the wingman overrunning him. Hmm. The backseater reported that the gear were still hanging and a glance at the gear indicators confirmed the bad news. When the pilot lowered the gear handle, all three rollers indicated down and locked, utility hydraulic pressure was in the green and electrical power was normal. Wisely deciding it wasn't broken and there was no need to fix it, the crew chose to give up the mission, burn down fuel and land.

While they were waiting, rain showers moved into the area, making the runway wet and bringing along some strong, gusty winds. After consulting with the supervisor of flying and the detachment commander, the crew decided on an approach-end arrestment into the BAK-12 cable that was 1,500 feet down the runway.

On the way down final, the pilot noticed the aircraft in a pretty healthy crab. So he decided to land on the first brick. That would allow the Rhino to straighten out before grabbing the wire.

Unfortunately, the pilot didn't have everything going for him. The visibility in the rainshower was above minimums but not real pure. There were no approach lights on this runway, and the VASIs were dim and not much help for his desired touchdown point. And the pilot didn't understand that the touchdown sequence would be hook, main gear, nose gear—he thought the hook and the mains would hit together . . .

Touchdown was a little short of the intended spot—about 300 feet short of the first brick. The hook touched about 120 feet before the main tires.



En route to the runway, the tailhook grabbed the chain of another arresting system (similar to the MA-1A) that everyone had forgotten about. Since the overrun arresting system was not stressed for an approach-end arrestment, a 160-knot Rhino was more than it could take; after slowing the aircraft about 80 knots, it failed. The pilot stopped the aircraft with brakes. Although the aircraft was unscathed, the overrun arresting system didn't fare as well; it was damaged beyond repair.

Landing—a contact sport

Five feet above the runway, just as an F-16 pilot selected Mil power and raised the speedbrakes for his go-around from an inten-

MISHAPS WITH MORALS, FOR THE TAC AIRCREWMAN

tional low approach, the aircraft entered some turbulence or jet wash from the previous Falcon. Whoa! Suddenly, the right wing dropped abruptly, allowing the right main tire to contact the runway. The pilot instinctively countered with full left stick and continued to go-around. Other than an unscheduled one-wheel touch-and-go and an extra shot of adrenaline, it looked like no harm was done. The aircraft completed an uneventful closed pattern and full-stop landing.

Back in the chocks, however, the aircraft's right stabilator was discovered damaged beyond repair from contact with the runway. Even though the pilot had been flying at only 12 degrees AOA, all the static dischargers had been ground off and the stab's trailing edge was seriously scraped. Why?

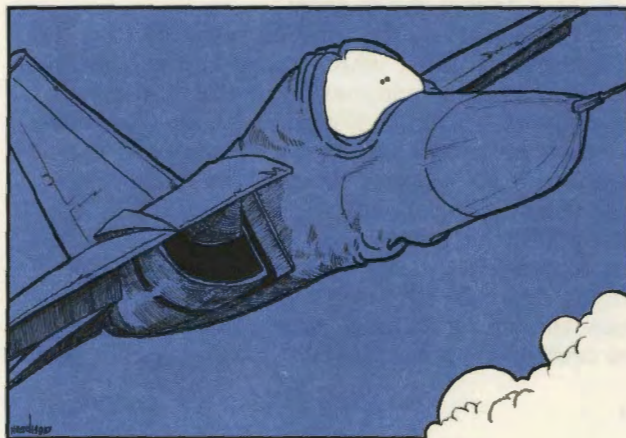
When the pilot commanded full left flaperon to counter the right wing drop, the left flaperon retracted like it says in Section VI of the flight manual. This resulted in the desired left roll, but it also reduced the lift produced by the left wing and increased the aircraft's sink rate. But something else was going on back there. When full left stick was applied, the right stab automatically moved trailing edge down to aid in rolling the aircraft left.

The moral? Heads up—during a low approach landing AOA (even at less than 15 degrees); the amount of stabilator movement corresponding to full lateral stick is apparently enough to cause contact with the landing surface.

Night owl foul

One of a pilot's greatest blessings in this country is our weather. Oh, it's violent at times and miserable at others, but most of the time our weather moves in waves—good, lousy, then back to good again. While that abundance of blue sky is generally a wonderful thing, it limits our opportunities to fly instruments in instrument conditions. So occasionally when we *need* to depend on that instrument crosscheck, we find it a little rusty or we have to coax it back from vacation.

It was a dark and cloudy night. An F-111 crew was flying a terrain following radar (TFR) low-level mission in auto-TFR at 1,000 feet above the ground. About a third of the way around the route, the crew noticed the aircraft wasn't steering towards the target coordinates. So the pilot disengaged the autopilot and began manually banking the Aardvark toward the target. After passing the target, he rolled into a 30-degree



right bank to get on the new course to the next turn point.

Suddenly the radar altimeter broke lock (indicating the aircraft was in greater than 45 degrees of bank), and the aircraft began a TFR fly-up. The pilot looked at his ADI (attitude director indicator); it indicated 20 degrees *left* bank. The pilot was severely disoriented but he didn't override the fly-up, thinking it was getting him above the terrain. As the aircraft came through the clouds, the WSO noticed lights from a town above and to his right and told the pilot to pull up. The pilot checked the standby ADI which was showing nearly 100 degrees right bank. The fly-up wasn't getting them away from the ground with the aircraft in that attitude.

Fortunately, our ADIs don't fail very often. When they do, if it happens at night or in the weather, our best chance of catching it early is an occasional routine peek at the back-up attitude indicator. How does that become routine? You guessed it, Ace—practice.

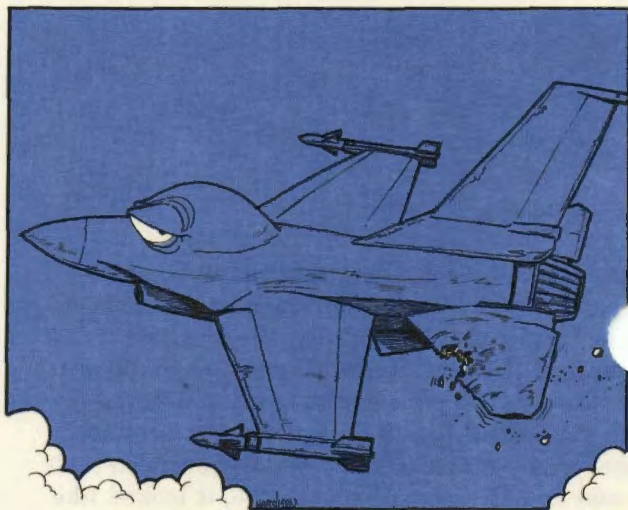
Sorry, wrong number

When an F-16 student pilot returned his jet to its parking spot following a practice bombing mission, the crew chief discovered that the aircraft had taken a hit. Apparently, one of the BDU-33 practice bombs had collided with the stabilator during the mission.

The video tape of the mission revealed that the pilot bunted slightly while trying to precisely fly the HUD steering commands for the 30-degree loft delivery profile. Unfortunately, the computer released the bombs just as the aircraft was unloaded to 0.2G, slightly south of the flight manual's G-limits (0.5 to 4.0) for dropping BDU-33s from a TER-9A bomb rack.

A contributing factor was the wrong pull-up range printed in the wing's local pilot aid. Because the wrong distance was entered into the fire control computer, LADD steering commanded

a climb about a mile too soon. That caused a significantly greater pitch attitude than the pilot expected. It also delayed bomb release seven or eight seconds longer than he reckoned.



As more experienced pilots know, there is no need to precisely follow the pitch commands of the LADD steering to get an accurate delivery. The fire control computer makes provision for that. However, accurately maintaining proper G-loading is required.

As a former blackheart, methinks there's another aspect of this little midair mishap that bears sticking our nose into—the numbs in the ladies' aid. The pilot aid (or depending on which aircraft you fly, the aircrew aid) universally contains vast quantities of useful numbers that are presented in an easy-to-use format. Many of us depend on those figures not only for weapons release data, but also for divert information, freqs, aircraft limitations that may not be on the tip of the tongue, etc.

When was the last time you stan/eval chiefs gathered your Indians for a Friday afternoon pow-wow and checked all those numbs? A typo amongst often-used figures will no doubt be immediately caught and brought to your attention by the last guy you no-noticed. But what about the one there on page 23 that the new guy is using—INS coordinates for that little-used alternate airfield?

INDIVIDUAL SAFETY AWARD

MASTER SERGEANT GILBERT H. LIBBY wrote a squadron regulation (EMSREG 127-1) to clearly identify each area's responsibility and within each area, each person's duties. It was such an excellent management tool that, after it was written, the supply and aircraft generation squadrons asked to use it as a guide for their regs.

He inspects 6 branches, 36 separate work-centers and a dormitory more frequently than required. The last hazard identified in the squadron was 5 days after he arrived, and all existing hazards were corrected within 30 days. Sergeant Libby's inspection methods have paid off: 5 Outstandings, 10 Excellents and 3 Satisfactories in ground, flight and weapons safety.

