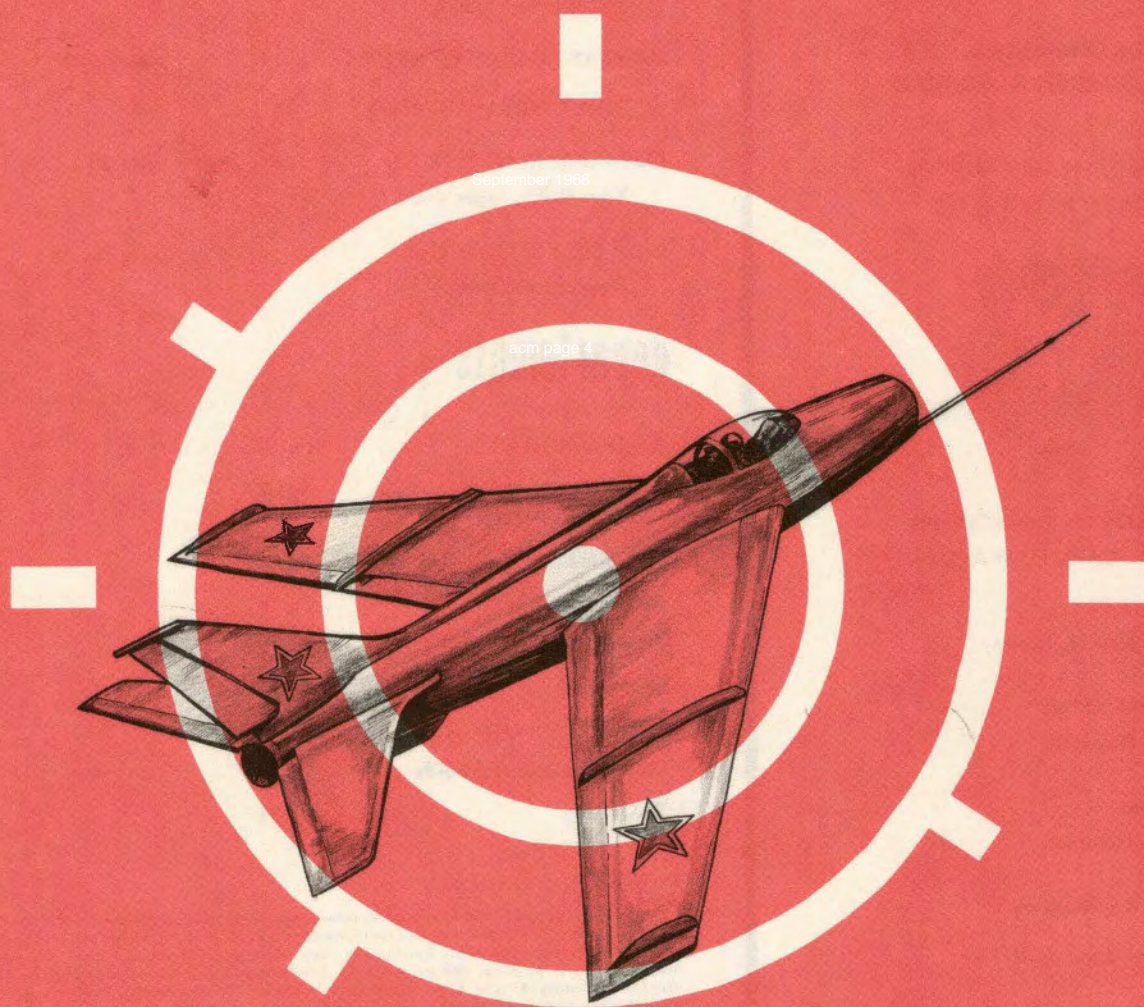


# TAC ATTACK

SEPTEMBER 1968



ACM...page 4



for efficient tactical air power

# TAC ATTACK

SEPTEMBER 1968

Vol. 8 No. 9

TACTICAL AIR COMMAND

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Published by the Chief of Safety

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

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Distribution F, Controlled by OSEPA - TAC Publications Bulletin No. 22, dated 3 June 1966





## back to fundamentals !

About thirty minutes after assuming my new job, my Flight Safety Division Chief delivered some sobering statistics: TAC's aircraft accident rate increased sharply in June and July. What had been a favorable long-run decline suddenly reversed itself.

In response to my, "Why?" he advised, "Operator errors, mostly pilots involved, but maintenance types and supervisors are contributing their share." A conservative evaluation of preliminary data pinpointed ten out of 19 accidents in June and July as "people problems." No doubt several others will fall into the same category when investigations are completed.

Surprisingly, the pilots involved in these serious judgment errors, or directive violations, aren't newcomers to either TAC or flying... some are IPs. They represent TAC's diversified operations, fighter, recce, special operations, and airlift. For example: an experienced fighter pilot takes off knowing both generators are out and ejects after double-engine flameout; a high-time recce pilot launches with one generator inop, known electrical system problems, one afterburner lit, and crashed shortly after takeoff; an instructor pilot repeats a buzz-job, destroying his aircraft and critically injuring his student in the process; an old-head twin-engine recip type charges off with an engine that backfires below 1100 rpm power settings, loses it on takeoff, his other engine won't hold max power without backfiring during his 200 foot pattern, his gear lowers and locks just prior to landing 30 degrees off runway heading, he rolls across a six-foot ditch, and somehow doesn't end up in a flaming ball.

