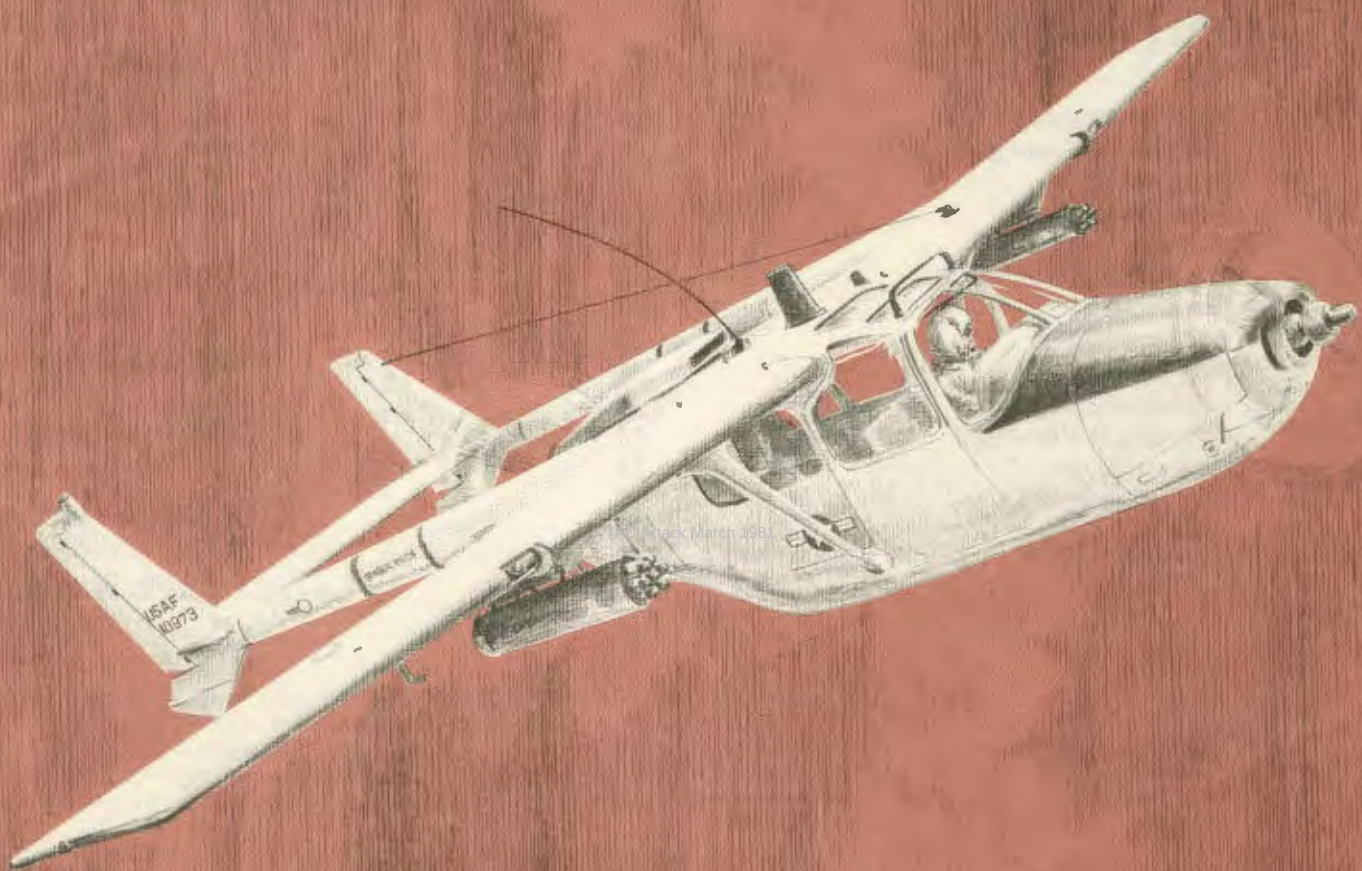
22

TAC ATTACK

MARCH 1981



GARCIA

TAC ATTACK

READINESS IS OUR PROFESSION

TACTICAL AIR COMMAND
GENERAL W. L. CREECH
COMMANDER
LT GENERAL THOMAS H. McMULLEN
VICE COMMANDER

CONTENTS

COL RICHARD K. ELY
CHIEF OF SAFETY
MAJ JIM MACKIN
EDITOR
STAN HARDISON
ART EDITOR
LINDA DAVILA
EDITORIAL ASSISTANT
SGT DAVID GARCIA
STAFF ARTIST

TAC ATTACK (USPS 531-170) is published monthly by HQ TAC/ SEPP Langley AFB, VA. Controlled Circulation Postage paid at Richmond, VA

VOLUME 21 NUMBER 3

Angle of Attack

By The Rules

Adam and Eve broke the only rule they had to obey. While many of us resent the idea that others may be wiser than we, there are some who insist on doing things their way — regardless of the result. How do you feel? I hope you don't feel the only reason we have rules is to harass the individual.

I believe the real purpose of rules and procedures is to protect us from our own inexperience. They represent our corporate memory, the knowledge of others accumulated by the organization. We shouldn't approach them like a tax lawyer looking for loopholes. The idea is to keep us from making the same mistakes our predecessors made. As an example, tech orders should be the best way to do the job. But the best way may not be perceived as the easiest way; so we take a shortcut, believing we know a better or faster way. Eventually, taking shortcuts will cause a mishap.

There are going to be times when the situation isn't specifically covered by the "book"; but, if we follow established procedures, we will be better able to apply sound corporate judgment and solve the problem. The intent is to accomplish the mission right.

If you know a better way to do the job, submit it through the proper channels so it can be evaluated and shared by the whole organization. That's how we make progress within the system; it makes more sense than going it alone. If we only learn from our own mistakes, we're going to run out of time before we run out of lessons.

Richard K. Ely

RICHARD K. ELY, Colonel, USAF
Chief of Safety

HEART OF THE ENVELOPE

By Capt Carl Decker
Chief of Safety, 49 FIS

"Tally-ho two bogeys, 1 o'clock, slightly high, 3 miles. I'm engaged." "Roger, tally; tally. I'm free. Press!" Unload, full mil . . . good overtake . . . no burner puff now, we've got a blind side entry . . . good mach . . . IR BORS, 4 mile scope, IR selected, armed and confirmed. "01 Flight, arm up . . . 02 let's take the one on the left first." They're coming in place right . . . I don't believe it . . . lag position, lead heading . . . trigger . . . missiles away — FOX 2!!! Heart of the envelope.

Text book engagement? Piece of cake? Well, maybe; but we'd better look at some other parameters so that we can see what's happening to the edges of that envelope.

1. You are outnumbered in the area six to one. For every two tallies, there are four no joys. AIR COMBAT RULE 1: Sight is life.

2. You are shooting toward the sun so you lock on in radar. Your opponent gets a RHAW gear strobe, breaks hard to find you, and your radar launch is unsuccessful. Now you're really engaged. AIR COMBAT RULE 2: There is no free lunch.

3. At joker you separate but your burner won't light. AIR COMBAT RULE 3: Mach is Power.

4. Two minutes later you discover that you've got trapped fuel in the right wing, the homeplate runway

is unusable, and you need a vector to the bail out area. AIR COMBAT RULE, ULTIMATE: They don't ask how, just how many.

A twelve-year old can see that this mission shouldn't have even left the ramp. However, "another hour on the ground is another hour of flying safety" is not a viable way to operate.

From the heart of the envelope to out of the envelope in one easy step. Why? Because the envelope is dynamic. Its volume and shape change with every passing moment and are affected by everything.

Who operates in this dynamic envelope? What poor fellow deals with this devil? What man would singularly dedicate his life to this challenging arena and love every second of it? Preflight near your left wing root. If you see a pair of silver wings, jump and yell tally ho!

Now before you run off to the neighborhood pub and announce yourself as a single combat warrior, take a look at all the bookshelves in your squadron. Notice all the regulations, supplements, manuals, tech orders, pamphlets, local area books, and all-around guidance made available by your commanders just for you. A real stack, isn't it. There are only two kinds, however: one kind defines the edges of the envelope, the other kind tells you how to remain in the envelope.

At this point, we'd better look at what our envelope includes so far:

1. A dynamic activity: If you don't think a one vs many is a dynamic activity, trade this article for *Better Homes and Gardens* and press on.

2. Dynamic participants: The ability of you and your aircraft to cope with a 300 foot overcast and 1 mile visibility during a Wednesday afternoon recovery is not equal to your combined ability to cope with 300 feet and 1 mile at dark-thirty off your third night ORI sortie. You have changed; ergo your envelope has changed.

3. Guidance: Tends to be both abundant and undynamic.

4. Guidance Creators: Sometimes less flexible than #3 above. If you don't think so, imagine how long it would be between disregarding a #3 and having your hemorrhoids removed by a #4.

To allow these seemingly mutually exclusive qualities to coexist, a contract must exist.

We must all accept the fact that rules are necessary; no matter how inept their description of this dynamic envelope appears, at first glance, to be. We aviators must abide by these rules and actively pursue knowledge to assure this end. Consult your local stack of guidance for this information. However, it is imperative that we recognize that at any given time, our personal envelope is not necessarily a duplicate of that envelope described by the books. Exceeding the one leads to a minimum of broken wings; exceeding the other, by definition, leads to a broken body. We must demand of ourselves to never exceed either envelope.

The most difficult task falls upon the commanders. You must insure that your rules are valid, reasonable, and clearly understood. You must also create an atmosphere where your young chargers are encouraged to know and operate within your envelope (the rules) and their envelope (ability at that moment) without insult — overt or covert, blatant or subtle.

Even the most competent of aviators can run into a task that is outside his envelope at that point in time. It is not a slur against his manhood if he elects to pass up that event and fly it tomorrow or call "knock it off" and set it up again. It is, rather, a quality much sought after in an aviator: it's called judgement.

. . . lag position, lead heading . . . trigger . . . missiles away — FOX 2!! Heart of the Envelope? You bet! SPLASH!!

Dr. Sam ...

those darned reddish blotches

"Hey, Rick. Look at these darned red blotches over my chest. What the heck could these be from?" Ralph spoke with some hint of irritability, which caught Rick by surprise. Ralph was generally a "laid back" kind of guy. But the blotches were strange looking; and maybe if they were on him he would be upset too.

"Look, maybe you should go by the flight surgeon's office and have him take a look see." Rick spoke with some hesitancy because that would delay chow and he hadn't eaten since early morning.

The whole day had been hectic. They had wanted to take off in the morning so that they would be at Western AFB early in the day to get a good night's sleep. Tomorrow they would be participating with their F-4 in aerial combat exercises against the superior F-15. But administrative duties had piled up, so they got a late start and had not even found time to eat.

The late takeoff was uneventful; however, severe thunderstorms developed en route and they had to decide either to go over the storm or to go around. They decided to go over the top to save time and arrive at Western early enough to grab a sandwich

before going to bed.