Sergeant Libby has raised everyone's safety awareness. He personally briefs all newcomers, and when an accident does occur, he briefs everyone in the squadron on why it happened and how to avoid it in the future. When there's a change in safety philosophy or procedures, he brings in reports: recently, civilian police demonstrated



MSgt Gilbert H. Libby
23 EMS, 23 TFW
England AFB, Louisiana

how a DUI would be handled.

Sergeant Libby is an absolutely superior safety NCO and is truly dedicated to the safety of the 435 people who work in the 23 EMS.

CREW CHIEF SAFETY AWARD

SERGEANT LUCIANO TORO was launching an F-16B with a fairly new pilot and his IP. During engine start, smoke started coming from behind the front seat. (It was later discovered that the smoke was coming from the canopy actuator which had fired.) The IP, who couldn't see beyond his instrument panel because of smoke, told the pilot to shut down the engine and open the canopy. Because the canopy actuator had failed, the pilot couldn't open the canopy using the normal method. And when he tried to manually crank it open, he was unable to engage the manual handle.

Sergeant Toro knew what was happening via the intercom and had already directed the fire-guard to move the fire bottle out of the way. But when the generator dropped off, he lost communication with the pilots. He had to act quickly and precisely.

First, he opened the cockpit emergency access door in preparation for externally jettisoning the canopy. As he was doing this, he noticed the pilot was still trying to manually open the canopy. Sergeant Toro suspected the pilot had forgotten



Sgt Luciano Toro
62 TFTS, 56 TTW
MacDill AFB, Florida

to open the canopy locking mechanism because of his experience level; so he moved a nearby maintenance stand next to the cockpit, climbed up, looked inside and found what he had suspected: the canopy was locked. He quickly opened the canopy manually from outside with a speed handle, then helped the pilots egress the aircraft.

Burnout

Air Force people, military and civilian, who pursue tough schedules, and who routinely do more than they are asked to do, sometimes become victims of overwork. Better to wear out than rust out, true. But sometimes the non-relenting press to do more and better leads to burnout. Call it tedium, overextension, breakdown — whatever the term, this article examines the process of burnout in flyers.

Burnout, a condition that we hear more and more about in modern America, has some unique characteristics. While many of life's emergencies produce high levels of external stress, burnout is a *chronic* internal condition. Dr. Herbert Freudenberger defines the process of burnout this way:

To gradually exhaust one's physical and mental resources. To wear oneself out by *excessively* striving to reach some unrealistic expectation imposed by oneself or by the values of society.

Why is burnout a threat to aircrews? Because of who you are. Because of the way you strive to do it better. Here is an excerpt from a vintage safety message that describes the problem:

Several recent accidents have involved chronic fatigue and were possibly exacerbated by highly motivated (can-do) aircrews and their desire to excel. This mindset either precludes recognition of fatigue or greatly reduces the probability of aircrews taking themselves off the flying schedule despite continued assurance by supervisors that it is acceptable to do so. As a result, they pass a point where even a relatively minor unplanned event can overtax their abilities and lead to a mishap. Strong, active supervisory involvement and support of the concept to 'take a raincheck for a sortie' is necessary.

The people written about in this excerpt were not chronic dunderheads; they were top guys who were simply overworked and burned out.

Why did they press so hard? Couldn't they or their close associates/family members see trouble coming? What are the symptoms of burnout?

There may be physical, emotional, mental or a combination of changes that *gradually* surface in an individual. In the book *Burnout, From Tedium to Personal Growth*, the authors put it this way:

The high-energy person becomes chronically tired. Cooperative becomes constantly irritated. Well-organized becomes accident-prone. High resistance changes to nagging cold. Positive attitude becomes 'Who cares.' Work changes from sheer joy to sheer tedium. People may even begin to comment on apparent change in appearance and 'broken spirit.' Afflicted individuals often have little to say to people. Person may have the feeling he is working harder but accomplishing less.

If the pressures of your responsibilities (work, parental or home) are causing you to align yourself with burnout, and you recognize some of these symptoms as your own, you need some R and R. Flight surgeons have been aware of the need for regular complete escape from flying for years. Witness this 1962 passage from a master flying doctor, the late Harry G. Armstrong:

Airmen engaged in active air operations should avail themselves of their full allocation of vacation and leave time. It has been found that individual duty performance is improved



Col Rich Pilmer
Human Factors Analysis
ARRS/SG
Scott AFB, Illinois

when flyers take sufficient leave at one time, such as from 10 to 30 days. For them to adequately profit from a temporary respite from flying duties and a change in environment, flight surgeons should advise at least a 10-day vacation every six months.

While duties sometimes preclude the availability of protracted leaves, service members also have a tendency to use their leave sparingly — a few days at a time — without taking a vacation. Fast burners may use their leave time to work on other projects, to finish schoolwork and so on, rather than taking a period of time to really relax and get away from the demands of success. Fight that temptation. Plan and take a real vacation.

Finally, take a minute to re-evaluate your goals and priorities. Construct a balanced, realistic schedule to attain your goals. Burnout is easily overcome if the individual recognizes its symptoms and modifies his lifestyle in time . . . ➤

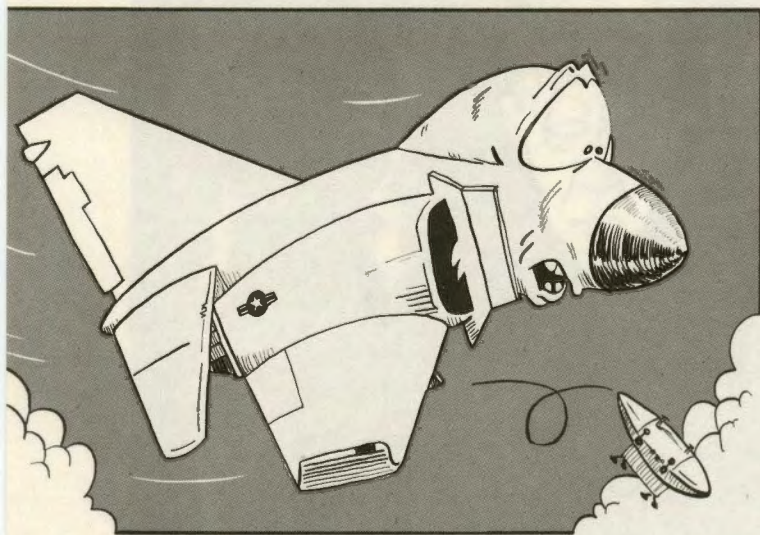


HARRISON

WEAPONS WORDS

Lost at sea

When an F-4 returned from an air-to-air mission, the crew chief noticed the TER (triple ejector rack) was missing from the MAU-12 bomb rack under one of the inboard pylons. Since the bomb rack didn't contain any explosive carts, the pilot couldn't have jettisoned the TER. Apparently, it was lost at sea—during



high-G maneuvering in a warning area over the Atlantic.

The bomb rack and TER were uploaded during the wee-hours in preparation for this early morning mission. The load crew that uploaded the TER must have thought they didn't need a flashlight since the operation was conducted in a lighted hangar. Without a little direct light on

the subject, however, a valid visual check of the lock indicator wasn't made. The load crew also neglected to use the safety pin for the MAU-12 bomb rack to physically check that the rack was locked.

Unless we bring all the required tools to do the job, chances are we can't do it by the TO. If we have all the tools but don't use them, we're still asking for trouble—we're totally depending on our experience to keep us from human error. If we only had one job to do, maybe we could pull that off. But weapons handlers have literally scores of operations to perform. And from time to time the equipment or procedures change or we get new workmates. All those variables increase our chances of making a mistake. That's why we have tech data. But we have to *choose* to follow it—even if it means an extra trip to get all the tools.

Details, details

When the aircrew of an F-4 that was sitting alert noticed one of the AIM-9P Sidewinder missiles wouldn't cage, they called for help. A load crew came out to the aircraft to download the suspect missile from the inboard station of the AERO-3B rack. Once the missile had been replaced with a spare AIM-9, power was reapplied to the aircraft, and the new missile was evaluated. It wouldn't cage either. So the



load crew downloaded the second missile, safed the aircraft and began an ASM-11 functional check of the inboard station of the AERO-3B. Sure enough, the station failed the test. The culprit identified, the crew replaced the SWRP (Sidewinder relay panel) and once again ran the ASM-11 check on the empty inboard station. It passed. Then, for some reason, the number two man ran the check on the *outboard* station for good measure. The outboard station, of course, was still holding an AIM-9.

When the worker reached the step that called for pulling the electrical safety pin from the

AERO-3B rack, WHOOSH!—the system worked as advertised. The safe and arm rocket motor squib ignited. Fortunately the safe/arm key was installed and safed so the rocket motor did not follow suit.