Maintenance errors include an apparently unsafetied stabilator linkage bolt letting go at liftoff, resulting in a pitch-up and fatal crash. In another type of human error, a supervisor over-scheduled a known weak student for formation-in-trail; he lost control and collided with the ground before recovering.

With football getting under way perhaps we can borrow an approach from it: "When you're losing, it's time to re-emphasize fundamentals." With over 50 percent of TAC's "losing" accident upsurge caused by people problems, let's re-emphasize flying and maintenance fundamentals, retrain those who require it, tighten supervision, and discipline the game's rulebreakers.

*R. L. Liles*

R. L. LILES, Colonel, USAF  
Chief of Safety





# Some Safety Aspects of **ACM Training**

by Major Albert L. Logan

4538 FWS, Nellis AFB, Nev.

begins to fly the aircraft rather than just ride in it. He also learns to employ smooth control techniques as opposed to a "ham-fisted" approach.

Of course, these benefits do not accrue merely by having an ACM program. It must be a well-planned program that allows graduated progression at a rate commensurate with the individual's ability. The flying portion must be preceded by thorough academic instruction, in addition, the academic and flying instructors must be selected on the basis of demonstrated competence.

Certain basic aircraft handling characteristics, such as adverse yaw and dihedral effect, must receive special emphasis. A good understanding of these characteristics will enable pilots to perform more effectively and, at the same time, should enable them to avoid an unplanned maneuver such as a post-stall gyration or spin. Numerous publications, including AFM 3-1 and Fighter Weapons School text books, provide a thorough discussion and background material for these very important subjects.

## SPECIAL CONSIDERATIONS

Prior to engaging in any maneuvering flights, the pilot must be thoroughly familiar with the acceleration or G limits for the aircraft. This is particularly true of ACM because the potential for over-G is prevalent in several areas... in a split-S or slice turn, at high KCAS, and in low altitude maneuvering. In the transonic region, the aircraft "tuck" may also over-G the aircraft. In any program in which the aircraft is flown to maximum performance, the possibility of overstress exists. This involves all types of gunnery... and even landings. You should, of course, make every effort to avoid overstressing the bird. But, if you do exceed the limits, admit it and let maintenance check the aircraft prior to another flight. Don't risk your life or that of your fellow pilots by failing to "write-up" any over-G occurrence.

Any time the aircraft is flown at or near maxi-

**P**ilots flying today's high performance fighters and recce birds will face many situations that require maximum performance from themselves and their machines. Although not as exacting as Air Combat Maneuvering (ACM) training or aerial combat against an aggressive opponent, heavy weight take-offs and landing, pop-up attacks with maximum bomb loads, night attack, and day and night refueling also demand consummate skill in aircraft control.

By far the safest and most effective way to insure that the pilot will perform effectively in these situations is to teach him the necessary techniques in a controlled situation under the guidance of a qualified IP. In teaching the techniques required to perform these exacting tasks, ACM is perhaps the best possible vehicle because it teaches the pilot his capabilities and limitations as well as those of his aircraft. In addition, he develops a "feel" for his aircraft that is invaluable throughout his entire flying career.

This training is essential even if the tactical mission never requires him to engage and destroy hostile aircraft in aerial engagements. As the pilot progresses normally in the ACM program, the ability to control the bird and make it do his bidding will greatly improve flying skill and combat potential. He



mum performance, both the aircraft and the pilot are subjected to unusual stresses; therefore, equipment must be in top-notch condition. This includes a well-fitted G-suit in good condition, an operational Anti-G System, and a clean aircraft canopy that is free of scratches. A thorough preflight and control (rig) check must also be accomplished. This is even more important when an aircraft has undergone extensive maintenance or has not been used in ACM for quite some time.

The pilot's physical condition is another important consideration. Any debility is immediately discernible because of lack of G tolerance. Vision is seriously affected and other senses are impaired. When scheduled for an ACM flight the next day, a pilot should get plenty of rest and if not in good physical condition, should have his name removed from the schedule.

### FLIGHT BRIEFING "MUSTS"

The flight briefing must include reference to any unusual items that may be pertinent, for example, high terrain in the ACM area, a condition which drastically limits effective altitudes for ACM. If the day is particularly hazy or if the horizon is difficult to see, as in flying over water, the minimum altitudes should be increased. Also, pilots should be reminded that the attitude indicator and altimeter must be included in their cross-check.

In two-seated aircraft, the rear-seat pilot should inform the pilot when low altitude is reached or when an unsafe airspeed or angle of attack is approached. All pilots must be aware of the insidious nature of vertigo and must know how to recover from unusual attitudes. It is also important to stress the need for constant vigilance in looking for other aircraft because of restricted operating areas.

Another item of concern is fuel consumption rate and reserves. Since fuel is consumed at a tremendous rate in any good engagement, each pilot must make fuel management a matter of primary concern. Throttle usage and techniques should be discussed in academics and reemphasized during the flight briefing. Also remind all flight members that they must guard against becoming so engrossed in maneuvering that they forget to check fuel. Each participant should be required to call "Bingo" and the flight leader or IP should always acknowledge the call. Each flight member must be alert and start home in time to preclude a "minimum fuel" condition. Remember, an accident of this nature cannot be explained as anything other than negligence.