Rick remembered that as they climbed over the thunderstorm he had felt somewhat "uncomfortable" and noticed the altimeter was reading 35,000 with a cabin altitude of 27,000. He checked his readings then asked Ralph for confirmation. Ralph agreed and checked for possible cabin leaks. He found none, so he cranked up the heater full blast to get some added pressurization. This helped as the cabin altitude decreased to 25,000. What the heck. They would be able to descend in a few minutes, so they proceeded on course over the thunderstorm. Ralph had previously flown the unpressurized A-37, so he had flown at 25,000 feet numerous times. He was not particularly concerned. They made a normal descent and landed at Western .

They quickly finished their post-flight activities and checked into the VOQ. Ralph asked Rick to come by as soon as he got cleaned up so they could grab something to eat. Ralph took a hot shower and as he was drying off he first saw those darned reddish blotches.

"You know, Rick, I feel kind of crummy — washed out. Do you know what I mean?" Ralph's question was heavy with concern.

"OK that does it. Let's go by and see the Doc," Rick spoke with firmness and some urgency.

So thus begins the story of "Those Darned Reddish Blotches." Reluctantly Ralph agreed, and off they went to the clinic. At the clinic the flight history and symptoms were immediately considered to be compatible with decompression sickness. Ralph didn't like the idea of staying the night at the hospital breathing 100% oxygen by an aviator's mask. In fact, the pilot and the young flight surgeon didn't see eye to eye about this being a clear-cut case of decompression sickness. Three hours after hospital admission, the starving pilot was becoming a bit demanding on the hospital ward because he had agreed to stay only if he could just get something to eat. The flight surgeon also thought that the flyer's attitudes were possibly signs of central nervous system involvement in the decompression sickness. Should Ralph be referred to the nearest decompression chamber, about one hour's drive from the hospital? Ralph strongly disagreed. The flight surgeon finally agreed to let him remain breathing 100% oxygen unless something changed or a new decompression symptom arose. And finally, the patient was fed.

The next morning those darned reddish blotches were gone and Ralph felt ready to fly. However, he was DNIF and could not fly fighter aircraft for at least 24 hours and preferably for 48 hours. Ralph actually returned home commercially 2 days later and was not allowed to take part in the scheduled aerial combat exercises.

Upon returning home, Ralph found that he could not be placed back on flying status because he had an episode of decompression sickness with neurologic involvement which is, in accordance with AFR 160-43, para 4-26(b)(6), not compatible with continued flying duties. Before Ralph could fly he had to be thoroughly evaluated at the USAF School of Aerospace Medicine (USAFSAM) and then be recommended for waiver by Headquarters USAF Surgeon General's Office.

Ralph did return to flying status after a complete aeromedical evaluation at USAFSAM, but being considered qualified for flying with waiver for decompression sickness with neurologic involvement is not easy. Questions immediately arise like: Is an individual with one neurologic episode more likely to have a repeat neurologic hit? Did this pilot truly have central nervous system involvement during his decompression sickness? Neurologic symptoms occur frequently and may be as subtle as irritability, restlessness, and personality change or as catastrophic as collapse and coma. Interestingly, sudden collapse can occur after such small findings as those darned reddish blotches.

The hyperbaric medicine facility at USAFSAM recommends decompression chamber treatment for any delayed reaction that occurs. The delayed appearance of those darned red blotches could have been considered as enough reason for hyperbaric treatment. If decompression symptoms are present, decompression treatment is indicated. When in doubt, treat!

Remember, decompression sickness can occur even after mild altitude exposure. Serious complications to your health and your flying status can result if not handled properly and immediately. Decompression chamber treatment is safe and easily done. The USAF School of Aerospace Medicine is ready and eager to assist day or night with their decompression referral service at Autovon 240-3278 or commercial 512-536-3278 (LEO-FAST).

DR. SAM eagerly solicits questions, ideas, and comments (both friendly and unfriendly) from aircrewmembers. All letters will be considered confidential and will be used as the basis for future articles.

Write: DR. SAM
USAFSAM/CE
Brooks AFB, TX 78235

TAC SA

SSgt Thomas M. White

Ground Safety Award of the Quarter

Staff Sergeant Thomas M. White, 35th Component Repair Squadron, 35th Tactical Fighter Wing, George Air Force Base, California, is the recipient of the Tactical Air Command Ground Safety Award for the fourth quarter of 1980. Sergeant White has continuously shown a deep and constant concern for safety, both on the flightline and in his shop. His contributions have included: relocating equipment whose location presented a hazard, procuring safety glasses for shop personnel requiring corrective lenses, obtaining safety guards for all types of machinery, establishing a storage rack to eliminate lifting hazards, and compiling a shop safety briefing to ensure continual awareness of safety information. Sergeant White made daily inspection tours of his shop, paying particular attention to the position of tools and guards. His thoroughness in all his duties qualifies him for the Tactical Air Command Ground Safety Award of the Quarter.

Sgt David Foster

Weapons Safety Award of the Quarter

Sergeant David Foster, 33d Equipment Maintenance Squadron, 33d Tactical Fighter Wing, Eglin Air Force Base, Florida, is the recipient of the Tactical Air Command Weapons Safety Award for the fourth quarter of 1980. Sergeant Foster has been a key figure in his munitions maintenance section. On one occasion, while in charge of a relinking operation, he observed a jam in a linker-delinker machine which ruptured a 20mm round, spilling the propellant into the machine and surrounding area. He immediately stopped and unplugged the machine, evacuated the building, and notified Munitions Control. His dedication and personal involvement contributed significantly to the Tactical Air Command mishap prevention program.

FETY AWARDS

Crew chief safety award

Sgt Robert B. Sharit

Crew Chief Safety Award

Sergeant Robert B. Sharit, 33d Aircraft Generation Squadron, Eglin Air Force Base, Florida, is the recipient of the Tactical Air Command Crew Chief Safety Award for March 1981. Recently, while performing a preflight inspection on his aircraft, Sergeant Sharit discovered that the streamer on the ejection seat ground maintenance pin could be removed with the pin still installed. The aircraft could have been inadvertently flown in that condition, and the pilot would not have been able to eject in an emergency. On his own, Sergeant Sharit inspected the rest of the aircraft on the line and found one-third of them had the same problem. He reported the condition and personally took the bad pins and had them soldered. Sergeant Sharit's alertness and thoroughness qualify him for the Crew Chief Safety Award.

Individual safety award

SSgt Ernest E. Parson

Individual Safety Award

Staff Sergeant Ernest E. Parson, 727th Tactical Control Squadron, Hurlburt Field, Florida, is the recipient of the Tactical Air Command Individual Safety Award for March 1981. Sergeant Parson was on duty when a power generator caught fire. Although flames 2½ feet high were roaring out of the generator, he managed to shut off the generator and extinguish the fire with carbon dioxide before further damage could occur to the generator or other electronic equipment nearby. Sergeant Parson's calm, quick action saved the Air Force countless dollars in equipment damage. He is deserving of the Individual Safety Award.

TAC TIPS

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

If you do not think about the future,
you cannot have one.
GALSWORTHY

E P QUIZ

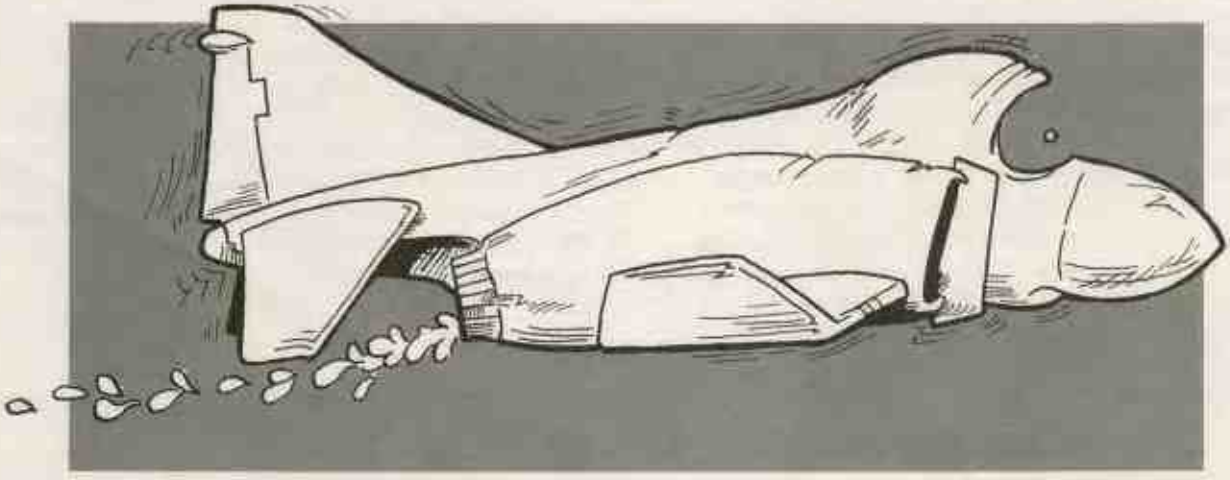
If a flight examiner gave you this series of emergencies in a simulator check, you'd cry "foul" because it's an unrealistic compounding of emergencies. But it really happened to a poor F-4 crew overseas.

First, the bus-tie-open light came on followed by the right generator light and the bus-tie-open light went out. Thirty seconds later, the right fire light came on. The pilot pulled the throttle back to idle and checked the EGT and oil pressure; they were normal. The fire warning light went out and the system checked good. The pilot headed for home, and his flight leader fell into a chase position. As they neared final approach, the chase pilot noticed fluid that could be fuel streaming from the vicinity of the right afterburner; so they shut down the right engine.

Then, he lowered the landing gear; that is, he tried to. The left main indicated down and locked, but the right main and nose gear indicated unsafe. The utility pressure was fluctuating around 1,000 psi. The chase pilot visually confirmed the unsafe gear indications. Fortunately the emergency system worked. He got his gear down, landed safely from a single-engine approach, and shut down on the runway as the engine began to auto-accelerate through 80 percent RPM.

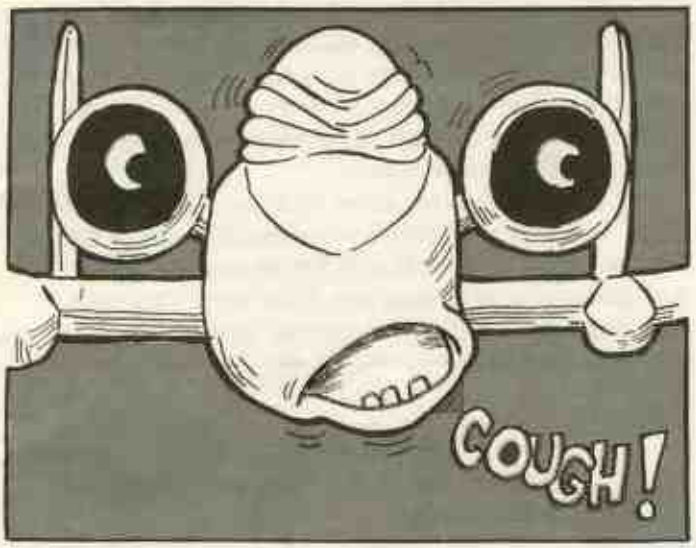
None of the failures were related. The electrical problem was due to a repaired cannon plug becoming un-repaired. The engine fire warning was due to a bleed air duct failure at a weld. The utility hydraulic failure was due to a faulty aux air door actuator check valve which allowed the fluid to escape into the airstream. That's the fluid the chase pilot saw.