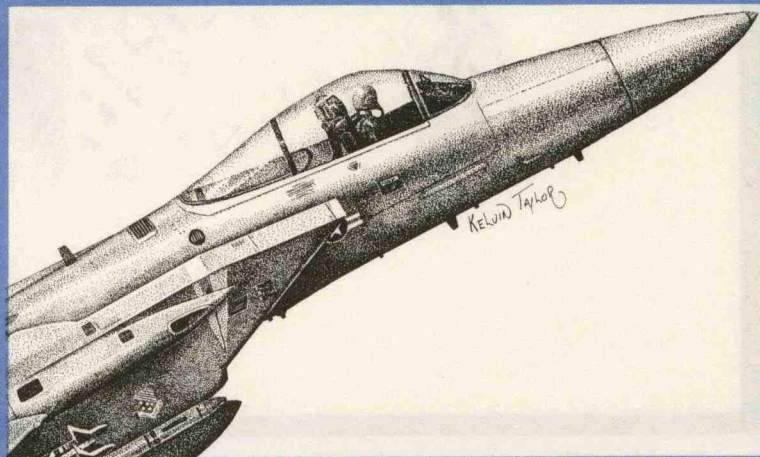
Being conscientious is a wonderful character trait—and so is the ability to follow directions. Thorough system checks keep us from having to do a job over again because it wasn't done correctly the first time. But unless we do those checks by the book, not only do we risk having to do the job over again anyway, we also risk hurting someone or damaging expensive equipment.

HEADS UP

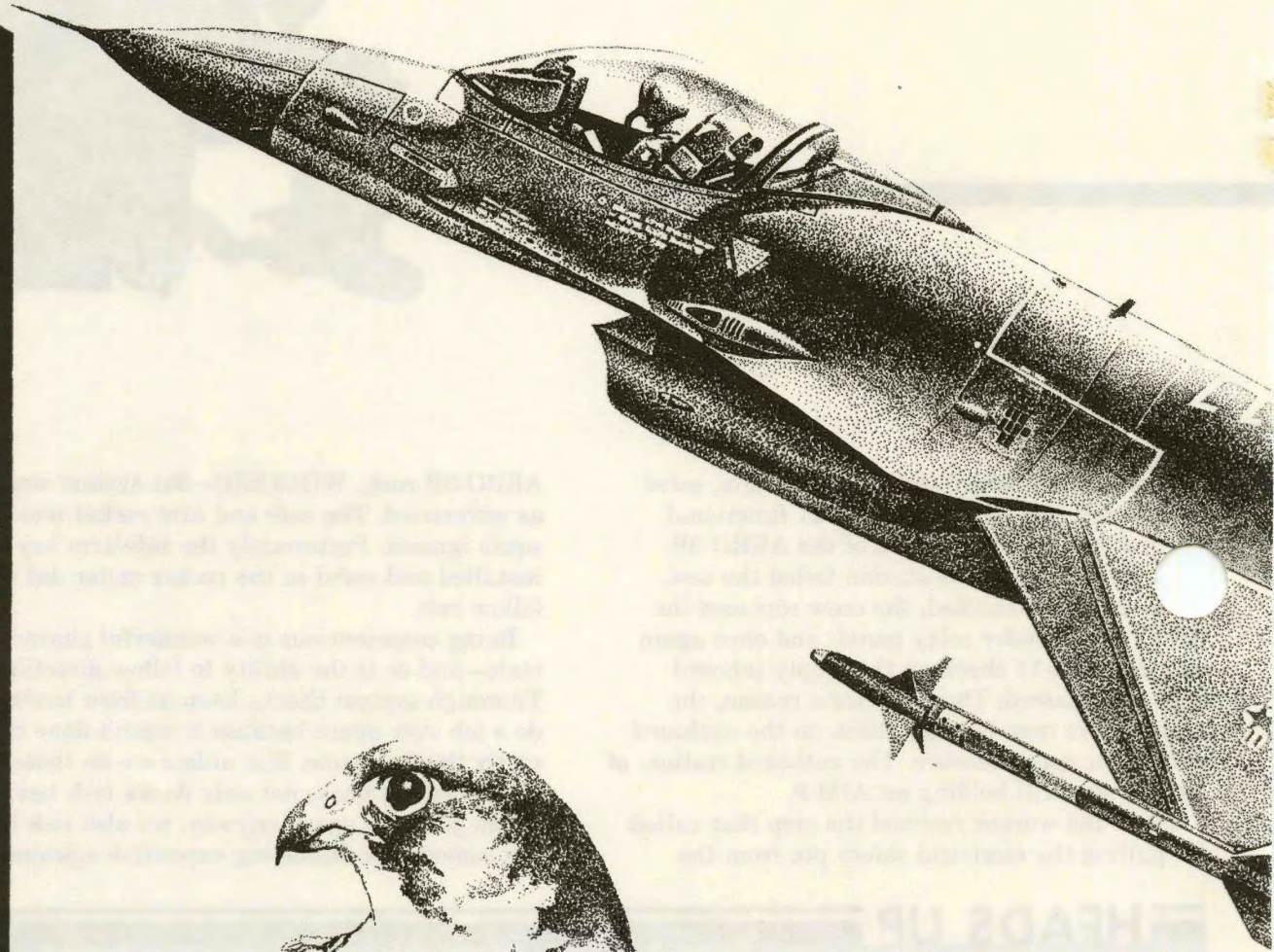
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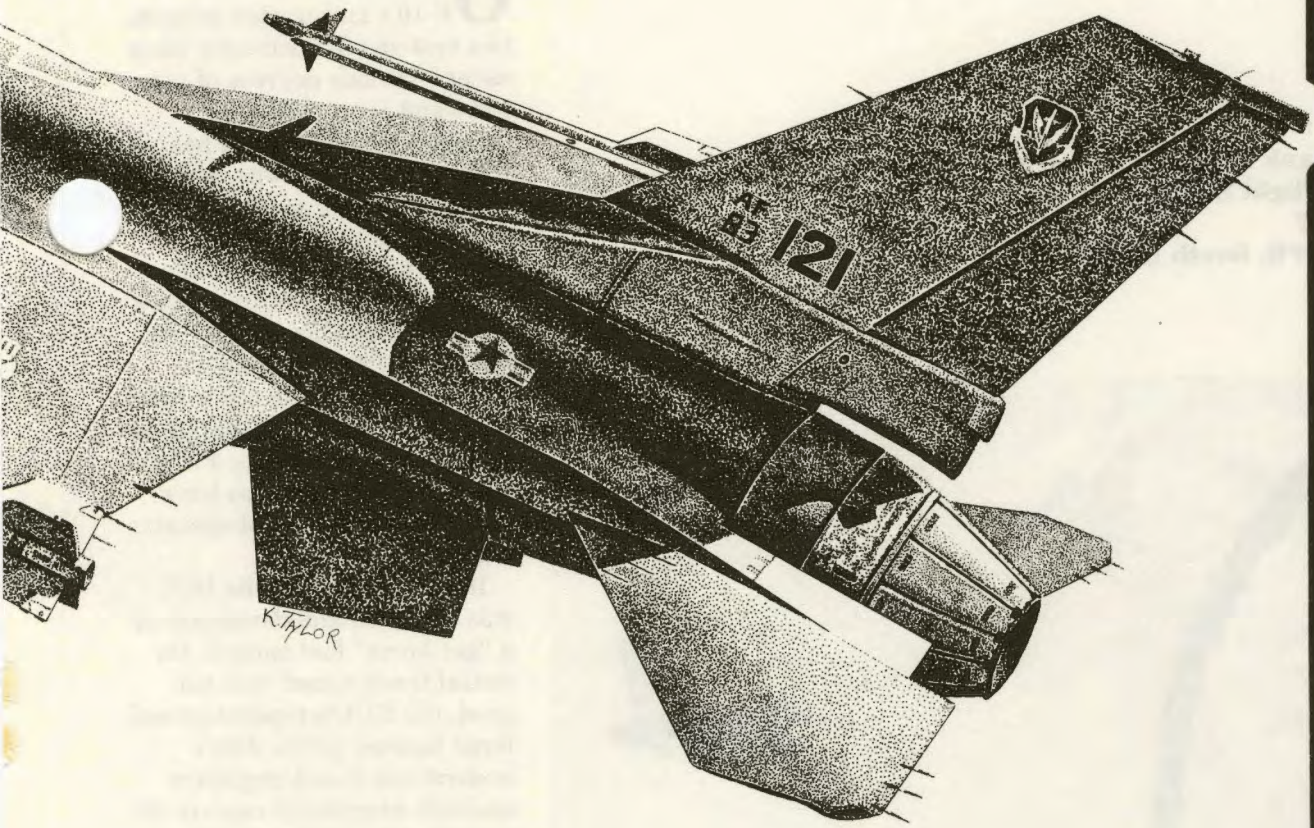
JUNE

issue of *TAC Attack* you can look forward to seeing A1C Kelvin Taylor's stipple rendition of the F-15 Eagle IN THE CENTER.



F-16C FALCON





Betting on the BUC

F-16 airstarts revisited

Capt Hank Aragon
Chief, Flight Safety
363 TFW
Shaw AFB, South Carolina



Over the course of the F-16's maturation process, two systems in particular have earned various degrees of notoriety and fame. The EPU (emergency power unit) has had its ups and downs, and there have been many improvements in the way we maintain and service this system. In short, we have become smarter about how to care for the EPU. The BUC (backup fuel control), on the other hand, has not suffered from design or maintenance problems. For the most part, its problems have been more a matter of operator education.