## MISSION CONTROL - THE KEY TO SAFETY

In an ACM flight where pilots will be maneuvering against each other, the flight leader or IP assumes the major responsibility for a safe and productive flight. While the major portion of this responsibility rests on his shoulders, all members of the flight must be knowledgeable and watchful for hazardous or potentially unsafe conditions. Each member must understand all aspects of the flight as well as emergency procedures.

The flight leader or IP must insure that each engagement is conducted in a manner to enhance learning. He must maintain strict control, assuring that the engagement does not degenerate into a low-speed, high-G, "head-knocking" contest. In this type maneuvering, the accident potential increases greatly because the engagement usually terminates at low altitude where loss of control could be disastrous. It is imperative that the engagement be discontinued before minimum altitude is reached, not only for safety reasons, but because it is a doubtful learning situation.

Personal pride or foolhardiness can get you into trouble very quickly. The man who says he has never lost an engagement usually has not flown many. Guard against personal prowess contests in which common sense is overruled and an unsafe situation is allowed to develop. The correct time to "break it off" is when the desired learning has been accomplished or the opportunity lost, and, of course, any time a potentially unsafe condition exists.

In a two vs two or four vs four engagement, the attacker must maintain visual contact with both aircraft in an element which he is attacking. When the wingman is lagging, do not press the attack on the leader. To do so will usually put you "belly up" to the wingman, setting the stage for a possible midair. If the wingman cannot stay with his leader, press him. He is probably weak or he would not be out of position.

If at any time during an engagement or formation join-up, you are not sure where the other aircraft are, the engagement or join-up should be discontinued until the relative position of all aircraft can be positively determined.

Establish a rule that the element losing mutual support loses the engagement. When flying as a wingman, be sure to inform your leader should you get out of position or lose sight of him.



## DEBRIEFING - A REAL LEARNING SITUATION

A properly conducted debriefing is an excellent means of promoting learning. Avoid locker-room debriefings . . . there will always be different points of view. The flight leader/IP should conduct the debriefing. He should insure that it is both thorough and constructive and that optimum learning is accomplished on each engagement, with all members having an opportunity to present their views. Each man should be required to jot down pertinent information during the flight to enable him to better reconstruct each air engagement. Whenever possible, gun camera film should also be used. Remember, the entire purpose of a flight is to learn, so don't be ashamed to admit that someone was at your "six-o'clock" . . . just don't make the same mistake again.

## PROGRAM CONTROL - KEY TO PROGRAM SURVIVAL

Proficiency in maximum performance flying is not something that you attain, then retain for all time. It requires constant training both in academics and flying. When you "lay off" for a while, perhaps on leave or TDY, you don't jump back in where you left off. You start with basics again and work back up to the desired level of proficiency.

Only after the pilot has demonstrated his proficiency in Basic Fighter Maneuvers should he progress into the more demanding one vs one, two vs two, or four vs four engagements. In these encounters, maneuvering techniques must be second nature while the pilot looks around, analyzes the situation, and concentrates on the task of putting his aircraft where he wants it. He must guard against the tendency to become preoccupied and to use improper controls. When pilots achieve a high level of proficiency, they will need to guard against overconfidence or complacency.

An excellent method by which to keep a program moving and interesting, both academically and flying, is to conduct ACM training in conjunction with another unit. And, preferably against dissimilar aircraft. This type training is very beneficial and gives a better measure of performance. It calls, however, for the utmost in coordination and effort between the units and flight leaders.

ACM against dissimilar aircraft tends to eliminate the low-speed, high-G contest that sometimes develops during engagement of similar aircraft. It makes the pilots more aware of the need for proper

flight tactics and generates an interest in exploiting their own particular weapons systems capabilities. (For an interesting and informative discussion of dissimilar aircraft engagements, see the article, same subject, in the March 1968 issue of the FIGHTER WEAPONS NEWSLETTER.)

Conduct ACM training only in authorized areas. These areas and their boundaries must be thoroughly identified before each flight, and every flight member is responsible for staying within the allotted airspace. Most authorized ACM areas are small; therefore, flights and times should be coordinated between squadrons through wing scheduling to prevent overcrowding. To preclude inadvertent airspace violations, flight leaders must set up the engagements so that subsequent maneuvers do not cause the flights to go outside the authorized area. Unauthorized ACM, or ACM in unauthorized areas, even by a few individuals presents a serious threat to all ACM training throughout the United States Air Force. This, in turn, will directly affect the training and readiness status of our tactical forces.

Unbriefed and unplanned ACM engagements are prohibited, and those who indulge in such folly are marked as irresponsible amateurs.

In summary, a thorough academic program, combined with a properly supervised aggressive flying program will provide safe and effective ACM training. The supervisor must constantly remind himself that flying training must progress at a slow but steady rate and that an individual should not progress to the next phase until he is fully capable. The overall result of this type program will be a great improvement in pilot performance and a decreased accident potential in all flying operations. A lax or haphazard approach, as in any training program, greatly increases the associated accident potential. The overall benefits make the extra effort well worthwhile.





## MAINTENANCE MAN OF THE MONTH

Staff Sergeant Joseph A. Hoppe of the 33rd Tactical Fighter Wing, Eglin Air Force Base, Florida, has been selected to receive the TAC Maintenance Man Safety Award. Sergeant Hoppe will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



SSgt Hoppe



Sgt Van Sabben

## CREW CHIEF OF THE MONTH

Sergeant Jon T. Van Sabben of the 4511th Organizational Maintenance Squadron, Luke Air Force Base, Arizona, has been selected to receive the TAC Crew Chief Safety Award. Sergeant Van Sabben will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.