At the very least, this crew deserves to have their next emergency procedures check waived.



GAS GIVES A-10 INDIGESTION

The A-10 is still belching when it swallows too much gun gas. Our Guard friends had a case recently where both engines apparently stagnated during a strafe pass. It happened on the second strafe pass when the pilot fired a 2½-second burst in high rate on a tactical delivery. On recovery the pilot noticed a lack of thrust even though both throttles were at maximum. By cycling the throttles to idle twice, he was



able to clear the stall; so he declared an emergency and landed successfully. Both compressors were found to be coated with a heavy layer of gun gas residue. After being washed with water, the engines operated normally.

The odd thing about this incident is that the flight lead had briefed to use low rate instead of high rate and to fire short double bursts instead of long single bursts. A briefing isn't worth much if the wingman doesn't listen.

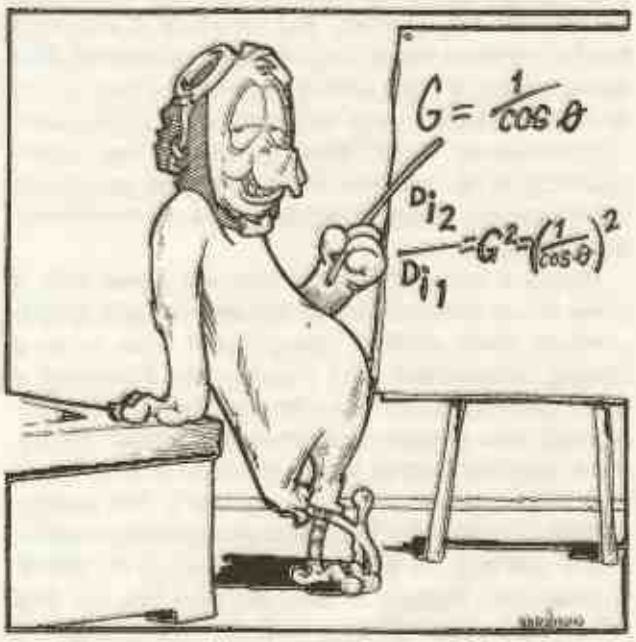
BASIC AERO REVISITED

A recent mishap led us back into the books for some information on turning performance. In this case an attack aircraft struck the ground when its pilot failed to maintain altitude in an 85 degree banked turn at 300 feet above the ground. A quick review of the books showed that it requires 11.5G in any aircraft to maintain altitude at 85 degrees of bank, so it's not surprising that he didn't make it. The increase in "G" required to maintain level flight as you increase your bank angle over 75 degrees is surprising, so we thought we'd share it with you:

Degrees of Bank	"G" Required
75	3.9
76	4.1
77	4.4
78	4.8
79	5.2
80	5.8
81	6.4
82	7.2
83	8.2
84	9.6
85	11.5

What this implies is a very touchy situation at low altitude: if we plan 4G turns, a slight overbank can put us in an impossible situation. If we don't roll out some of the bank, we won't have enough "G" available to recover. The figures also tell us that, depending on our "G" tolerance, we may be forced to choose between tunnel vision or altitude loss during a turn if we've overbanked just a tad.

Some aircraft are thrust limited, which means the thrust is insufficient to counter the induced drag. The induced drag increases by the square of the "G" in the turn. At the same time, the stall speed increases: we cannot sustain the turn.



This doesn't tell us not to use 4G turns at low altitude; it tells us that when we do, we are at the brink. If we increase our bank, we'll be over that brink in a hurry. If we find ourselves losing altitude, we've got to roll out; otherwise, pulling harder on the pole isn't going to solve the problem.

TAC TIPS

COMPLACENCY: OUR THANKS FOR RELIABILITY

By Capt Alan L. Carpenter
Aerospace Physiologist, 1099 PTF

It's a fact of life — the more reliable someone or something is, the less we worry about them. It's that guy who's accident prone or that system that's always breaking on us that gets our REAL attention. Inattention in personnel management results in a lack of recognition to reliable "ace" performers. In machines, inattention and complacency concerning their operation and maintenance (particularly in the flying business) can wind up killing somebody.

One of the most reliable pieces of equipment a military aircraft has onboard is an oxygen regulator. Very seldom do we see these little black boxes breaking on us, and what does this lead to? Hurried, incomplete oxygen equipment preflight checks which now become the habit pattern. But, let's face it, it's pretty hard to continue thoroughly inspecting something that never breaks. It's like getting up everyday and having to check to make sure gravity is still with us and working: nonsense, right? Well, gravity we can pretty much count on, but man-made machines and equipment need our attention regularly if we want to bet our lives on them.

Here's a fact that most of you will agree with: it takes about as long to do an effective oxygen system preflight check (PRICE Check) as it does to do a sloppy, incomplete, and unsafe one. Following a rapid decompression is no time to suddenly be preflighting your oxygen equipment. Remember, following a rapid decompression to altitudes of 35,000 feet and higher, you're only going to last a few breaths without oxygen. After those last few beautiful breaths, you're going to be so impaired you won't be able to recover from hypoxia — and yes, then you die. And folks, this isn't some scary scenario dreamed up in a warm, white castle somewhere; you know it yourself, hypoxia has been killing people in airplanes for years.

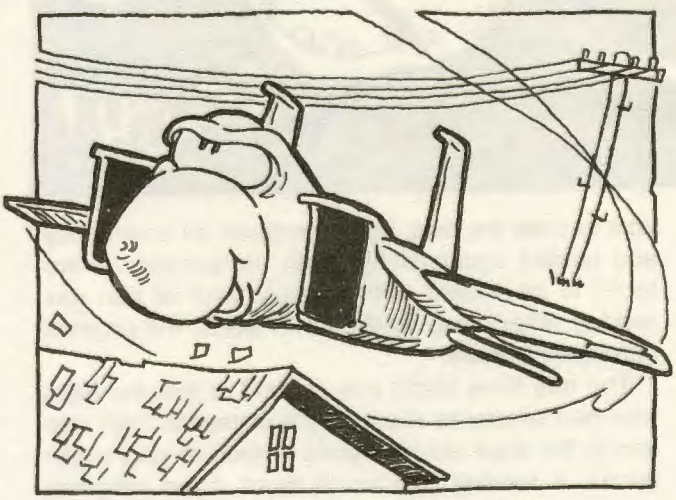
Don't let your appreciation for reliable equipment be expressed as neglect and complacency. No matter how sophisticated your aircraft is, complacency can kill you!

JUST SHOWING OFF

By Major Gene McVay
Chief of Safety, 188TFG (ANG)

"You can work up a thirst, even when you're just showing off." Or so the television commercial says. Showing off has had far worse consequences in the aviation community. The loss of life, valuable assets, and civilian property has often been the result. The affliction to show off is no respecter of age or experience; there is a little show biz in everyone. A few years ago, a pilot was killed trying to roll a T-38 on takeoff. More recently, an experienced fighter pilot was killed doing aerobatics in a civilian aircraft. Not even the transport drivers are immune: witness the many-motor that crashed while performing an unauthorized low level maneuver.

The reckless acts are often far more subtle. They come in the form of 100-foot low levels flown at 50 feet, or formation takeoffs with the wingmen tucked in too tight overlapping wing tips. Then there's the awe inspiring, ultimate mark of superior airmanship: the



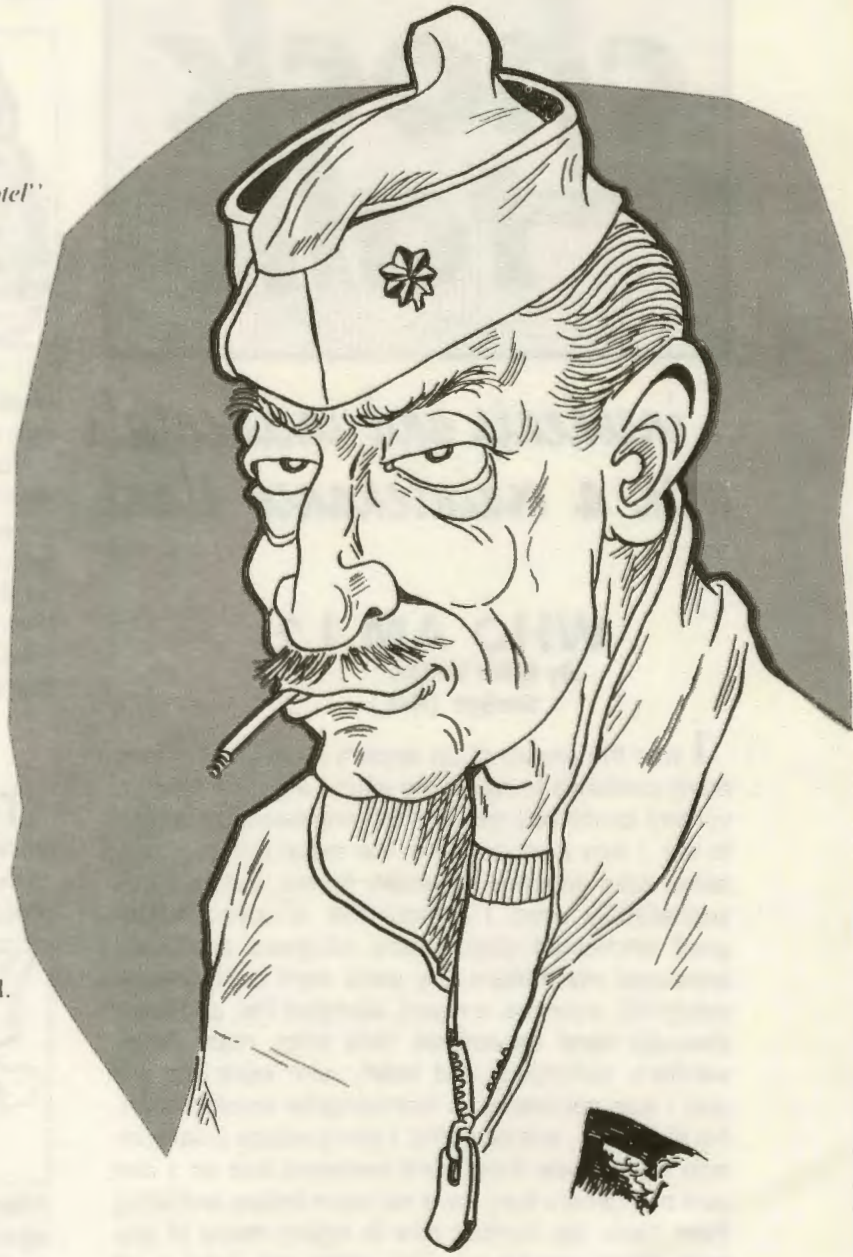
fighter pilot traffic pattern. Yes, surprisingly enough, we have suffered several losses while attempting this complex maneuver. Aircraft have pitched up, spun in, pancaked, and come apart, all in the name of impressing the folks on the ground. By flying the tightest pattern, what are we proving? In the final analysis we are proving nothing. You prove something by being the best bomber in the squadron, the best low level navigator, or the best air-to-air tactician. You show off by performing the mission and protecting valuable assets. By doing your best to be ready when the balloon goes up, you will be doing a service to our nation and earn the respect of your fellow colleagues. The mission of flying and fighting is dangerous enough without the added risk of just showing off.