In the beginning, the BUC was designed and developed as a "get home" fuel control. Its initial track record was not good; the BUC's reputation suffered because pilots didn't understand it and engineers couldn't adequately explain its operation to us. Hot starts, overtemps and *infinite patience* were synonymous with BUC. Finally, early last year we had the first successful BUC airstart and recovery. Several more successful BUC airstarts soon followed, and the credibility of the BUC system has since grown tremendously.



However, we still have had some problems with overtemps and stagnations.

Recently, I spent several weeks as the investigating officer on an F-16 Class A mishap board. During the course of our investigation (which involved an unsuccessful BUC airstart attempt), we discovered some new techniques which I believe can be important to successful BUC airstarts. Some of what follows will emphasize the importance of old information. Some of the information is new.

To BUC or not to BUC

The procedure for low-altitude engine failure in the flight manual leaves the airstart decision (UFC or BUC) open to interpretation. Yes, I know the narrative discussion says you should perform a BUC airstart if the engine problem is not afterburner related or if there is only time for one attempt. (Incidentally, it also says there is time for only one attempt if the zoom results in an altitude between 5,000 and 10,000 feet AGL.) But both the procedural steps and the CAPs (critical action procedures) leave the decision to the pilot. In a critical situation, the door is open for a mistake. A pilot

who is not predisposed to a BUC airstart may attempt a UFC airstart without fully analyzing the situation. This in fact has happened several times in the past. I believe a change in the wording of the low-altitude engine failure procedures is needed, from "Perform Airstart" to "Perform BUC Airstart (unless stall/stag was A/B related)." A minor change perhaps, but one that puts the proper emphasis on using BUC when there is time for only one airstart.

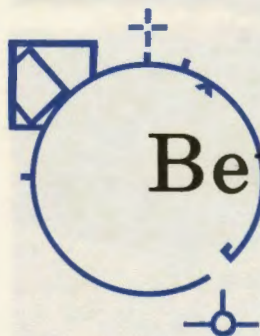
Solutions

Our board discovered two things which can help reduce the probability of hot starts and thus improve the chances of a successful BUC airstart.

First, it is best to have an empty main fuel manifold prior to advancing the throttle out of Off. When you shut down an engine, 1,000cc of fuel (about a quart) is vented overboard from the main fuel manifold. In the chocks when the engine has been running at idle, manifold drain time is about three seconds. However, when the engine is windmilling (flamed out), fuel manifold drain time takes about seven seconds. If the pilot advances the throttle

out of Off for a BUC airstart before the fuel has drained from the main fuel manifold, there is a greater possibility of an over-rich fuel condition. Pausing a minimum of five seconds with the throttle in Off will allow sufficient time for the fuel to drain. Five seconds may seem like a long time when you're pointed downhill and the trees are getting bigger, but if you try this technique in a simulator, or better yet in the aircraft next time you're filling one of your ground BUC start squares, you will find that switch activations (EEC/BUC, JFS, etc.) will fill most of this five-second time requirement.

Second, when you advance the throttle to idle (UFC idle position), be very careful not to overshoot. This will require some attention on your part because of the awkward position of your arm and shoulder when the throttle is in Off. Most pilots I've talked to have a habit of advancing the throttle forward an inch or so and then pulling back to the UFC idle stop. As you know, in BUC, fuel flow is purely a function of throttle position. Advancing the throttle forward of idle,



Betting on the BUC



even a little bit and only for a short time, can start an over-rich fuel flow into the combustor and a stagnation or overtemp is likely. Again, the problem is magnified if the fuel manifold has not drained properly.

Another aspect of poor throttle control in BUC is that a hot start may not show up on the FTIT gauge until the throttle is advanced. In other words, the start will look normal until you push the throttle forward and notice increasing FTIT while the rpm indications remain the same. This is the sign of a BUC start stagnation and will require engine shutdown to clear. Obviously, the time you just lost may make the difference between landing on a runway and landing in a tree.

If you allow the fuel manifold to drain, make sure you don't overshoot idle, and then let FTIT and rpm stabilize before advancing the throttle (as described on pages 3-65 of the A/B model flight manual), you will be well on your way to getting a good BUC airstart, the first time.

The zoom

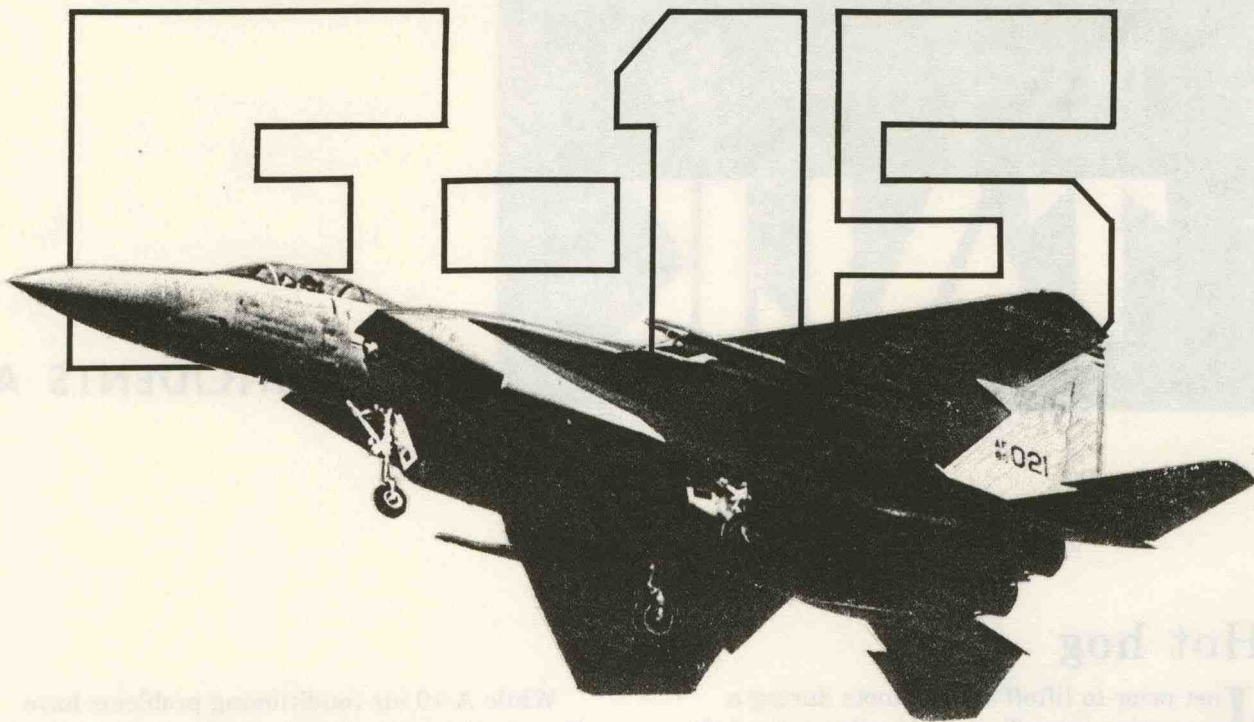
Finally, if you have never tried it, you may find performing the zoom maneuver while simultaneously executing a BUC airstart is not easy and requires practice. Attaining an optimum climb, hitting your airspeed lead point, bunting over to maintain recommended glide speed; all while jet-

tisoning stores, getting the JFS On and performing your throttle ritual takes practice. You have to use both hands—difficult for most fighter pilots.

Try it sometime out in the MOA or coming off a low-level route. I think you'll find it harder than you think. While you are zooming, think about the switch actions. Can you see the JFS switch when the throttle is at midrange? (If the rpm is less than 60 percent, you should be at Off anyway.) Additionally, when you are practicing, if you call up the clock on the HUD and turn on the VTR, you'll have a great debriefing aid to play back your altitude gain, airspeed control, descent angle and time to glide to 2,000 feet AGL.

In summary, the information presented here is yet another step in the evolutionary process of the BUC learning curve. Leaving the throttle in Off for five seconds, carefully placing the throttle to UFC idle and allowing FTIT and rpm to stabilize before advancing the throttle are all pieces of information the first F-16 pilots did not have. Using this information will greatly increase your chances for a successful BUC airstart on the first attempt. At low altitude, you may only get one chance. ➤

Captain Aragon is the 363 TFW's flight safety officer. The 1976 SW Texas State graduate has flown 2,800 hours, 700 of that in the F-16 at Hill and Shaw AFBs. He has also flown a tour in the OV-10.



F-15 EMERGENCY SITUATION TRAINING

Maj Bob Keeney/Maj Dave Greschke
HQ TAC/DOV

SITUATION: During your first DACT engagement in the area, you notice a Master Caution and Hydraulic warning light along with a PC1A Bit Panel light. You start the RTB, then observe the PC1A light extinguish and the PC1B light come on. Shortly thereafter, with the PC1B light still on and utility pressure normal, the UTL A light comes on and cycles to UTL B. What's happening and what'cha gonna do now, Ace?

OPTIONS A. Put the sim on freeze. You are obviously not in the actual aircraft since the highly reliable and redundant F-15 hydraulic system makes this situation impossible.

B. You don't have a clue, but as long as you've still got utility pressure, throw down the gear and flaps and make a normal landing and rollout.