# QUICK QUIZ FOR CHIEFS.....and indians

by Major Kleth McDonald 316 TAW (OS)

**S**upervisor, here's a chance to grade yourself as a Chief.

Indians, stay with us. You're a supervisor too... and you'll be Chiefs as soon as you demonstrate that you can "boss" yourself.

All you have to do is check the one right answer to this question. My approach to accident prevention is characterized by the statement:

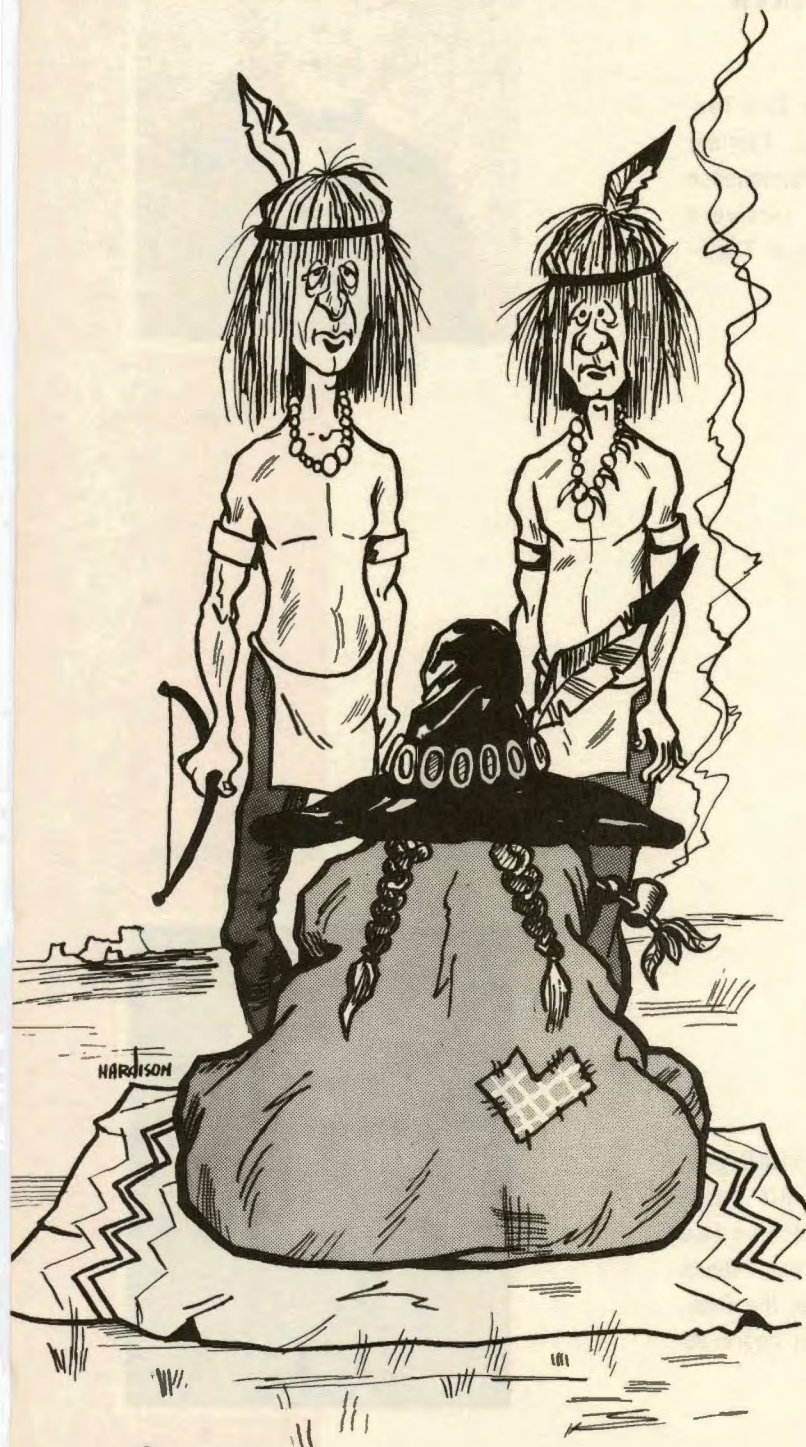
- (a) Get it done the fastest way.
- (b) Get it done the easiest way.
- (c) It's the mission "Uber Alles."
- (d) You have to expect losses.

If you're having trouble finding an answer to circle, you're a winner. Air Force training efforts haven't been a total loss. As you're suspecting, the quiz is rigged. There isn't a right answer listed. We needed your attention and help in sorting out and getting rid of some wrong answers we've been reading. And you know where they're found... in accident reports. We admit it's sneaky, but so is the way wrong ideas creep into our supervisory thinking.

Since our first military aviation accident sixty years ago on 17 September 1908... our first materiel failure bash... we've heard excuses (not reasons!) such as "you've got to expect losses," or, "nobody told me how," or, "I didn't think it mattered how you installed it"... the start of "Murphyism."

Adding to these classical complaints is a "war baby." It popped up in World War II, Korean War, and no doubt World War I birdmen heard it too. There'd be a lot more flying troops still around if we had gotten rid of the rationalization back in World War I.