THE BALLAD OF LANCELOT B.

By Lt Col William F. Hughes
Chief, Air Field Management
Holloman AFB, NM

Just standing on top of the bar and yelling "Sierra Hotel" don't make you a Fighter Pilot — Ernie Craigwell

Lancelot Blowjet, A.C.
Sits drinking Black Label J.D.
Gunfighter mustache and a fist full of cash,
God's gift to the Air Force is he.
In a slatted-wing Foxtrot 4-E,
Or his red and black 280Z,
Rules and procedures are for those lesser creatures,
Not Fighter Jock Lancelot B.
He's weak on the new R.O.E.
And the detail that's in Section III,
But he don't need advice, just pass him the dice
For "Horses", two out of three.
A fighter jock's breakfast at three,
Cigarette, coke or coffee.
The briefing is boring; he's soon softly snoring,
Just resting his eyes, don't you see.
"That wimp of a SEFE and me
Will have it out soon, wait and see!
Big stan/eval whiz, who does he think he is
To give me a qual level three?"
"So I'm four minutes off TOT,
And the pop had a bit too much "G",
And I messed up the LADD, well, it wasn't *that* bad.
This might as well be ATC."
It's not what young Lance has to be,
But it's part of the image, you see.
A hard-drinkin' hellion, a hard-lovin' stallion,
Marginal Lancelot B.
But in the sights of a MIG-23,
Far short of max L over D,
He'd trade all his glories and all the bar stories
For one more available "G"
For in the ultimate DACT
The lessons are no longer free,
An Ivan is trackin', and Lance just ain't hackin'
But that's what he chose; *C'est la vie!*
The old heads mourn Lancelot B.,
And ask how it all came to be,
Snap the barmaids' bikinis, order triple martinis,
Saying, "He never learned that from me!"



LCol William Hughes is this month's FLEAGLE T-Shirt Winner

chock talk

...incidents and incidentals with a maintenance slant.

WHO AM I ?

By Mike Vedas
SmSgt (Ret.)

I was the dream of an ancient Greek, but it took many centuries to make me what I am. The best inventors conceived me, and top engineers gave birth to me. I was a challenge to the metal industry; new alloys were invented especially for me. Before I was successfully used, I confounded, annoyed, frightened, enchanted, discouraged, delighted, and finally appeased my makers. My parts were cast, forged, machined, polished, x-rayed, stamped OK, and painstakingly hand assembled. New bolts, nuts, rivets, washers, cotterpins, and safety wire went into me until I was completed: a technological breakthrough. I'm long, slim, and powerful. I can produce unimaginable horsepower from mere kerosene and air. I can take men where they have not been before and bring them back. My number now is legion; many of you work on or around me. You know me: I am a jet engine.

Considering everything, I lead a pretty good life. The USAF depends upon me, and I get the best. My accessories are routinely changed; and every so many hours I get a HPO, PE, or an overhaul. Humans would be fortunate to have the store of interchangeable parts I enjoy. But, I have a problem.

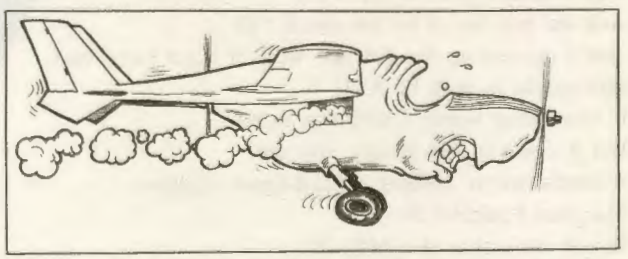
It concerns my appetite. You know I like lots of air, any kind of air; and I have ways of making the air digestible, making it subsonic and all that. However, what I don't have are jaws I can close. Once I'm going, I'll try to eat anything. You just wouldn't believe what jet engines have tried to eat. Well, we don't

know any better; so we depend on each and everyone of you.

You can help. Please be careful and account for your tools and other hardware. If you drop something or see FOD laying about, pick it up. Always follow tech data when working on me or my airplane. If you do these things and aren't ever careless, I won't be hurt; and I'll be around to defend you if I'm needed. That's it: I'm only as good as my maintenance and that's up to you.

SMOKING IS UNHEALTHY

The 0-2 made a normal takeoff, but after liftoff smoke started coming out from underneath the left side of the instrument panel. The smoke got worse, so the pilot decided to abort and land on the remaining runway.



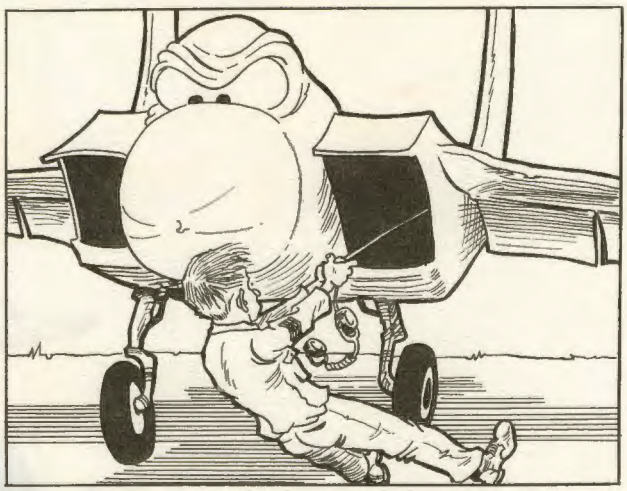
After touchdown the pilot shut everything off and egressed the aircraft, turning it over to the fire department. The fire department disconnected the battery and removed the front engine cowling. Hydraulic fluid was found in the rear of the engine compartment. The evening prior, somebody had changed the hydraulic pump and hadn't cleaned up after themselves.

If you think smoking in a confined area makes nonsmokers mad, you should see what it does to a pilot in the air. Please don't give his heart a no-notice stress test.

THOSE "FOREIGN OBJECTS"

Some very familiar objects cause "foreign object" damage; take ground cords and headsets for example:

In one case, during an F-15 launch, the crew chief was called over to the line truck. He quickly disconnected from the intercom cord to go over to the truck. The left engine ingested two feet of the cord before the crew chief could retrieve it.



In another case, an F-16 was undergoing quick check and arming at the end of the runway. One of the weapons specialists signaled to the aircraft marshaller that the VTR door was open. As the marshaller closed the door, his headset mouthpiece, hanging by one support strap, was pulled inside the intake. Parts of it were ingested by the engine.

Anything on or around you that's loose can become a "foreign object." Don't give it the chance; secure it and keep it secure.

MURPHY STRIKES AGAIN

The Phantom was undergoing a transfer inspection in a hangar. Part of the inspection calls for opening the inlet guide vanes to best observe the engine compressor for damage. A manual vane actuator pressurizer was installed to cycle the vanes and was correctly connected to the head end and rod end fuel lines used to operate the vanes.

When the vanes on the number one engine were opened, fuel began to flow from the head end fuel line. Caught unprepared by the unexpectedness of the malfunction, the maintenance personnel didn't think of reversing the pressurizer and closing the vanes. Instead, they disconnected the pump from the head end and unsuccessfully tried to reconnect the fuel line. With fuel still flowing and a major spill accumulating on the floor of the hangar, they towed the aircraft from the hangar to the flightline. There they finally closed the fuel shutoff valve by cycling the engine master switch and the number one throttle.

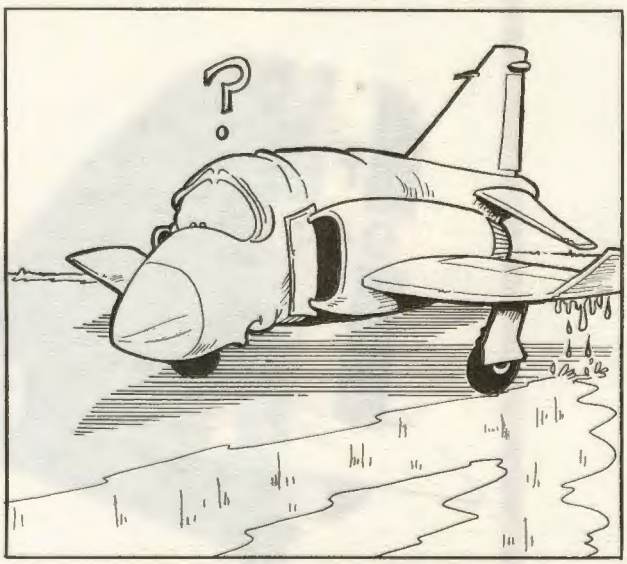
The best guess of the cause was that someone had shut off the engine master switch while the throttle was past the idle/cutoff range and then had placed the throttle in cutoff. But the tech order didn't give any warning that this could result during inlet guide vane rigging and checking.

Forewarned is forearmed, but these poor troops came unarmed.

...AND AGAIN

Here's another way Murphy can get fuel to spill out of a Phantom:

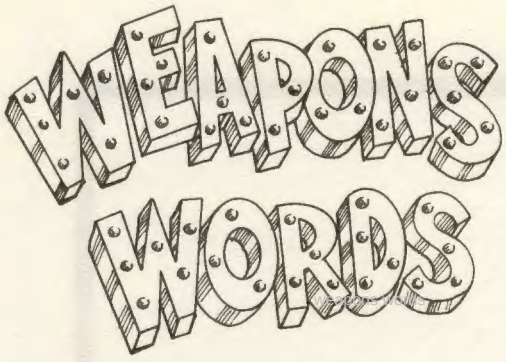
At the end-of-runway quick check, the checkers found a small fuel leak in the left wing fold area of the F-4. A fuels specialist came out, looked at the leak, and



called for a low pack air unit, figuring to stop the leak by injecting sealant. While waiting for the low pack, the chief of the quick check crew had the squat switch in the right main landing gear depressed to pressurize the wing fuel tanks and see how bad the leak was. As the tanks pressurized, fuel began running out of the left wing fold area and all along the left leading edge flap and the left pylon. Since the fuel was running toward the aux air doors, the aircrew was told to shut down. They did so and egressed the airplane.

The technique of using the squat switch to pressure check the fuel tanks is one of those "locally accepted" procedures that contradicts the tech order. That's just opening the door and inviting Murphy in.

S.E.5A



The Missing Pin

The weapons load crew had come out to the F-101 to do a jettison check and ejector cartridge installation, but the canopy was closed when they arrived. So the C-man attempted to raise the canopy by opening the canopy switch access panel and using the canopy switch which is under the canopy ejection lanyard. It didn't work. The A-man came over and tried: no luck. The C-man tried again, and again it didn't work. In frustration he abruptly turned away and jerked his hand out, catching the canopy ejection lanyard on the way. It worked. The canopy flew straight up and came back down on top of the fuselage, then bounced off the right side of the airplane and landed on the ramp.

Neither man had checked to insure that the safety pin was installed in the manual ejection actuator before trying to open the canopy. Would have helped if that pin was in. Would also have helped if we had a pin we could put in our tempers to keep them from blowing up, especially when we're around dangerous equipment.