C. You probably have a flight control hydraulic leak. Expect a drop in utility pressure. Perform a controllability check, refer to the emergency landing gear extension and take the approach and cable.

D. Roll inverted, perform a radar bit valsalva and eject.

DISCUSSION: Before you bite on option A (which sounds like a stan/eval trick), consider

what happens when you have a hydraulic leak at a flight control actuator. In an actual incident, the leak was traced to the left rudder actuator, linking PC1B and utility non-RLS systems through the same line. The sequence of lights tells you that you will eventually lose the PC-1 and utility systems because of fluid loss. You might consider extending the gear early (option B), but don't count on having utility pressure through landing. Option C is the real answer. The controllability check will remind you to reduce gross weight, a good idea if you want the cable to stop you, not just slow you down. Give yourself plenty of room to perform the emergency gear extension.

A few things to remember: the speedbrake is inop with UTL A failure; UTL A/PC1B failure will give you split flaps; expect flight control transients as PC2A picks up the CSBPC (extra points if you know what that stands for) from UTL A; expect both the LPMP and RPMP utility lights to come on when the utility pumps cavitate.

Despite all these indications, the plane flies quite well and will respond to good planning. By the way, in the actual incident, the pilot made a no-flap approach and engaged the cable at 130 knots. The tailhook failed structurally (Murphy), but the pilot stopped with emergency brakes.

CHOCK TALK

chock talk

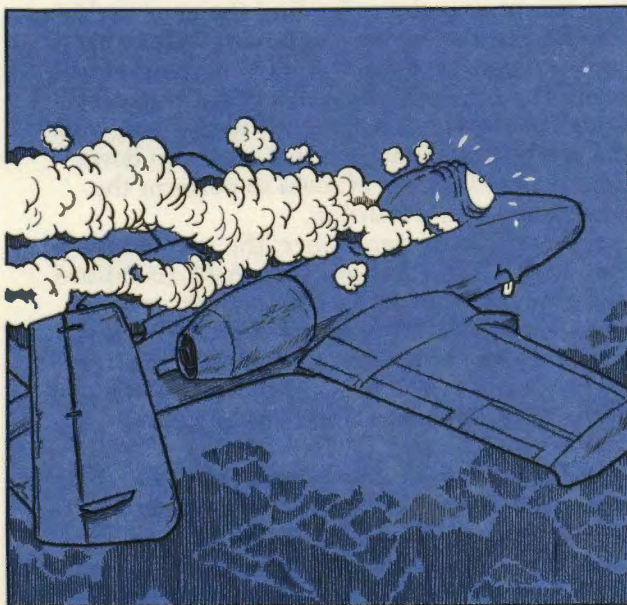
Incidents and

INCIDENTS AND

Hot hog

Just prior to liftoff at 110 knots during a formation takeoff, an A-10 pilot noticed the air conditioner had gone full hot. The cockpit filled with gray, rubbery-smelling smoke. After liftoff, the pilot shut off the Bleed Air switch and selected ram air. The smoke and heat cleared quickly and the pilot landed uneventfully.

Although this pilot wasn't burned by the extremely hot air flow, like some others have been, it had been warm enough to char the water coaleser and melt the nylon stitching on the band around the coaleser.



While A-10 air conditioning problems have been in the news, there's another aspect of this incident that bears sticking our snouts into—the audit trail of air conditioner repairs contained in the aircraft forms.

During the three-month period preceeding this incident, this aircraft had quite a long history of air conditioning problems, particularly in the auto mode. Troubleshooters had replaced the temperature control box three times and the temperature control panel once.

During the repair/write-up/repair/write-up cycle, several pilots used the 781A to leave cautions to other pilots, advising them not to run the air conditioner in auto. But these write-ups were either cleared when repair work was done or the caution was deleted and an incomplete description was transferred back to the 781K.

When a problem persists, the 781 should be used to inform other pilots as well as maintenance technicians of the system deficiency. When this can't be done, transferring the complete write-up from the 781A to the 781K would help, even though the form doesn't lend itself to long write-ups. Shortening write-ups to make them fit on the form sometimes changes the meaning or leaves out details that the pilot needs to know.

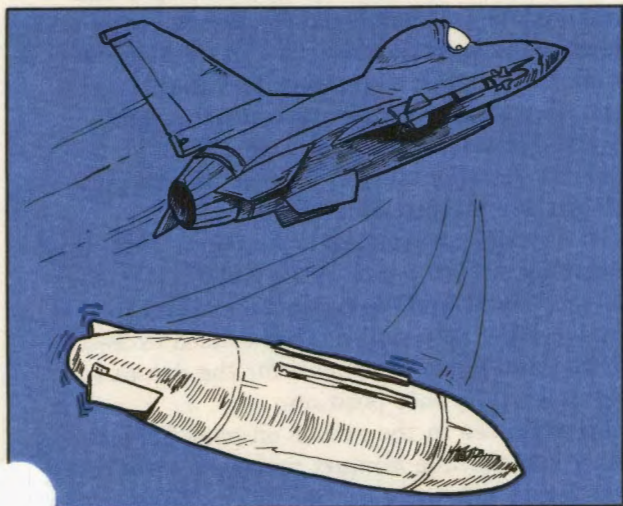
We've blasted pilots from time to time about the consequences of incomplete 781 write-ups. Let's all do our best to make communicating with aircraft forms no harder than it has to be.

INCIDENTALS WITH A MAINTENANCE SLANT

Tank 13

Some non-Air Force types I know, who don't know very much about airplanes, think that big fuel tanks strapped under the wings of our fighters are actually big bombs. Most of us know better, but there's always that ten percent . . .

Number 13 was a 370-gallon fuel tank that used to fit snugly on a pylon under the wing of F-16 jet fighters. One day on a bombing mission, when the pilot squeezed the pickle button to drop his load of practice bombs, number 13 blew off the wing too. (It wasn't even close to the target;



fuel tanks really don't make good bombs, no matter what civilians say.) Later, some EOD folks retrieved the tank from the range; they took it to

the fuel shop where workers examined the remains and discovered a miswired cannon plug.

One night three weeks earlier during the swing shift, a couple of workers from the fuel shop downloaded number 13 to replace a broken cannon plug connector inside the pylon. They taped little markers on each of the eight wires to make sure they ended up attached to the correct pin of the new connector. But dirty, greasy fingers soon made the markers come off. So the workers wisely called the electric shop for help.

When the electricians rewired the cannon plug and completed continuity checks, the fuel shop looked over number 13 and decided to send it to the tank farm until a missing panel cover could be ordered and installed on the pylon. After the sentence had been served, the tank was uploaded once again on its rightful position.

The new cannon plug passed the jettison check. It worked well enough to not affect fuel system indications. But it didn't pass muster when the pilot hit the pickle button. Apparently, the new connector had been wired wrong after all . . .

When it comes to electrical work, six or seven out of eight isn't good enough. With all the checks that the miswired plug successfully passed, it's likely that no one but the worker who did the wiring and perhaps the supervisor who inspected it could have found it wasn't done correctly. Those odds mean it's important how much attention we give to electrical repairs—especially on the electric jet.

CHOCK TALK

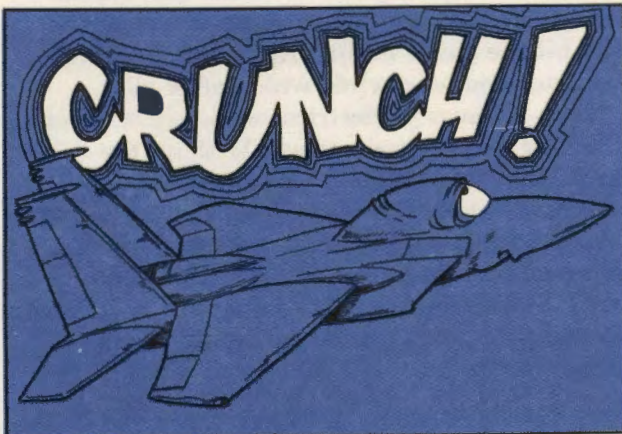
Sometimes we CAN, sometimes we shouldn't

At any given time a percentage of any outfit's airplanes are grounded, relegated to a hangar and waiting on parts or major maintenance. By removing parts (cannibalizing or canning) from an aircraft that's not flyable anyway, other aircraft can be repaired quickly, without waiting for parts to arrive through the supply system.

An F-15 was in such straights. The maintenance-powers-that-be decided to use this aircraft as a donor. One of the first parts to be lifted was some hydraulic plumbing. It's removal was duly documented. Then someone needed a part that could only be reached with the Eagle's ramp down. Normally this meant hooking up external hydraulic power and lowering the ramp. But with hydraulic parts missing, that wasn't possible.

Undaunted, the mechanic removed the bolt from the ramp actuator and manually lowered the ramp. Unbeknownst to him, the ramp was held up only by some hardware that wasn't designed to carry the load. Later when the ramp was raised, the distorted assembly didn't fold correctly; several metal parts were bent and weakened.

The damage wasn't discovered, and before long the F-15 was back in the air. Each time the left ramp cycled up or down, the assembly bent a little more out of line. Several sorties later, the parts gave up, broke off and were sucked into the engine. Crunch!