It's a feeble attempt to justify broken birds and bodies when accidents occur. You've heard it spoken or implied many times. It goes something like this: "If we conformed with all this tech order, checklist,





regulation, and manual "junk" in-SEA we'd never fight the war."

It's a way of saying safety interferes with getting the job done. And it couldn't be farther from the truth. It's the kind of fuzzy logic that would pick answer (a) above, "Get it done the fastest way." Which ends up being the slowest way, repeating the job ... if the bird and crew gets back and you have a second chance.

### MISSION VERSUS SAFETY?

Does safety consideration really deny mission accomplishment? Here's a way to test that idea. Think about Air Force operations world-wide without tech orders, checklists, regulations, and manuals. Add no weather forecasting or minimums, command and control, required inspections, maintenance standards, and standing operating procedures. If you can imagine doing your job in a state of pure anarchy, that's what we'd have. What do you suppose your chances would be for fulfilling your mission more than one time ... if at all. Throwing out all the operational experience and "know-how" of years represented by the so-called "junk" would reduce Air Force equipment to junk, literally, in short order.

### SUPERVISOR, WHERE ARE YOU?

You're in the thick of it. Supervisors are key men in accident prevention. And the word supervisor doesn't apply only to Chiefs with a title stamped on their foreheads. All of us supervise ourselves first ... or should ... and then others if our job calls for it. Wherever we fit in the organization, we all share the commander's responsibility for his mission and have his delegated authority to make it successful. As chiefs or indians we are only extensions of the commander's authority ... and exercising his authority fixes responsibility for mission achievement on each of us. You can't escape it, but you can neglect it.

As a supervisor you share closely the highly-localized problem world in which your people must do their jobs effectively. And effectively is really just a synonym for safety. You know their capabil-

ities, habits, attitudes, and problems ... or should. Your influence and example and if you have to use it, your authority, provide you with control methods and the "key" to accident prevention.

Your experience, qualifications, and superior knowledge of governing manuals, tech data, and directives pertaining to your job make you a highly-qualified safety expert. And if you're not, are you really qualified to be a supervisor?

Stop and think about it. Do you recognize ... and accept ... deviations from correct procedures without taking positive corrective action? It's obvious that your failure to set an example, or acceptance of shortcut practices starts the downward spiral. You've set the standard and tolerated deficiencies spread like a cancer through your operation. If you have to rely on accident investigations or "experts from out of town" ... safety survey teams ... to find your safety problems, you may be the safety problem.

Thinking that safety conflicts with mission is pure misunderstanding of its goal. Safety is not a separate discipline. It interfaces compatibly with every factor of mission. Think of safety as striving for the most effective manner in which to complete assigned tasks with minimum cost in men, materiel, and manhours. Perhaps conservation is a better descriptive term than safety and more easily understood. For there can be no doubt that supervisors are tasked with full responsibility for conserving those scarce factors comprising Air Force's combat capability: people; machines; know-how. Safety then becomes a supervisory tool improving mission achievement through avoidance of preventable loss. It's "investment return" is more than equal to the time spent in safety consideration during planning, directing, controlling, and executing any task.

One of the paradoxes of the safety business is the sharply contrasting attitudes of some supervisors toward mission and safety. They express very positive positions on mission accomplishment and practice a cavalier approach to risk assumption. Emphasis placed solely on job, schedule, or mission overshadows the safety function. Mission achievement speaks louder than the "silent service" called safety. Until disregard of its quiet voice brings tragedy with its accompanying loud reports ... accident reports, that is, speaking of supervisory failure. ➤



# TRAIN for SURVIVAL

BRIG. GEN. WM. SPRUANCE TALKS TO STUDENTS  
AT 9AF SEI SURVIVAL SCHOOL, HOMESTEAD AFB,  
FLORIDA...



Brigadier General William W. Spruance, of the Delaware ANG, is one of the few living experts on crash-survival who can speak with first-hand authority. He was practicing what he preaches in 1961 when his T-33 flamed out on takeoff. Although severely burned in the subsequent crash he recovered, and for the last six years has traveled all over the Air Force, Army, Navy, and Marines giving lectures on personal equipment, crash-survival, and emergency ground escape from various types of aircraft.

**Y**our ability to unhook, get out of your harness, and clear your aircraft rapidly while it sits on the ground can mean the difference between life or death. If you're a transport pilot this includes not only your crew, but your passengers. And if you haven't practiced it, you're only about one-third as fast as you think you are. For those who may not believe this, go out and time yourself to see just how long it takes you to get unhooked and completely clear of your aircraft.

When I brought this up to the pilots of the 12th TFW at Da Nang they decided to go out and try it. Most of the crews felt pretty confident until they discovered it was taking some of them as much as 45 seconds to get out. Three-quarters of a minute in a burning F-4 can produce only one result. The way I beat the "Grim Reaper" when my T-33 crashed on 1 June 1961 was by being mentally and physically prepared in advance to get out in a hurry.

Simulator training is good... but not as good as



actual practice from an aircraft cockpit when you're loaded with full flying and survival gear. On one of my first trips to SEA I found that only about two percent of the crews had ever practiced ground egress from the aircraft. This seemed appalling, especially in light of the fact that we were losing people in the theater at the time, all because they weren't TRAINED in ground egress procedures.

On my last trip, there was some improvement. About 25 percent of the crews had practiced egressing from their aircraft.