The Almost-In Pin

After finishing an integrated combat turn, another load crew was removing equipment and munitions from the area around the aircraft. The crew chief was driving the jammer, and he proceeded to pick up a LAU 88 missile launcher on an MHU-114 rack. However, the airman assisting did not install the safety pin completely through the rack and the jammer forks so it would lock. Approaching the trailer, the crew chief hit the brakes to slow down. The brakes grabbed, and the rack slid off the forks and tumbled forward. As the rack hit the ground, the force of the impact bent the pins holding the LAU 88 to the rack and it rolled free, finally coming to a rest on its suspension lugs and top two rails.

This time, the pin wasn't missing; it just wasn't in far enough. Maybe that's what they mean by "half-way measures."

The Stuck Pin

Then there was the crew which was attaching a Weapon System Evaluator Missile (WSEM) to its launcher rail. It became jammed because the holdback pin wasn't properly aligned before the rail followers were released. To unjam it, the crew needed to manually hold up the rail followers to release the holdback pin and free the missile. The load crew decided it would be easier if they removed the missile handling frame; they did so in violation of the tech order. The crew chief then actuated the rail followers, with one crewmember pushing at the rear of the missile and another crewmember pulling from the front. At this point, the crew chief asked that the handling frame be put back on for protection, but the others couldn't hear him because of background noise and their ear protectors. So, they continued without it. The holdback pin released, and the missile began sliding forward on the rail through the grasp of the man in front. It slid off the rails and hit the ground nose first, cracking the radome.

As a postscript to this incident, the load crew mentioned that they had not received adequate rest before starting this midnight shift. The problem was not caused by their official duties, since they only worked 8-hour shifts; it was caused by their attending education courses at a local college off base. We're all in favor of self improvement, and supervisors should do everything they can to adjust the schedule to help out those in night classes. But when it comes to a crunch, duty comes first; and being sufficiently rested for your work is part of your duty.

...And Things That Go Bump In The Night

By Capt Ken Pesola
HQ TAC Explosives Safety

How many of you seasoned ramp rats remember the time we shot out the nose gear of an F-4 and prematurely retired a step van together with a 50-pound fire extinguisher? The location was one of our overseas bases where aircraft maintenance people were using locally developed procedures instead of the checklist designed to prevent the SUU-23 gun from firing inadvertently. The ultimate cost unfortunately included the life of one flightline expeditor. The reason? Lack of respect for the hazards of forward firing ordnance.

This is but one example of many — the unplanned functioning of forward firing ordnance (rockets, missiles, and guns) on our flightlines. We wearers of supervisor, quality control, and safety hats spend a healthy portion of our day walking the flightlines, intrepidly looking for tech data violations; or, at least, we should be. But when is the last time we assessed the direction that airframe-strapped-to-a-gun is aimed? How do we orient forward firing ordnance on the flightline?

AFISC's direction on this subject is clear. Aircraft laden with forward firing ordnance must be headed in the direction presenting the least exposure to personnel, equipment, and facilities. More specific guidance is impractical because of situational variety. But what constitutes a hazard or direction of least exposure? Forward firing ordnance should never be aimed at off base civilian targets falling within the weapon's range parameters. Specific parking spots with no potential targets must also be identified for maintenance on hung rocket, missile, and jammed gun aircraft.

Unfortunately, not all situations are this clear cut. The mission must be considered. Maintenance facilities, aircraft, people, and their frequency and duration of exposure must be included in the hazard assessment equation. Only unit commanders can assess their given situation. Commanders, together with their entire staff, develop parking plans based on mission requirements. Parking plans are designed to insure mission accomplishment and at the same time attempt to expose the least amount of combat equipment, people, and facilities to damage or injury in the event of a mishap. Today's congested aprons, real estate constraints, and community encroachment force us to make tough parking decisions.

If complete coordination and thought have not gone into your aircraft parking plan, you may be open for criticism — or worse. It's worth reviewing your plan for possible improvement in the orientation of forward firing ordnance.

Sometimes It's Straps

This one also happened in the middle of the night. The load crew had downloaded a TGM-65, Maverick training missile, off of an F-4. After downloading, one of the crewmembers was released to go to another airplane, while the crew chief and the remaining crewmember loaded the missile onto the trailer. The crew chief was acting as spotter for the other man who drove the jammer. After positioning the missile on the trailer, the jammer operator went to get another missile which was on a broken down trailer nearby. Meanwhile, the crew chief was just beginning to position the tie-down straps on the first missile when the jammer returned with the second missile. The crew chief had one tie-down strap attached but not fastened when he left to act as spotter for the jammer. The jammer operator had the hand throttle set wide open as he advanced the torque converter; and the jammer surged forward, pushing the first missile off onto the parking ramp.

When it's not pins, it's straps. That's why the tech orders insist on them being in place. When you don't follow the tech order, the odds eventually catch up with you.

Straps Again

Different time, different place, different crew, different weapon — same problem. In this one the crew was downloading SUU 25 flare dispensers from an F-4. As the fourth dispenser was being lowered onto the trailer, the jammer driver's foot slipped off the clutch; and the jammer lurched forward striking the third dispenser, pushing it into the second dispenser which, in turn, struck the first dispenser. Since the first dispenser was only held by a "loosely attached" tie-down strap, it came loose and impacted the ramp with its nose.

The reason the driver's foot slipped from the clutch was that the cleating on the clutch was covered with ice and snow and the bottom of the driver's boot was covered with de-icing fluid. Why the strap was loose wasn't explained. Straps are like seat belts: they're no good if they aren't put on right.

SPO CORNER

Getting The Word

By Major Wayne Skora
HQ TAC/SEF

"Ten percent never get the word." These are the people who miss meetings, get caught with out-of-date publications, follow outmoded procedures, and many times have accidents. They make the same mistakes that others made because they "didn't get the word."

Keeping people informed is an important responsibility of a headquarters; conversely, getting the word up the chain to those who can do something about a problem is an individual responsibility. It's something you can and should do.

Because everyone at the bar knows the air conditioning in your aircraft is worthless or you really need a better map case or the radar altimeter should have an aural tone, don't assume that the right people also know about the problem. It does no good complaining to your buddies at the bar about bad procedures, aircraft inadequacies, or a poorly written Dash One: they can't do anything about it. You are assuming that the people who can do something about the problem know about the problem, which is many times not the case. Oh, maybe they've heard about it through the grapevine, but let's be realistic: to get anything done you need cold hard facts and, above all, documentation.

What can you do to improve systems, designs, procedures, and any other inadequacies? Don't just complain — act! Document the problem, throw in your recommendation if you have one, and pass the information along. Take your pick of the many channels available: Deficiency Reports, Hazard Reports, Hazardous Air Traffic Reports, Suggestions, High Accident Potential Reports, Forms 847, or just a plain letter.

You say you put one in two years ago and nothing ever came of it? Maybe the funding wasn't available then, but maybe it is now. Maybe yours was the only complaint received in two years; what happened to all those fellows at the bar who agreed with you? The point is to follow up and keep the pressure on. It's your choice — live with a problem or do something about it.

Low Level Hazards

By Major Gary Porter
HQ TAC/SEF

It's an old, old story and no secret to anyone that low level flying can be hazardous to your health. What with birds, trees, hills, towers, even grain elevators to be avoided, the exhilaration of going low and fast is neutralized by the cold-blooded potential that you might be killed.

A pilot and his tandem-teammate recently had this potential brought home — for them at least. While zipping along through the hills on a VR route they heard and felt an explosion and noticed, to their chagrin, that the forward portion of their wing fuel tank was missing. After recovering safely, it became apparent that their tank had struck a suspended cable and the exploding tank had damaged the left wing tip, leading edge flap, and fuselage. One can only speculate what the results would have been had they been flying 5 feet lower. Anyway, sure enough, the next day a call came in from the local electric company asking for help in stringing their two ½ inch static lines back up — with a request to please not do that again.

The static lines were 397 feet AGL, according to the power company, so this wasn't a case of "dusting off the plantation." The VR route was certified for 100 feet AGL and although the crew was certified to that altitude, they were only trying to fly a "comfortable" altitude. They had studied the route beforehand and were aware of the numerous powerline crossings depicted on the map. A clear cut case of see and avoid, right? Yes — but . . .

We need some special rules for powerlines which cross a low level route. You can determine the height of towers along the route, as well as the elevation of ridgelines you'll cross. But is that powerline you see 40 feet or 400 feet high? Or higher? No way to know till you fly it. So, I guess the bottom line is: pay close attention to powerlines, those depicted and those that may not be. Why not start a file in the squadron of special hazards or route notes on your most popular (or maybe least popular) routes. In the meantime, we'll be working on a way of making the powerline notations on maps and the notes in FLIP more specific about height.

We'll all meet our Divine Appointment someday, some earlier than others. I'd just as soon not preempt mine with a cable through the windshield. Heads up, check "12", and good flying.

Aircrew of Distinction

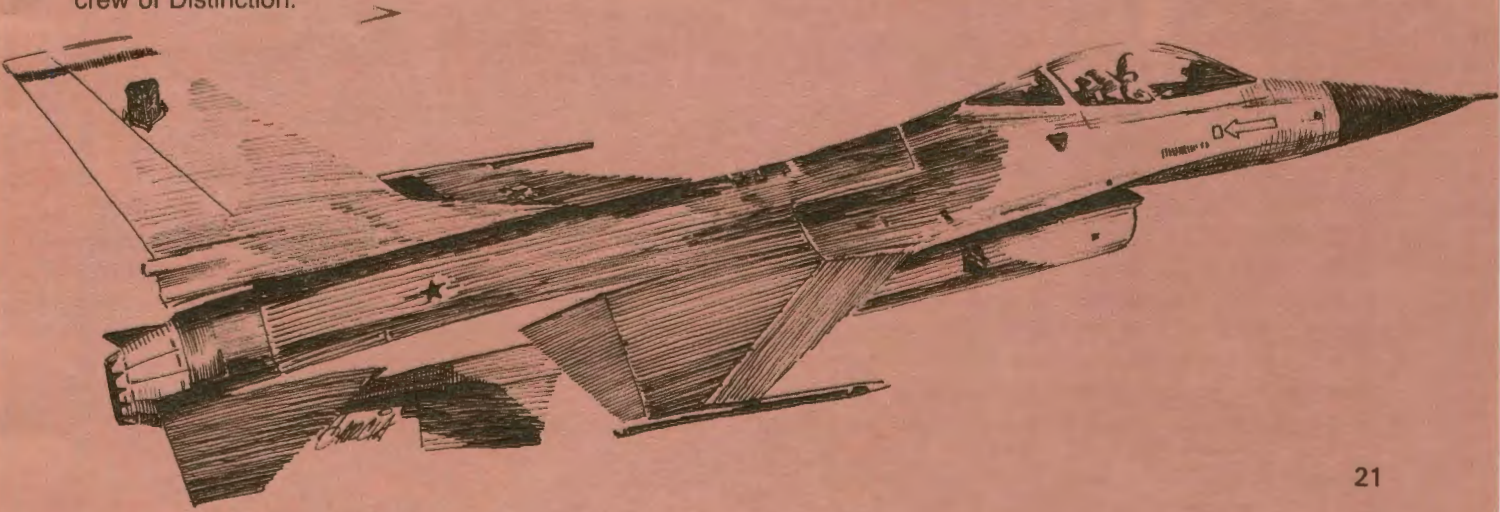
4 TFS
Hill AFB, Utah

On 3 December 1980, Captain Gary L. Kopren was leading a flight of two F-16s on a night air refueling and surface attack mission. In straight and level flight after refueling, he was enroute to the gunnery range in instrument weather conditions with his wingman tucked in close when he first noticed an increased pitch control sensitivity combined with a warning light for dual flight control failure. He notified his wingman of the problem. An instant afterwards, Captain Kopren's aircraft pitched up, rolled, and entered an inverted rotation.