Part of the problem here is human nature. When we set out to solve a problem, that's exactly what we want to do. If things get in our way en route to our objective, most of us have a tendency to work around them. Call it inertia or whatever, distractions are not welcome. But when they come, we need to call time out and re-evaluate the plan. Sticking to the original plan when the situation has dramatically changed can be a basic tactical blunder.

The other part of the problem was basic too. The TO doesn't allow for manually lowering the ramps. Now we know why.

No matter how many alligators are in the swamp, any time we don't follow the tech data we're making a basic tactical blunder.

Who's minding detent?

On day-one, after an uneventful flight in 80-409, an F-16 pilot made a write-up in the aircraft forms that the BUC (backup fuel control) idle detent was *sticky* and slow to fall into place. On day-two, a highly experienced instructor pilot climbed into 409's cockpit and started the engine. When the F100 was running smoothly, the pilot initiated the BUC check by placing the EEC/BUC switch to BUC at 70-percent rpm. When he heard the BUC idle detent drop into place, he slowly advanced the throttle, and normal BUC transfer occurred. After the engine's rpm and temperature had stabilized, he slowly began advancing the throttle to verify proper BUC operation. But as soon as he advanced the throttle, both the rpm and temperature began rapidly winding down. As the rpm fizzled through 60 percent, the pilot cut the throttle off and gave 409 back to maintenance.

Troubleshooters checked everything from the main fuel shutoff valve to the EEC/BUC switch. All they could find wrong was a slightly misaligned BUC detent plate that caused excessive friction and made it difficult for the detent to seat down fully into position.

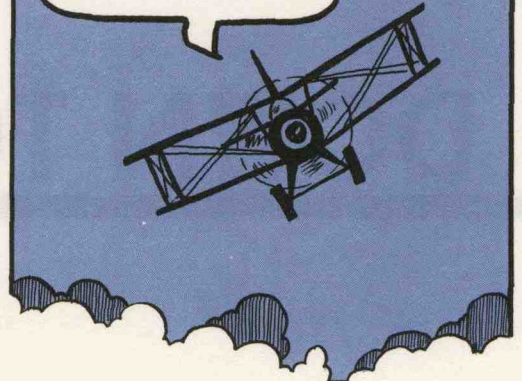
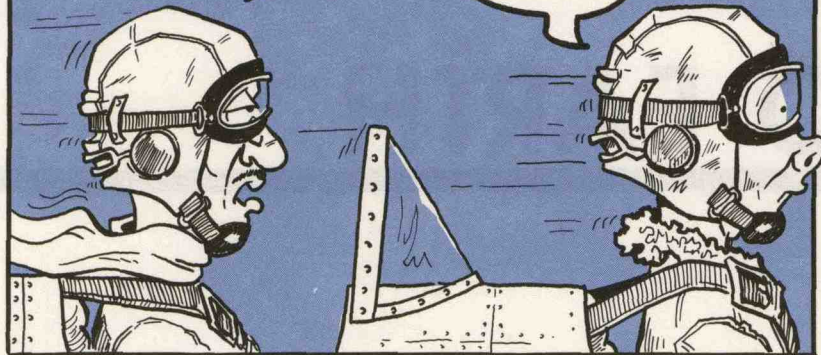
As you'll see in the article on page 18, emergency low-altitude airstart procedures are being changed to rely more on the BUC. Considering the increasing importance of BUC, we need to make sure the BUC idle detent is properly aligned.

BIRD CALL

Now remember, Stanley, if you see birds, climb; they'll tuck their wings and dive if they see you. If it looks like you're gonna hit 'em anyway and you don't want a mouthful of feathers, duck your head down below the glare shield.

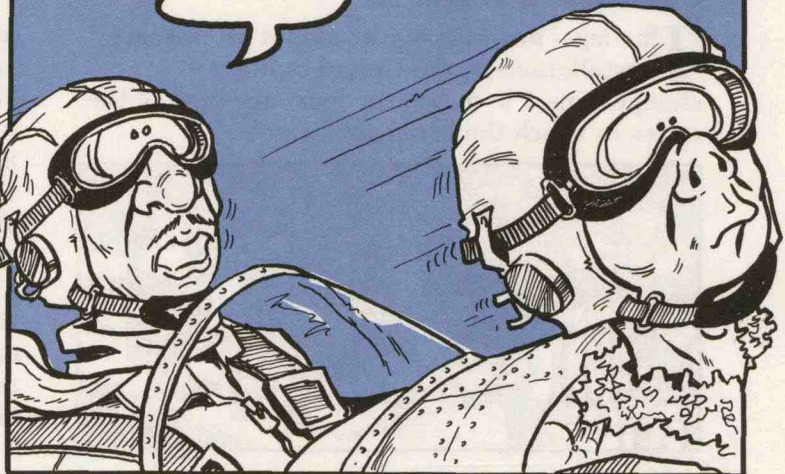
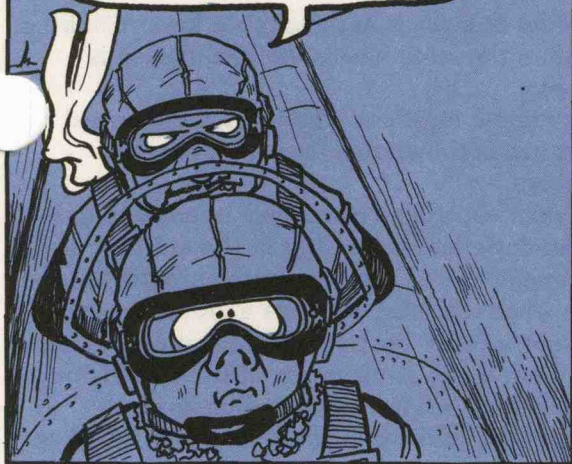
Yes, Sir.

Watch your altitude!
Are you trying to kill me?



You're too slow, Stanley.
Don't you see that aircraft on initial?

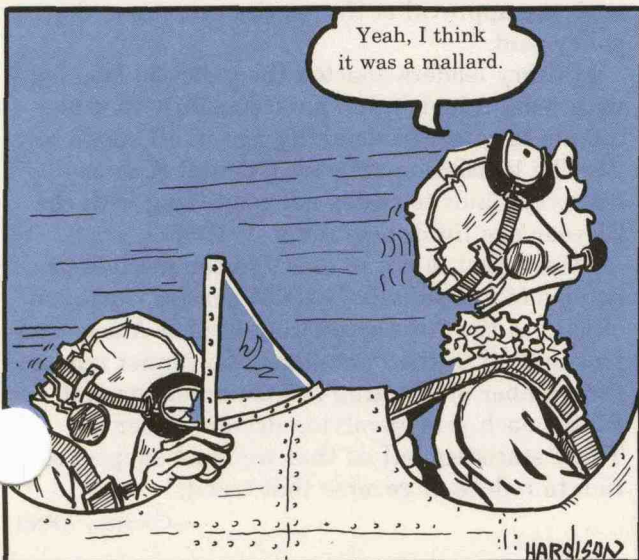
OK, that's better. Now you're gettin' the ...
DUCK!!!



Yeah, I think
it was a mallard.

Is your outfit's flying operation plagued with a bird problem? Technical assistance is only a phone call away. The bird/aircraft strike hazard (BASH) team, HQ AFESC/DEVN, at Tyndall AFB, Florida, AV 970-6242, is anxious to help. Direct contacts are authorized and encouraged.

The BASH team can give you a computer graph of all strikes reported on the VR or IR routes you routinely fly and the best times to fly those routes to avoid birdstrikes. If you don't use published routes (fly LATN), you may want to submit routes close to your flying area. The printout may surprise you. Changing routes or time of flights can be an effective management action to save aircrews and airframes.



DOWN TO EARTH

Drinking age takes effect June 1

The legal drinking age at almost all military installations in the United States will change June 1 to match the legal age limit of the states in which the bases are located.



The Department of Defense announced the drinking age policy's effective date in a memo March 7 by Lawrence J. Korb, Assistant Secretary of Defense for manpower, installations and logistics. For installations not in the 50 states or the District of Columbia, the current drinking age limits will remain unchanged.

In August, Deputy Secretary of Defense William H. Taft sent a memo to the service secretaries announcing that installations will follow the law of the state in which they are located. However, until the March 7 announcement, there was not an effective date or guidance for exceptions to the policy.

As of June 1, installations will observe state laws except:

- Where an installation is within approximately 50 miles or one hour driving time of a neighbor-

ing state or foreign nation with a lower drinking age than the state where the installation is located.

- At remote locations where privately owned vehicles are not available for use by service members.
- "Under controlled conditions in order to foster camaraderie and friendship in the military environment" on "... infrequent, nonroutine occasions when an entire unit, as a group, marks an occasion such as the conclusion of arduous military duty or the anniversary of the establishment of a military service, organization or vessel."

Exceptions will be granted or denied based on the consideration of motor vehicle safety and with the approval of the service secretary, the policy said.

Military leaders enacted the policy in keeping with federal legislation passed in July that attempts to raise the drinking age in all states to 21. The legislation calls for a denial of some highway funds to states not complying with the 21-year age limit, beginning in 1987.