Take the case of a B-66 which crashed short of the runway. The crew members had not practiced emergency ground escape. Even though this was the B-66's home base, the crash crew was unfamiliar with the crash-rescue procedures for this type aircraft. There were indications the pilot was alive for four or five minutes after the crash. He finally ejected, probably out of desperation, just as rescue personnel were getting to him. Unfortunately, he was killed, but the rescue crew was uninjured.

I actually witnessed and photographed a good example of the results of not briefing and practicing emergency exit procedures. During a paramedic rescue demonstration off Snake Island in the bay at Cubi Point, the Philippines, a photographer was riding aboard the demonstration helicopter to photograph the aircrew pick-up. He secured himself with the gunner's belt but nobody bothered to see that he knew how to get it unlocked or what to do in an emergency. When the helicopter lost part of a control surface and crashed into the water, the photographer nearly drowned, and was actually clinically dead when a hospital corpsman finally got him to the surface. Thanks to superb training on the part of the para-rescue team and the team doctor, this man was saved by immediate application of a combination of mouth-to-mouth resuscitation and external heart massage. Had this passenger been properly briefed on the functioning of his belt and the actions he was to take in an emergency, his near-drowning would not have occurred.

The thing most people forget is that ground egress is an almost totally manual operation. During ejection in flight everything happens automatically. But on the ground it's you who must unhook the straps, disconnect the survival kit, and figure out which way to exit in order to avoid the fire.

There are some crewmembers who think that ground egress training and attention to their flying gear is not important to their particular mission. I'm talking now about the airlift types who fly mission after mission without a ground egress drill; who fly without gloves and with their flying suit sleeves rolled above their elbows. As you C-130 types know, crashes on takeoff and landing in Vietnam are not uncommon. Every member of your crew should be drilled in the proper position for a crash landing... as should your passengers. Every person on your aircraft should be wearing leather boots, flying gloves, and long sleeves (rolled down). If you are carrying Army troops, they should be wearing their helmets.



This pilot had not practiced ground egress from his aircraft. After a crash landing he lost portions of fingers on his gloveless right hand due to slapping out fire which was consuming his cotton flying suit. Ground egress training plus fire resistant flight clothing would have minimized his injuries.

CONTINUED





When this B-66 crash landed at its home base the rescue crew did not know how to extract the crewmembers. The plane's crew had not practiced emergency ground egress from the aircraft. Delays resulted in this fatal ejection. Better training in ground escape and crash-rescue would have minimized the loss of life.

On the subject of personal equipment, I'd like to caution those of you participating in the evaluation of some new piece of gear: Do not condemn the item just because you object to a particular feature. Too often we condemn the "good" while waiting years for the "best." For example, the new Nomex fire retardant flying gloves will offer valuable protection to your hands, which we've needed for years. But many people complain about the green color. The color admittedly isn't what you and I would choose. What you should know is that in the interest of economy DOD is buying all fibers in that color. So we have no choice. The important point is that your hands will receive much better protection than in the past.





One item that we have condemned because of color and possibly some loss in comfort is the Nomex fire retardant flight suit. Some models of this suit, which were tested last summer, are infinitely lighter and cooler than our present cotton suits. Yet, because the Nomex fibers don't absorb perspiration they tend to feel like wool when there's no breeze. As a result, they were rejected by the Air Force. We should learn to live with this small irritation and look at what valuable fire protection the crewmember obtains.

The Navy, Army, and Marines all use this Nomex flight gear. An A-6 pilot who was involved in a collision with a C-141 in Vietnam, credits his, and the R.O.'s, survival to their complete coverage with Nomex flying suits and gloves. "As a result (of this accident) we all wear them on every mission," he said.

About your helmet... it must be fitted properly and the nape strap **MUST** be properly adjusted. This means not more than one finger's worth of space between head and strap. When my T-bird crashed I was knocked out momentarily because I was wearing

an ill-fitting hard hat. It came off on impact and my head bounced off the old iron-backed head rest.

In SEA recently I examined four helmets from crewmembers of an Army helicopter crash. Three helmets were broken up badly, yet, these crewmembers had survived. One helmet was in near perfect shape because it had come off the man's head at impact. This man died simply because his helmet didn't fit. The attending doctor told me, "The crewmember wearing this helmet would have survived had his helmet not been lost."

My recommendation is this: Plan your crash landing in advance. None of us expect to have an accident yet a lot of the fatalities in SEA are the result of accidents. Practice your ground escape procedures in the aircraft you actually fly. Wear a properly-fitting helmet and above all, dress to survive. Leave your sleeves rolled down, wear your gloves and leather boots. Even though it may be warm, wear your flying jacket, if you can stand it.

Your plan and your proficiency at ground egress could mean your life.



"I was wearing a standard summer flight suit and jacket, G suit, leather boots, gloves and helmet with mask and visor down. My burns were minor and I was back on flying status in less than a month. I would have had extensive burns if I hadn't worn the jacket. Since it was a fairly warm day, I probably wouldn't have worn it had I not heard Gen Spruance's talk two years ago."





# TAC TIPS



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

## the role of flight leaders and instructor pilots

Several articles have appeared recently in various safety publications regarding the responsibilities of the multi-engine aircraft commander, and the instructor pilot while he is on board. It is evident that similar attention should be given to the exercise of responsibilities by flight leaders and instructor pilots in formations of fighter and trainer aircraft.