Hanging against the canopy, inverted and out of control in the weather at night, he analyzed his situation and concluded that he had enough altitude to attempt recovery. He checked the throttle response to ensure proper engine operation and then began flight control inputs which righted the aircraft. He again checked altitude and elected to pursue the recovery. Captain Kopren applied forward stick which broke the rotation and lowered the nose, giving him flying airspeed. He broke out of the weather into a valley bordered by mountain ranges. Regaining complete control, Captain Kopren returned to Hill Air Force Base, Utah for an uneventful landing.

Captain Kopren showed exceptional presence of mind under dire conditions. His quick call to his wingman avoided a midair collision. He quickly and correctly assessed a most difficult situation and recovered his aircraft from an out of control situation caused by a severe angle-of-attack sensing problem. Captain Kopren's outstanding judgment, exceptional situational awareness, and superior piloting skill readily qualify him as the Tactical Air Command Aircrew of Distinction.

Captain Gary L. Kopren



enforcing the BE-NOEs

Editor's Note: We found the makings of this article in a term paper submitted to us by an anonymous contributor some time ago. His ideas are the basis of this article.

On Monday, a job technique results in a mishap. Tuesday, the commander puts out the word that there will *be no* more of those techniques. Another be-no is added to the growing list of be-noes, and the grumbles are heard. Was the be-no required? Will they abide by the be-no?

From top to bottom, supervisors issue be-noes based on their assessment of risks versus gains for a given act. Writing or announcing a rule, however, doesn't guarantee compliance. Supervisors must do more than just establish the be-noes; they must motivate their subordinates to follow the guidelines.

One way is fear. Take the first poor soul that gets caught disobeying and make such an example of him that everyone else's blood will curdle at the thought. Historically, punishment has been an early choice as a tool for enforcement. Historically, it hasn't worked very well.

That's not to say it won't work at all. There are times when it can be very effective. It can inhibit the committing of a be-no, at least temporarily. If you were going to be drawn and quartered for violating a tech order, you'd stop and think before you did it. But after a while, the threat isn't enough, and somebody does violate the tech order. Why? To prove to himself or his peers that he has both skill and guts.

What has happened is that his perceived need for esteem has become more important than his need for safety. Hierarchy-of-needs theories, such as Maslow's, indicate that once the basic needs are essentially satisfied the higher needs predominate. Theories aside, experience shows that people will knowingly risk their lives for more abstract causes. When the causes are idealistic, we cheer them on; when they are self-centered, we think they are crazy. We call one a hero, the other a daredevil; but the daredevil is probably trying to prove to himself that he's a hero. There are no "rebels without a cause," but there are plenty of rebels with ego as their only cause.

Punishment alone can create rebellion instead of compliance. The supervisor needs to provide a means of satisfying that ego need for esteem in his subordinates in a way that will serve the mission. Reward his ego for complying with the be-noes. Victor H. Vroom has said that motivational impact on an employee is based on two factors: the value of the outcome to him, and his confidence that his behavior will achieve that outcome. Esteem is of high value to him. His question is whether compliance with the be-noes will gain it for him.

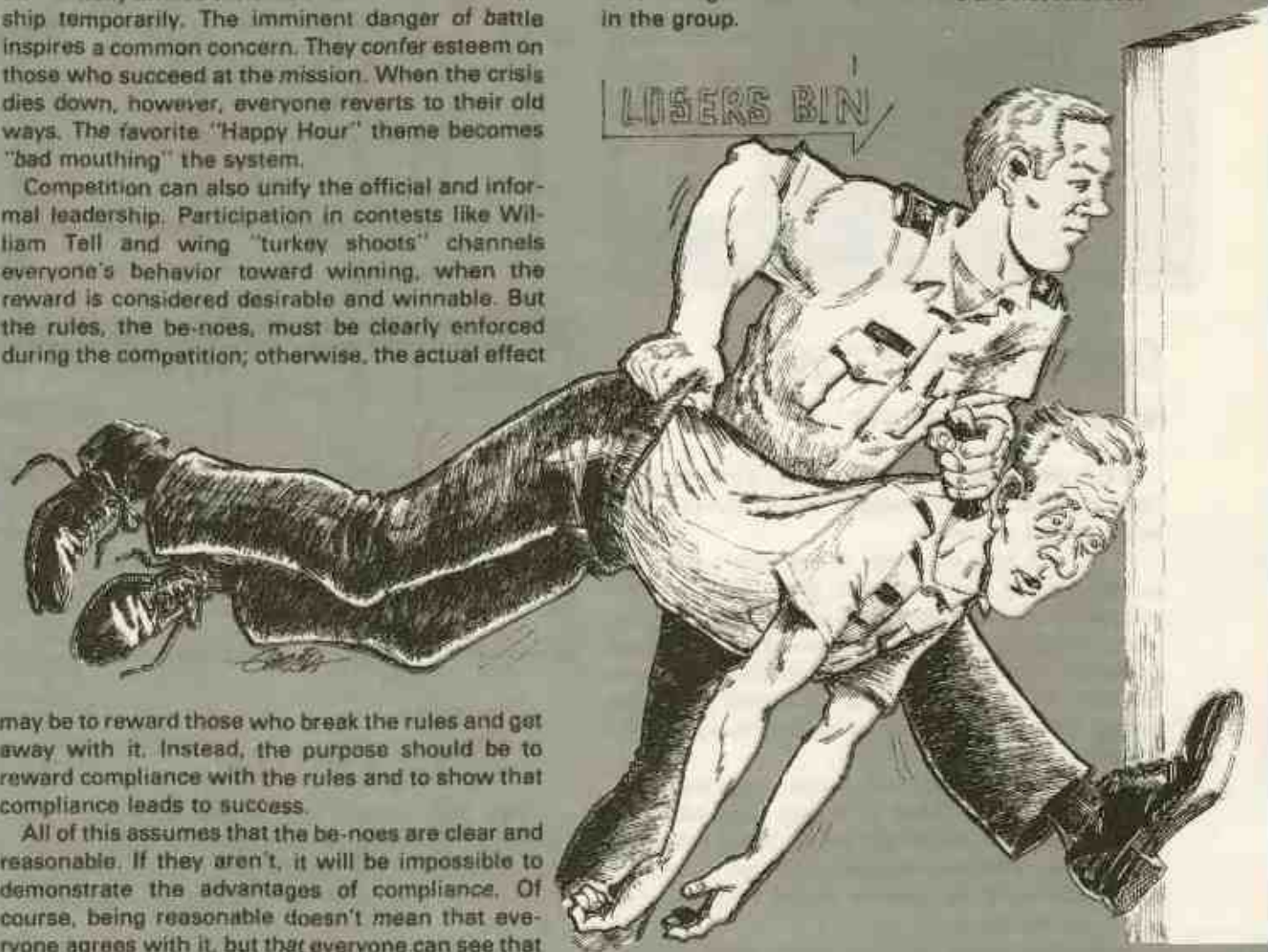
If the appointed supervisor *is* unable to inspire respect in his subordinates, he will be equally unable to fill their need for esteem; and he will be unofficially replaced or circumvented by the workers. It might be the group at the bar encouraging the misdirected individual, but someone is going to fill the vacuum. That informal group often develops its own goals which are in conflict with the organization's. They may subtlely reward breaking the rules, getting away with a be-no.

The official supervisors must find ways to influence the informal leadership to aim for the goals of the organization, to be heroes not daredevils. A crisis normally unifies the official and informal leadership temporarily. The imminent danger of battle inspires a common concern. They confer esteem on those who succeed at the mission. When the crisis dies down, however, everyone reverts to their old ways. The favorite "Happy Hour" theme becomes "bad mouthing" the system.

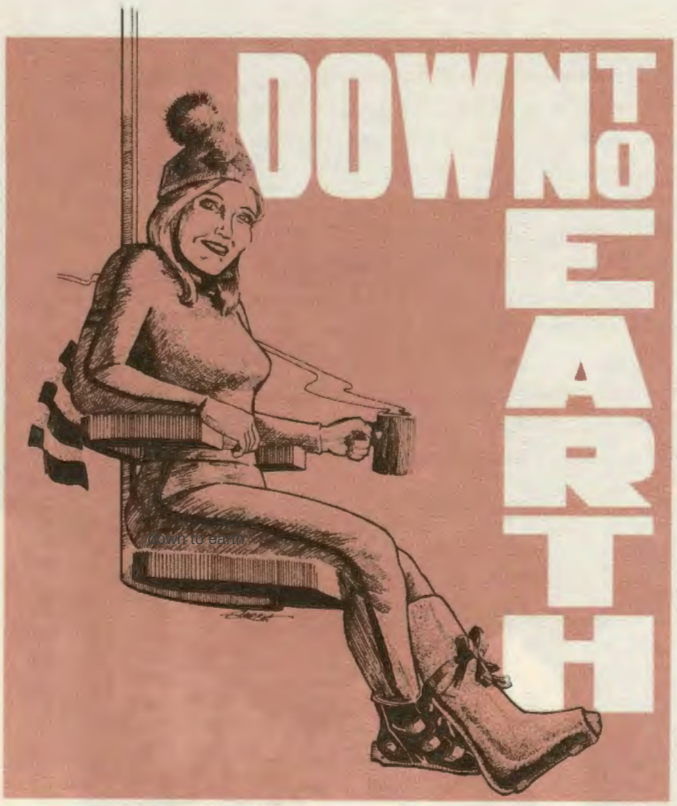
Competition can also unify the official and informal leadership. Participation in contests like William Tell and wing "turkey shoots" channels everyone's behavior toward winning, when the reward is considered desirable and winnable. But the rules, the be-noes, must be clearly enforced during the competition; otherwise, the actual effect may be to reward those who break the rules and get away with it. Instead, the purpose should be to reward compliance with the rules and to show that compliance leads to success.

All of this assumes that the be-noes are clear and reasonable. If they aren't, it will be impossible to demonstrate the advantages of compliance. Of course, being reasonable doesn't *mean* that everyone agrees with it, but that everyone can see that it was based on *logic* not emotions. In some cases, the be-*noes* have grown uncontrollably without a good pruning; they overlap and often contradict each other. Some are obsolete. Some are so obscure that they are unknown, except for that inspector or evaluator who specializes in trapping the unaware. Rules like these are unenforceable in the long run because they lack credibility. According to Vroom, the worker has to believe that his behavior can achieve the desired outcome; if the rules seem impossible, he'll quit trying. Then the informal group will set up their own goals and rules to achieve them. Rebellion will be the channel to gain esteem.