"The intent is not to question the motives or actions of individuals," said Major Sal Curto, an official in the Air Force Drug-Alcohol Abuse Control Branch in the Pentagon. "We cannot ignore the number of drinking-related accidents and deaths each year involving drivers under 21. These statistics tell us that we must support a nation to reduce or reverse that trend."

—Courtesy AFNS



I saw a man die

The following article was extracted from the *Ridgefield [Connecticut] Press*, letter to the editor column.

Last week I saw a man die. He had suffered unimaginable torture. Second-degree and third-degree burns covered 40 percent of his body. For five days and six nights he had fought off the inevitable before he drew his last rasping breath.

Old friends had spent the weekend at his house, and on Sunday night they were to have a giant steak, charcoal-broiled on his outdoor grill. When the coals did not flare quickly enough, he gave them another squirt from a large can of fluid. There was a vapor-puff explosion. You may



have seen one like it. There is a flash of light but very little sound—only a quick phfft, and it is all over.

This time it was not over. As he released the pressure on the can a tiny bit of flaming vapor was sucked back into the can. It exploded. The bottom blew out and drenched him with flaming fluid.

He rolled on the ground, got up quickly, ran toward the river, stumbled and fell, got up and hurled himself into the water. There was no scream. There was little sound of any kind. Even the exploding can made little noise. He said, "Oh, my God!" twice in an agonized undertone, and one of his dogs howled. In less than 30 seconds it was over, and 30 minutes later he lay in a hospital bed bandaged like a mummy.

I went over the ground later and saw the burned grass and branches of the cedar tree above. I picked up the remains of the can. It bore a name familiar to all of us, and it contained a fluid I have often used. One of the purposes for which it is sold is the starting of charcoal fires. The still-readable directions were clear: *If used on charcoal, wait before you light it. Never add more after the fire is started.* But how often have you followed these directions, if you have read them at all?

If you light charcoal this way, please don't ever invite me to a cookout at your house. I never want to see another man die.

—Courtesy ATC



Make that gasoline safety can safer. Only fill your *sturdy* safety can, that's approved and labeled with *UL, FM or CSA*, $\frac{3}{4}$ full. This leaves enough room for vapors to expand. Don't let the can rock and roll in your truck or car, and be careful where you put it when you get home.

Keep the camplight burning. If you can still have a campfire where you go camping, here's a few tips to make woodcutting safer: keep your axe or hatchet as sharp as possible at all times and sheathed when not in use. Swing that axe or hatchet in an area free of brush that you could get tangled in. And get on your knees when using a hand-held hatchet—if you miss, the blade will hit the ground, not your leg.

Where do your kids blow-dry their hair? If the answer is in the bathroom, think about this: in a study of 95 bathtub electrocutions, conducted by the Centers for Disease Control, electric hair dryers falling into the bath water were the cause in more than 60 percent of the deaths. December through March were the highest accident months, and the average age for female victims was 10; boys, 12.

Smoke detector update. About 75 percent of U.S. households have smoke detectors, and 15 to 30 percent of them aren't working. Here's why: the electric workings have deteriorated and can't sense smoke; dead or missing batteries or disconnected power; defective components or incorrect

wiring; some were painted over or clogged with grease, dirt or bugs; and some were simply put where smoke can't get to them. What kind of detector do the experts recommend? At least one of each kind: photoelectric and ionization. Photoelectric is best for a smoldering fire, which usually occurs during the night. Ionization is best for fast, free-burning fires, which happen during the day. When was the last time you checked your smoke alarm?

Cooking may be hazardous to your health. It's the third largest cause of fire deaths in the home. It's also the major cause of apartment fires. And when the weather is nice, cooking fires increase. As a reminder, don't leave the stove unattended to go out and smell the roses, to watch TV, to talk on the phone, or to run next door to borrow some sugar. And, although it's fashionable to put something on the wall behind the stove, like pot holders or utensils, please don't. Clothing could catch fire while you're reaching over the burners. If you have a grease fire, don't move the pan—simply cover it with a lid, a cookie sheet or a cutting board.

Electrocutions at Home. The U.S. Consumer Product Safety Commission estimates that 600 people die each year from electrocution in or around the home, especially where there's electricity near water: the bathroom, kitchen and laundry. Twenty people a year are electrocuted in the bathtub usually from a plugged in hair dryer that either fell into the tub accidentally or by someone who was drying his hair while standing in the water. And kitchen appliances, like hand mixers and food processors, aren't double insulated like most hand tools. Those wonderful kitchen wizards are usually using an electrical appliance while at the same time reaching for water from the sink. How much does it take to kill? About one-third of an ampere or enough power to light a 60-watt light bulb is all it takes to upset the heart's rhythm, which causes death. Reduce the risk: always unplug an appliance after using it; place appliances where they can't fall or be pulled into a tub or sink (if this happens, unplug it, don't reach for it in the water); don't immerse an appliance in water or cleaning liquid; and don't use a hair dryer if you're in the tub.

What's plan B?

Lt Col Gary R. Lorenz
Chief, Stan Eval, 35 TTW
George AFB, California

Utility hydraulic failure is a standard emergency in the F-4. In fact anyone who has over 1,000 hours in the Rhino is likely to be an ace on this particular EP. Recovery is usually a simple matter of putting Big Ugly in the wire and letting maintenance phyx the Phantom. Lately, however, a number of F-4 bases have experienced more than the normal number of hook skips/cable breaks. If this happens, a routine emergency (if there is such a thing) has the potential of quickly becoming a hair-raiser. While every Phantom phylar has a missed engagement plan, everyone has a complete understanding of *why* or *how*.

WHY. Why should you go around (fuel/weather permitting) if you miss the cable? For starters, if you keep the jet on the ground, you may encounter a situation where you become only a passenger. This occurs in an airspeed window of 120 knots down to 70 knots with any vector other than straight down the runway. In this situation, you are going too slow to have effective directional authority with flight controls (particularly since you have no ARI and a manual-only rudder), and too fast to use emergency braking for directional control without a high probability of blowing a tire and compounding your problem (pulling the emergency brake handle—usually from the other cockpit—while holding in full manual rudder at 100 knots is setup for a blown tire). Having slowed to this speed (120–70) may now have cost

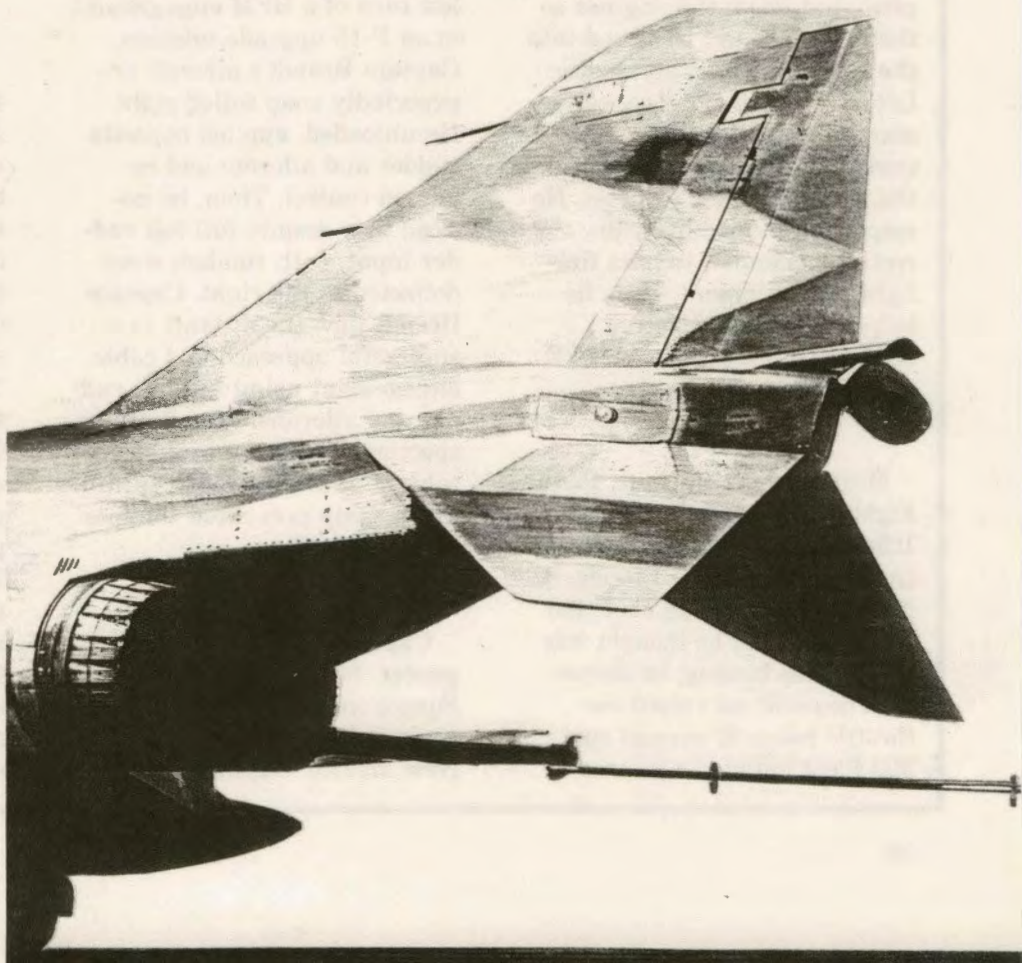
you the option of going around. You will have plenty of runway left; however, not enough of it will be in front of your nose.