Flight leaders and IPs are selected not only because of their experience, but also for their demonstrated ability to lead and instruct in the air. The authority and responsibility of the pilot in command of a formation of aircraft is not an issue covered with any regularity at the unit level. However, the close coordination of a formation of fighters or trainers requires more than an airborne administrator or skilled, interested observer. The rapidity with which in-flight events occur frequently precludes assistance from ground stations and places a greater premium on the responsible leadership exercised by the flight leader.

Several recent accident reports, unfortunately, point out that the flight leader carefully noted the difficulty experienced by one of his charges, and was able to comment extensively during the accident board proceedings on the pilot's performance. Missing from the commentary, and notable for its absence, was evidence of timely exercise of in-flight command by the flight leader or IP.

Commanders should periodically review the performance of their flight leaders and instructor pilots to assure they are providing the quality of in-flight leadership their mission requires.

From: TIG Brief

## blind mans buff

The IP in the UH-1F set up his student for simulated hydraulics-off operation. In the process he unknowingly moved the main fuel switch to the shutoff position. Things got awfully quiet after that.

As confused as his student, the surprised IP assumed control of the chopper and established autorotation. His self-inflicted emergency landing damaged the main skid and a small area of lower fuselage skin... about 28 manhours worth.

In trying to be a sly one, the IP outfoxed himself. As every bridge player knows, "One peek is worth two finesses."

## experience isn't enough

We continue to read about C-130 accidents involving "our best" pilots. For example, a C-130E overrotated on a max effort approach and landing. As the aircraft touched down on the rear main gear, the aft fuselage scraped the runway for 177 feet and damaged the tail skin and surrounding skin area. The pilot had over 3,200 total hours, 1,491 first pilot hours, and 712 hours in the C-130. The copilot had almost 4,000 hours and 898 hours in the C-130.

A pilot with 3,800 total hours, 2,100 first pilot-IP hours, and 560 hours in the C-130 aircraft started his round out too high. He then overrotated and damaged the tail skin extensively.

It happened again... almost! A pilot with over 4,000 C-130E hours was making a VFR GCA approach. The before landing checklist was delayed because of a long, wide, descending pattern at high gross weight. The GCA controller did not call for gear-down confirmation. Both pilots and the engineer checked the gear simultaneously. The gear started down just as the tower called for a "Go around, no gear."

The lesson is this: Experience and previous qual-



ification cannot offset complacency. Attention to checklist detail and alertness throughout the entire mission is the only professional and safe way to operate.

Remember, that's why you've stayed around to accrue all those hours!

CHECKLIST

CHECKLIST

CHECKLIST

## flight clearance through restricted areas

Air Traffic Control is responsible for aircraft clearance through, or alternate routing to avoid, restricted areas when a pilot files and flies an IFR flight plan.

For restricted areas which are not joint use, or for areas not controlled by ATC, the pilot filing IFR or VFR-on-Top flight plan must obtain prior clearance from the using activity. Failure to advise ATC that clearance has been obtained will result in ATC routing to avoid the area. An exception applies to aircraft flying in accordance with an approved ALTRV (altitude reservation).

When flying VFR, the pilot is responsible for obtaining approval from the using or controlling agency prior to penetration or transit of a restricted area.

By Major C. Bowen

FLYING SAFETY NEWSLETTER  
Langley AFB, Va.

## the little things can get ya!!

A T-33 took off from a western base and headed to Sacramento at 1930 hours. The pilot, a well qualified individual, was by himself. At 1940 hours he called Departure Control, leaving their frequency and giving a 2000 estimate for his next check point. He began feeling woozy immediately thereafter. Leveling off at 26,000 indicated, 24,000 cabin, heading 260 degrees, he switched to 100 percent oxygen. This did not seem to help so he went to a "Safety" setting. He awoke 25 minutes later (2005) heading 260 degrees, altitude, 22,000 in a 500 fpm descent. Power

was still at 100 percent. Not knowing where he was or what might happen, he called "MAYDAY" on guard and channel 1. No response on either frequency. Making further oxygen check, he found that the regulator hose had pulled loose at the CRU-8/P connector. The metal part (female) of the regulator hose was still attached to the connector, hence, his breathing had not become difficult. The hose had pulled away only about two inches, held by the intercom wire. He fixed the connection and reoriented himself. Twenty miles further and he would have been over the Pacific Ocean. The position report which he gave to Los Angeles Center he later described as goofed up to say the least. It was not in sequence, full of hesitations, and contained superfluous information. He then proceeded to Sacramento, and made a "Good penetration and a good landing."

Whether you call it PD McCRIPE or PRICE, the preflight oxygen check is a vital part of aircrew discipline. Do it right and don't sweat some of the little things.

Major D. Choisser

Chief, Physiological Tng Flight  
Langley AFB, Va.

## prop manners

On landing roll the C-130's left forward main tire blew. Stopping on the runway, the Herky pilot shutdown, called tower for fire equipment, and cleared the loadmaster off interphone for a left wheel well fire scan. Trying to assist, the navigator exited the crew entrance door. He concentrated his attention on the main gear area while walking in front of the props. Number two prop was dead; number one coasted slowly, silently. When he moved into its arc, a blade knocked him down, fracturing his skull.