If the be-noes are clear and reasonable, the informal leadership can align their goals with the organization's to achieve their desired reward. Then, instead of making martyrs of violators, supervisors can *rely* on the informal group to ostracize those who disregard the be-noes. Losers are not tolerated in the group.



The end result is a unit that enforces discipline from top to bottom. A unit that gains esteem for the people in it by doing the mission safely and recognizing them for it. In such a unit there will *be no* daredevils, only heroes.



Smoke or Heat?

Safety Directorate, HQ ATC

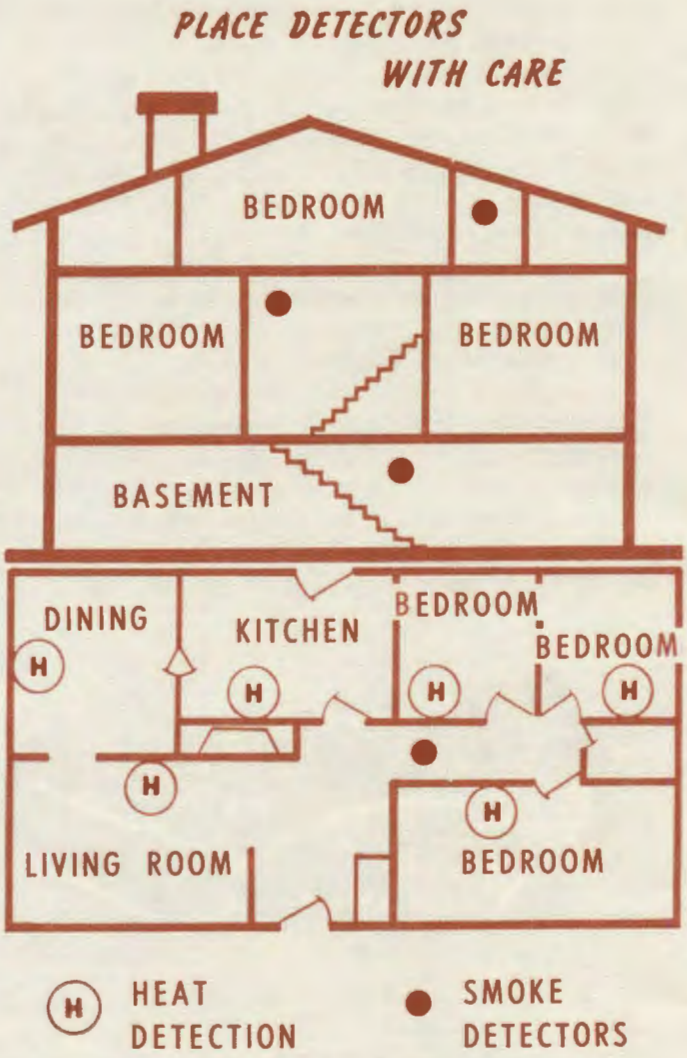
How many detectors you need and where to place them depend in large measure on the type of house or apartment you live in.

If you live in a one-story house with a common corridor joining your bedrooms, one smoke detector mounted on the corridor ceiling or wall near the living area — not the bedrooms — should offer the best protection. If mounted on the wall, the detector should be 15 to 30 centimeters (6 to 12 inches) below the ceiling. This is because smoke tends to flow along the ceiling.

If you live in a multi-level house where there are sleeping areas on more than one floor, separate smoke detectors should be placed outside each of these areas. If the bedrooms are clustered around the top of the stairs, the detector should be installed at the top of the stairs.

In any style house, it is important to locate the detector between the bedrooms and other living areas so it can intercept smoke before it reaches the bedroom area. The detector should be close enough to the bedrooms so that an alarm can be heard in the bedrooms, even with the doors closed.

The National Fire Protection Association recommends that if the living unit has a basement, a smoke detector should be placed along the basement stairway. A U.S. study showed that 11 percent of home fires started in basements.



(Top) This cutaway view of a two-story house and basement illustrates proper location of smoke detectors when there are bedrooms on several levels. A detector on the basement stairway also is recommended.

(Bottom) This floor plan of a six-room, single level house illustrates the difference in protection offered by heat and smoke detectors. A heat detector would be needed in each room for proper protection. One smoke detector can provide the same protection.

OUR LOSSES: JANUARY - DECEMBER 1980

OFF DUTY MISHAPS

AUTOMOBILES

MOTORCYCLES

BICYCLES

JOGGING

DROWNINGS

MOUNTAIN CLIMBING/ HIKING

PRIVATE AIRCRAFT

FIREARMS

ON DUTY MISHAPS

WELDING

FORKLIFT

SWEEPER

WIND/ FLYING OBJECTS

Down to Earth

Your Drinking Friends

By Sgt E. Russell Anderson
TAC/PAI

Frank and Sara sat in a booth in The Corner Cafe. They often met there after work to relax, talk over the events of the day and read the news. Sara ordered tea with cream; Frank, a glass of beer.

They divided the afternoon paper. As Frank skimmed the sports section, Sara was struck by a story on page three.

"Listen to this, Frank. Here's a story about a guy who drank himself to death."

"Happens all the time, these days," Frank said, not looking up from the page. "He was depressed and all alone, right?"

"Wrong. It says here he was putting on a show for his friends. He chugged a quart of whiskey and was half-way through another when they took it away from him. His roommate put him to bed and he never woke up."

Frank stopped reading and seemed to stare at nothing in particular across the room. He knew how a shot of straight whiskey burns going down. 'But two quarts?' he thought.

"He probably burned to death from the inside out," Frank said.

"He died from an overdose," Sara asserted.

Just then the waitress placed their drinks in front of the pair. Frank looked into his glass, glanced up at Sara then pushed the glass aside. Sara stirred the cream in her tea. "What a stupid way to die," she said.

"Look at it this way," Frank offered. "At least he wasn't driving on the highway. No one else was hurt."

"What do you mean no one else was hurt? What about his family or maybe his girlfriend?"

"Maybe that's why he did it," Frank quipped. From the look on Sara's face, he wished he hadn't spoken.

"I'm serious. Don't you think it hurts them that he's dead? Don't you imagine his drinking buddies will think about this for a while? I hope they do. After all, they're partly responsible."

"What do you mean they're responsible?" Frank asked.

"Look, anyone who'd try to down two quarts of whiskey obviously doesn't know what he's doing. Someone else has to do their thinking for them."

"Yea," Frank said, "but suppose the person gets embarrassed, or even angry at the intrusion. I wouldn't want to lose a friend just because he drinks too much."

"That's bunk," Sara said. "If you don't stop friends who are drunk from driving and they kill themselves or someone else, or if they drink themselves stiff like this guy, they're no less dead. But if you cut them off, or take their keys, at least they'll be alive tomorrow. Believe me, if I thought you had had too much to drink, I'd stop you from driving."

"What's this got to do with me?" Frank asked.

"Well, if you die your worries are over, but mine would just begin. And I'd rather you be mad at me for a little while than gone forever." This brought a smile from both of them.

"Okay, you've made your point," Frank said. "You need to be a responsible friend as well as a responsible drinker, right?"

"Very good, Frank."

"Do me a favor, Sara. Keep an eye on me, will you? I can't always stop myself when I'm having a good time."

"You can count on it."

The Basics of MOA's

By Maj Harold W. Hosack
12AF Airspace Management

If a look at a standard low altitude wall planning chart gives you the idea that military operations areas (MOA's) are here to stay, you're right.

They're all over the map, all shapes and sizes. There are high ones and low ones, big ones and little ones. You can hardly fly today and not run into one of them. MOA's are such an important part of airspace and of air operations we tend to think that all users understand MOA's and their associated rules. Some recent conversations with aircrews show that there is still some confusion and misunderstanding. Let's review a few basics about MOA's.

A MOA is charted airspace outside positive control areas that is designed to contain certain military operations that are incompatible with general use of the National Airspace System. MOA's are designed to separate these military activities from IFR traffic and to identify to VFR traffic where these activities are conducted. A MOA is established and charted through procedures that allow anyone concerned with the airspace to make their views known prior to charting. When all considerations are weighed and the airspace is approved and charted as a MOA, the military users must then use the airspace in conformance with the established rules. A key point to remember is that permission to operate in a MOA is not of itself an authorization to violate any Federal Aviation Regulation (FAR).

People in aviation tend to divide everything in terms of IFR vs VFR. Unfortunately MOA's don't clearly belong to either world, though most of us associate them with IFR. A MOA may be used totally VFR when it is necessary for mission accomplishment and procedures are established for such operation. However, VFR use of a MOA precludes the use of any overlying Air Traffic Control Assigned Airspace (ATCAA). Remember, MOA's do not exist in Positive Control Airspace (PCA) and can only be extended above FL 180 by ATCAA's. Any operation above FL 180 must be IFR and appropriately cleared by the controlling agency. Additionally, if the MOA contains an airway, and acrobatic maneuvers are to be performed on or across the airway, an IFR clearance is required for this operation. This requirement was specified in the FAA exemption that allows military aircraft to perform maneuvers on airways in MOA's. As a final note to the discussion of IFR vs VFR, we must emphasize that Air Force policy still requires all air operations be IFR to the maximum extent possible. Operations within MOA's are no exception.

the basics of MOA's

A military pilot that desires to operate in a MOA on an IFR flight plan requires a clearance, as with any other IFR operation. The clearance limit specified is generally the boundaries of the MOA. This clearance is no different than any other clearance limit, so that departing the boundaries of a MOA without further clearance is a violation of FAR, Part 91.75, Compliance with ATC Clearance and Instructions. It's for that reason that a pilot may be cited if he spills out of, or leaves the MOA without clearance, while on an IFR flight plan. If the pilot is below PCA and elects to cancel his IFR flight plan, he may do so and then proceed VFR. Otherwise he must have further clearance.

Aircraft operating on a clearance in a MOA are separated from nonparticipating aircraft, but as with other IFR clearances, that separation is only from other IFR aircraft. No separation is assured from VFR aircraft. It seems that this doesn't bother some military pilots because they believe VFR aircraft have to stay out of MOA's. They are dangerously misinformed. A MOA is not synonymous with a restricted area. While MOA's are clearly outlined on sectional charts, and non-participating VFR pilots are discouraged from operating through active MOA's, they may and often do. Thus the need for vigilance under the see and avoid concept remains important. Don't be lulled into a false sense of security simply because you are in a MOA.

For every MOA, there is a specific letter of agreement between the controlling agency and the scheduling agency. The agreement specifies scheduling and flight plan filing procedures as well as special routing and air traffic control procedures that are to be used in conjunction with the MOA. The letter may even prohibit VFR operations in the MOA. Some require IFR operation in VMC. All users of a MOA must be aware of the provisions of the agreement and comply with all special procedures. This information should be provided to the user by the scheduling agency at the time the airspace is scheduled. However, if a unit is a frequent user of a particular MOA, ask the scheduling agency for a courtesy copy of the letter of agreement. Having the information on hand will be helpful when planning and coordinating for use of the airspace.