HOW. How should you plan the go-around in the event of a missed engagement? First, do everything you can to make the engagement successful: if you lock the shoulder harness, make sure you can still reach the emergency brake handle; increase the throttle friction; fly your computed speed—no faster; land well short of the barrier, but keep the tail hook out of the overrun; lower the nose prior to the cable (this habit pattern change should be a crew coordination effort); consider not deploying the drag chute—it normally doesn't blossom until you engage the

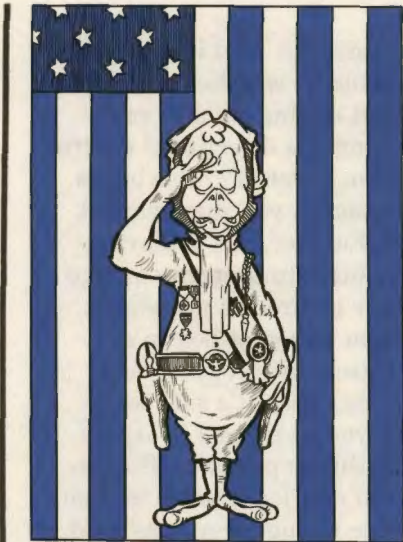
wire anyway. And if you miss the cable, it weather-vanes the aircraft during rollout, complicating the directional control problem. Even if crosswind is not a factor, you may want it later. Further, not deploying the chute eliminates two steps in your go-around procedure.

If you have not begun decelerating within 1,000 feet past the cable, it's safe to assume you've missed it. Apply full Military power (A/B if required) and log a touch and go.

If the engagement was good, don't relax after you're in the wire—be prepared to control rollback with emergency brakes and power, anticipate auto acceleration and shut down as soon as crash recovery personnel are in position. ➤



FLEAGLE SALUTES



Sergeant John A. Sisko, 33d Aircraft Generation Squadron, 33d Tactical Fighter Wing, Eglin AFB, Florida. During an integrated combat turn, an F-15 pilot shut down the engines so the aircraft could be towed into the simulated aircraft shelter. Later, when the engine was restarted, Sergeant Sisko noticed smoke and flames coming from the jet fuel starter exhaust. He responded immediately directing personnel to man fire-fighting equipment while he helped move four captive AIM-9P and four live AIM-7F missiles to a safe distance.

Major Robert I. Plant, 159th Fighter Interceptor Squadron, 125th Fighter Interceptor Group (ANG), Jacksonville, Florida. As Maj Plant was flaring his F-106 to cushion what he thought was his full-stop landing, he discovered he could not retard the throttle below 92 percent rpm. Maj Plant initiated a go-around

and flew around the airfield for a straight-in approach. He was unable to free the stuck throttle and had to frequently turn the aircraft to keep the airspeed under control. Using fuel switches, he shut down the engine over the overrun. Once on the runway, the aircraft's tail hook hit the centerline lights which caused the hook's shear pin to fail. When the hook engaged the departure-end cable, it separated from the aircraft. Maj Plant successfully stopped the aircraft on the runway despite also blowing a tire in the process.

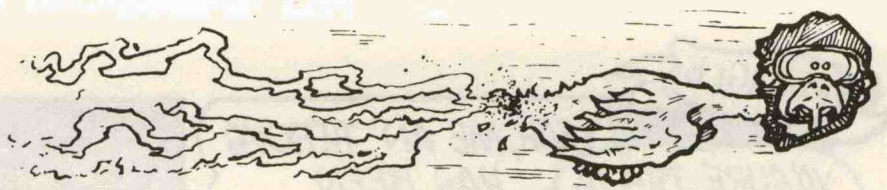
Captain William P. Brandt, 555th Tactical Fighter Training Squadron, 405th Tactical Training Wing, Luke AFB, Arizona. At 300 knots during a left turn of a BFM engagement on an F-15 upgrade mission, Captain Brandt's aircraft unexpectedly snap rolled right. He unloaded, applied opposite rudder and aileron, and regained control. Then, he noticed that despite full left rudder input, both rudders were deflected to the right. Captain Brandt flew the aircraft to a successful approach-end cable engagement using full left rudder and ailerons. Post-flight inspection revealed a broken ARI cable. Captain Brandt's skillful airmanship prevented the loss of the aircraft.

Captain William D. Carpenter, 9th Tactical Fighter Squadron, 49th Tactical Fighter Wing, Holloman AFB, New Mexico. Captain Carpen-

ter was practicing landing patterns in an F-15A following an air defense training mission. When he tried to lower the landing gear for his third approach, several caution lights lit up indicating utility hydraulic failure. He tried to lower the gear with the emergency extension system, but all gear remained up and locked. He repeatedly yawed the aircraft and applied G while trying to lower the gear with the emergency system, but to no avail. Finally, when fuel was nearly exhausted, Captain Carpenter performed an all-gear-up landing touching down on the external tanks. His superior airmanship limited the damage of a potentially severe mishap to minor repairs and saved a valuable fighter aircraft.

Captain Brian H. Wilber, 4450th Tactical Group, Nellis AFB, Nevada. As Captain Wilber completed his fourth dive bomb pass, his A-7 suddenly lost power. He zoomed the aircraft and added power but the turbine outlet temperature (TOT) rose out of limits. So he set the throttle to stabilize the TOT at its upper limit and turned toward the range's auxiliary airfield seven miles away. Without changing the power setting, he completed a precautionary landing pattern. Turbine blades from the engine were found scattered on the runway as he rolled to a stop. Captain Wilber's precise response to a serious emergency saved a valuable fighter aircraft.

TAC TALLY



CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
MAR	THRU MAR	
	1985	1984
1	5	6
0	2	8
1	4	2
1	4	0

ANG		
MAR	THRU MAR	
	1985	1984
0	2	1
0	0	0
0	2	1
0	2	1

AFR		
MAR	THRU MAR	
	1985	1984
0	0	0
0	0	0
0	0	0
0	0	0

TAC'S TOP 5 thru MAR 85



TAC FTR/RECCE	
class A mishap-free months	
32	405 TFW (F-15) Luke AFB, AZ
26	1 TFW (F-15) Langley AFB, VA
25	33 TFW (F-15) Eglin AFB, FL
23	23 TFW (A-10) England, AFB LA
22	49 TFW (F-15) Holloman AFB, NM

TAC AIR DEFENSE	
class A mishap-free months	
146	57 FIS (F-4) Keflavik, Iceland
99	5 FIS (F-106) Minot AFB, ND
96	48 FIS (F-15) Langley AFB, VA
55	318 FIS (F-15) McChord AFB, WA
46	87 FIS (F-106) KI Sawyer AFB, MI

TAC-GAINED FTR/RECCE	
class A mishap-free months	
155	188 TFG ANG(F-4) Ft Smith, AR
147	138 TFG ANG(A-7) Tulsa, OK
146	917 TFG AFR(A-10) Barksdale AFB, LA
124	114 TFG ANG(A-7) Sioux Falls, SD
113	183 TFG ANG(F-4) Springfield, IL

TAC-GAINED AIR DEFENSE	
class A mishap-free months	
129	177 FIG ANG(F-106) Atlantic City, NJ
95	125 FIG ANG(F-106) Jacksonville, FL
78	119 FIG ANG(F-4) Fargo, ND
62	107 FIG ANG(F-4) Niagara Falls, NY
53	147 FIG ANG(F-4) Ellington AFB, TX

TAC/GAINED Other Units	
class A mishap-free months	
188	182 TASG ANG(OA-37) Peoria, IL
172	110 TASG ANG(OA-37) Battle Creek, MI
168	USAFTAWC (many fighters) Eglin AFB, FL
160	84 FITS (T-33) Castle AFB, CA
102	552 AWACD (E-3) Tinker AFB, OK

CLASS A MISHAP COMPARISON RATE

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

	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
TAC	3.2	3.4	2.8													
	3.4	4.3	3.3													
ANG	4.8	4.8	3.0													
	0.0	2.3	1.5													
AFR	0.0	0.0	0.0													
	0.0	0.0	0.0													

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

FLEAGLE

YEAH, ME AN' TH'BOYS
YA'SURE DIS IS TH'PLACE, SPIKE?
HAS BEEN NAILING'EM HERE
FER YEARS. BUT THEY JUS'
KEEPS CUMING BACK.

MEANWHILE

Ping

NO NEED T'GO
BACK TO T'BASE
FER A LITTLE
PING LIKE THAT.

LOOK SPIKE, HERE
CUMS ONE NOW.

© STAN HARRISON 1985

OK BOYS,
UP AN' AT'EM

BAM!
PING
SMASH!
★ BEND!
SNAP SPIN
OUCH!
FALL
★
SCRATCH
BUMP!

DIDN'T FLEAGLE
TAKE A BIRD STRIKE
'BOUT THIS SAME PLACE
LAST YEAR?

'FRAID SO.

HARRISON