MOA's are an integral and important part of military air operations in today's airspace environment. All MOA users must understand and follow carefully the rules that apply. Airspace today is at a premium, and the military cannot afford to jeopardize the MOA program by failing to use allotted airspace properly. →

LETTERS

© Stan Hardison, 1977

Hi Fellers,

Thought I'd send you some filler for Chock Talk or anywhere you desire and, as you've noticed, I'm Anymouse's cousin. I felt I must pass this on to my birds of a feather:

I was Number 2 in an A-10 2-ship slated for LATN and high-threat ingress to a tactical gunnery range and subsequent jog over to a controlled range for strafe. The mission progressed as briefed after a false start out of the chocks because NONE of my radios would work. After the dew or whatever burned off the radios, we taxied 10 minutes late. I do not recall "seeing" as I looked at the fuel gages. But they must have been normal, 'cause here I am on the way home at 100′ AGL and thinking about . . . well, stuff you think about at 100′ AGL. Then the master caution illuminated and the annunciator panel says FUEL IMBALANCE and the Left Main Fuel gage says 300#, no 200#, hmmm, 100#. Start climb, crossfeed ON, "I have the lead on the left with fuel problem." My wingman looks me over for an unlikely 30mm hole or leaks from anywhere and the fuel gage is now pegged at "0". Aha! A bad fuel gage again (my fourth in 2 months). I remained in crossfeed, however, and landed from a straight-in. Something kept nagging at me, though. On all the other "bad" gages, I got no warning lights of any kind. I gave the guys in the gage shop a week to have a good sounding answer, and this morning they told me that, yes, the gage may

have been showing "normal" indications but that the gage should have shown that my left main tank was virtually bone dry because of two circuit-breakers in the open position that did not allow the left main tank to receive any fuel during the ground refueling prior to my flight. My left wing tank supplied fuel for nearly the entire flight for the left engine. The gage was questionable, but some of our new guys on the flightline forgot about those two very important CBs, and this unidentified yet identified party may have let other priorities get in the way of cockpit checks such as: How much gas do I have?, or maybe . . . Suppose it ain't just the gage? I honestly don't remember checking the gage and LOOKING during that check at start. But if I had been in a left hard turn at a hundred feet, not seen the Master Caution, and the left one flamed out . . . well, now I'm speculating, but it was a Murphy-ism that I wanted to share.

Anonymous

P.S. Our unit is undergoing conversion and we (maintenance and ops) are all low experience.

Dear Anonymous,

Thank you for getting the word out to your fellow hog herders.

Ed

Dear Editor,

Congratulations on starting your third decade with probably the best single issue of TAC ATTACK I have read — and that's almost all of them. Except when the wheels and mach are up, your magazine, like Friday afternoon beer call, is among the most enjoyable aspects of the business.

When the article "Sink Hole" was written, I was completing a "career" as an ATC puke (I think FAIP is the current vernacular) and eager to — at last — become a fighter pilot. I remember reading this article while going thru RTU in the Thud at McConnell; in fact, I am still "learning to fly" the Thud here in Fort Worth and I agree with you that it is an "excellent article" and that "not much has changed in our business." Certainly the fundamentals of aerodynamics used as a basis of the article remain unchanged. But, I reckon maybe I've changed in the 14 years between readings because I've seen too many pilots get into trouble by forgetting the basics. Although I like the tone and writing style used by the author(s), I cannot agree with a flying technique which either stems from or (worse yet) could cause a misunderstanding of one of the most basic aerodynamic principles a pilot must know. Namely — what you got in your right hand controls airspeed and what you got in your left hand controls altitude. If it doesn't — you're sitting in the bird backwards! This is true for J3 cubs, helicopters, and Thuds. An understanding of this relationship is critical for the phase of flight addressed in the article; i.e., final approach to touchdown.

The following quotes from the article bother me:

"Most of us dive below the 2½ degree glide path at some point inside the mile-to-touchdown point . . ." (pg. 11)

". . . (Three-quarter mile final) sees us easing the nose down and increasing our rate of descent momentarily. Then we raise the nose to resume a normal descent rate. We don't lose or gain any airspeed because the energy gained in losing altitude is just equal to what we consume when we rotate the nose down and then up again." (pg. 12)

"We started the flare after diving down . . ." (pg. 12)

"If he starts to flare at his normal three-quarters of a mile (4,560 ft.) from the runway, . . ." (pg. 14)

"If you're shooting for the first 1,000 or 1,500 feet (touchdown) from an ILS, GCA or VASI approach, you'll have to 'Duck Down.' You can get down to the spot you want without touching the throttle . . ." (pg. 14)

When I dive the Thud, I intend to drop a bomb or shoot the gun. My 2,000 Thud landings did not include dives, dive recoveries, or starting the flare at the three-quarter mile point. I don't mean to nit-pick his choice of words (i.e., "dive"), but the impression he gives could get someone in trouble. I agree that a shallower glide path is easier to handle than a steep one and that the glide path for a visual approach should be below that of a GCA, ILS or VASI approach (e.g., the F-105 dash one says 300 feet AGL at 1 mile). But that glide path should be a straight line (final approach airspeed remains constant) to flare point (normally over the overrun — not ¾ mile out) and that angle (as is the touchdown point) is controlled by the throttle.

Therefore, I see only one curve involved — not two. And that curve is during the flare to touchdown and it better be over some concrete. I submit that if you start the flare (decrease below final approach speed/increase angle of attack above recommended) very much at the ¾ mile final point you'll soon find that sink hole. Nobody is perfect — there will be a need for adjustments on final approach. But my point is to make the adjustments to the glide path with the throttle and maintain the proper airspeed/angle of attack with the stick. There is, of course, a built-in adjustment required when transitioning from a precision instrument approach to a visual approach — especially in the F-105. When this adjustment can be made will be determined by weather conditions and aerodynamic characteristics of each particular aircraft. But simple math tells me that at 1 NM on final I will be 20% higher on a 3°Gs ILS than on a visual approach in the Thud. More importantly, the TCH for most precision

Letters

approaches (with a 1000' GPI) is five times higher than a visual approach when crossing the first brick. So it is obvious that an adjustment must be made — that is what flying is all about.

My concern is how we go about making these adjustments. They must be made based on an adequate understanding of the aerodynamics involved. I am not suggesting that we need to dust off our slide rules and start plugging numbers into Bernoulli's equation. But I am suggesting that the longevity of our cockpit actions will be multiplied by paying homage to the basics.

Frank E. Peck, Lt Col , USAFR
Director of Operations
HQ 301 TFW (AFRES)

Dear Colonel Peck,

We agree with your analysis of the aerodynamics involved, assuming you maintain a constant AOA with the stick. However, your straight line glide path from 1 NM on ILS final to the overrun gives you a steeper glide path approaching the flare, while both you and the author agree that a shallower glide path is desirable. Your desired glide path is below and parallel to your ILS glide path; so why not fly two curves, one to intercept that lower parallel course, and another to flare, with a straight path connecting the two?

As to that flare, we agree that increasing AOA without increasing thrust can put you in a sink hole in a hurry, and three-quarters of a mile on final is probably not the place to do that. But, to be fair to the author, he's talking about a circular arc with high thrust rather than a true flare; how much thrust he carries will determine how successful his approach will be. All of us agree that the sink hole is caused by a deficiency in thrust relative to drag. Adding thrust will counter it, but the engine needs time to accelerate. That is why the author recommends not chopping the throttle. However, his technique of easing the nose down will not work in the region of reversed command. What will work is your technique of making adjustments to the glide path with throttle, as long as the adjustments don't require excessive power changes. Once the adjustments become excessive, you're in the "sink hole." Which leads us to the conclusion that being excessively high on glide path close-in can only be countered by going around.

Ed

Dear Readers,

In addition to Lt Col Peck's criticism of "The Sink Hole," we received other comments on errors in the figures in our reprints of "The Sink Hole" and "The Dynamics of Zoom" (TA, January 80). Since the diagrams were drawn before the era of the pocket calculator, we should have reviewed their math, but we didn't. Our sharp-penciled readers did, however, and this is what they found:

On page 14, the vector arrows for the aircraft on a go-around point in the wrong direction.

On page 30, the loss in vertical component of the ejection vector at 30 degrees bank should be about 15 percent instead of 30 percent.

On page 31, in the diagram of an inverted F-100 in a 30-degree climb, the vertical component of the sea thrust is 4,676 ft./min. down, and the vertical component of the aircraft vector is 6,000 ft./min. up, giving a net vertical component of 1,404 ft./min. up instead of 1,800 ft./min. up.

In each of the above cases, the concept was valid; even though the diagram was wrong. We apologize for the errors. But now that we've reviewed both articles, we're puzzled: Can you zoom an airplane at airspeeds in the region of reversed command? Write us your answer at HQ TAC/SEPP, Langley AFB, VA 23665. The best answer wins the Eleagle Fanny Feather of Fame Award.

Ed

TAC TALLY

tac tally

	TAC			ANG			AFR		
	JAN	THRU JAN 1981	JAN 1980	JAN	THRU JAN 1981	JAN 1980	JAN	THRU JAN 1981	JAN 1980
CLASS A MISHAPS	2	2	1	2	2	1	0	0	0
AIRCREW FATALITIES	2	2	0	1	1	2	0	0	0
TOTAL EJECTIONS	2	2	1	0	0	0	0	0	0
SUCCESSFUL EJECTIONS	2	2	1	0	0	0	0	0	0

TAC'S TOP 5 thru JANUARY '81

TAC FTR/RECCE	
class A mishap free months	
35	33 TFW
28	1 TFW
27	31 TFW
20	67 TRW
18	58 TTW

TAC AIR DEFENSE	
class A mishap free months	
110	84 FIS
96	57 FIS
49	5 FIS
46	48 FIS
27	49 FIS

TAC GAINED FTR/RECCE		
class A mishap free months		
105	188 TFG	(ANG)
97	138 TFG	(ANG)
96	917 TFG	(AFR)
93	116 TFW (128 TFS)	(ANG)
83	434 TFW	(AFR)

TAC GAINED AIR DEFENSE		
class A mishap free months		
102	191 FIG	(ANG)
83	102 FIW	(ANG)
79	177 FIG	(ANG)
45	125 FIG	(ANG)
28	119 FIG	(ANG)

TAC/GAINED Other Units		
class A mishap free months		
138	182 TASG	(ANG)
131	193 TEWG	(ANG)
122	110 TASG	(ANG)
118	USAFTAWC	(TAC)
114	919 SOG	(AFR)

CLASS A MISHAP COMPARISON RATE 80/81

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

TAC	1980	2.0
	1981	3.9
ANG	1980	5.0
	1981	9.6
AFR	1980	0.0
	1981	0.0

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

☆ US GOVERNMENT PRINTING OFFICE: 1980—635—083/10


FLEAGLE
WET PAINT
EVERYWHERE YA'GO THESE DAYS THERE'S A DERN SIGN TELLIN' YA'WHAT T'DO !
PLEASE DON'T LITTER
YA'DON'T GET CREDIT FER HAVIN' A LICK OF COMMON SENSE.
KEEP OF TH'GRASS
I'M SICK OF IT.
HARDIGON
HARD HAT AREA
THUNK!
THAT'S SURE A PAINFUL WAY T'FIND OUT THAT YA'GOT A SOFT SPOT IN YA'HARD HEAD.
© RICHMOND SYNDICATE 1981