Spinning props continue taking their tragic toll of lives among aircrew and maintenance men. Remaining alive around prop-driven airplanes is largely a matter of respect and discipline. First, acquire complete respect for that awesome arc a prop describes...whether it is turning or still. Next, discipline yourself to always walk around a prop...whether it is turning or still. Then in a moment of concern or crisis, your "prop manners" will carry you away from those bludgeoning blades.





# drivers i'd like to meet

by David Girling

**E**very now and then, when driving on a public highway, I pass a driver who shows unusual skill or alertness. And I think, "There goes a driver I'd like to meet. There goes a real expert." When you make your living behind the wheel, as we test drivers do, you learn to appreciate... and to respect... the driver who shows himself a cut above the rest.

Automobile driving more than anything else I can think of, really separates the men from the boys, the duffers from the pros. A few years ago the duffers seemed at times to outnumber the good drivers. But I don't believe that this is true now. Today, the really sophisticated drivers are on the increase. There are many more of them on the road than you might think.

## what marks the sophisticate?

As a test driver, I offer these clues to identify the sophisticated driver:

First, he is never spectacular. As a sophisticated man or woman, you would never dream of shouting, screaming, or dashing madly about at school or in the office or on a downtown street. Neither would you make yourself noisy or conspicuous in an automobile. The true sophisticate is distinguished by the fact that he doesn't call attention to himself.

He drives as the well-groomed person dresses... quietly and in good taste.

## he's helpful too

Second, he has a very special quality... he not only attends to his own driving, but also is constantly

trying to make things easier for other drivers. He's the fellow you see politely waving you to go first when your car and his come to the same tight spot at the same time. He's the driver who doesn't seize an opportunity to "cut you off" or to keep you from getting back in line if you blunder by trying to pass at the wrong time.

He's also the fellow who may be helping you without your knowing it. In a solid line of fast traffic, if he sees trouble forming ahead, he pulls his car a little to the right, so that you can see, too. He isn't doing this just to be nice; he doesn't want you to hit him from the rear in case of a sudden stop all along the line. And by pulling slightly out of your line of vision he lets you see the other brake lights flashing ahead.

He rarely blasts his horn, for he has learned that horns have a polite language all their own. He knows how to tap a horn lightly, to make it say, "This is just to remind you I am here... in case you've forgotten." Two taps are still polite, but add a bit of extra caution: "I'm about to pass and would appreciate your help." A single, slightly longer note might say to a boy on a bicycle, "Watch it, Sonny. Don't weave that bike."

He's learned how to make his car talk for him. Here's an example:

One thing that makes all drivers a bit edgy is suddenly seeing a car approach on a side road or side street at high speed. You're on the main road, and you know that you're protected by a stop sign. You feel pretty sure that he'll slam on the brakes and stop at the stop sign... at the last moment. But how can you be sure?





## how to spot a duffer

I can always spot a duffer by the way he "rushes the stop sign," then stops. Not so Mr. Sophisticate. He knows that drivers on the main road, seeing him, will be on guard against collision and will be very sensitive (perhaps without realizing it) to every slight movement of his car. They look for the slight "dip" of his car that says, "My brakes are on." They may even note the changing rotation-speed of his wheels. And they also note where he is looking.

Obviously, Mr. S. can't lean out of his window and shout to main-line traffic, "Don't worry, I'm going to stop!" And so he makes his car talk for him. He applies his brakes well in advance, creating the slight forward "dip" that will be seen. He decelerates clearly. He may even look directly at the other driver, to reassure him, "I see you."

## cars can talk in other ways

The sophisticate knows how to make his car "talk" in other ways. If he meets another car when both are trying to squeeze (in opposite directions) past a double-parked car, he taps his brakes slightly harder than necessary and turns his wheel ever so little. This causes the forward "dip" or slight "dive" and also pulls his car slightly to the right. It says plainly, "My decision is made. I am stopping right here to let you come through."

And before turning left into a driveway or side street, he actually edges his car a few inches to the left. Thus, besides having his turn signals going, his car is saying to the fellow behind, "We are now approaching the exact point at which my driver plans to make his turn." (This works on right turns, too.)

But the sophisticate's skill really shows up best

in passing. Let's say that you're going 55 mph on a narrow, two-way road. You look in your mirror and see a faster car coming up behind you. He slows down, all but locks onto your rear bumper, and stays there. Then he begins darting nervously in and out, looking for a chance to pass.

That's Mr. Duffer. He has managed to get himself "boxed" too closely behind you. When he does cut out to pass, his car may weave around because he's trying to corner (turn) too sharply and feed gas to the engine at the same time.

You feel relieved when he's gone ahead.

But when the sophisticated driver prepares to overtake you, he moves up gradually, thus keeping good speed, and does not let himself get "boxed" too closely behind you.

## the result is smooth

As a result, when he sees his chance he edges out easily, gets his car lined up nearly straight, then kicks the gas and goes by you like an arrow. No fast acceleration while cornering is needed, no nervous wheel turning. He is past you and back in his own lane quickly and smoothly.

Finally, champ that he is, he keeps accelerating for a while after passing you. Is he in a big hurry to get ahead? Not at all. He knows that a car that passes you and then sits in front of you blocks your vision and annoys you. He's just trying to get far enough ahead quickly before settling back to cruising speed, to clear your vision... to help you see the road ahead.

All these things I like about the sophisticated driver. I hope you'll enjoy being one; I'll like meeting you.

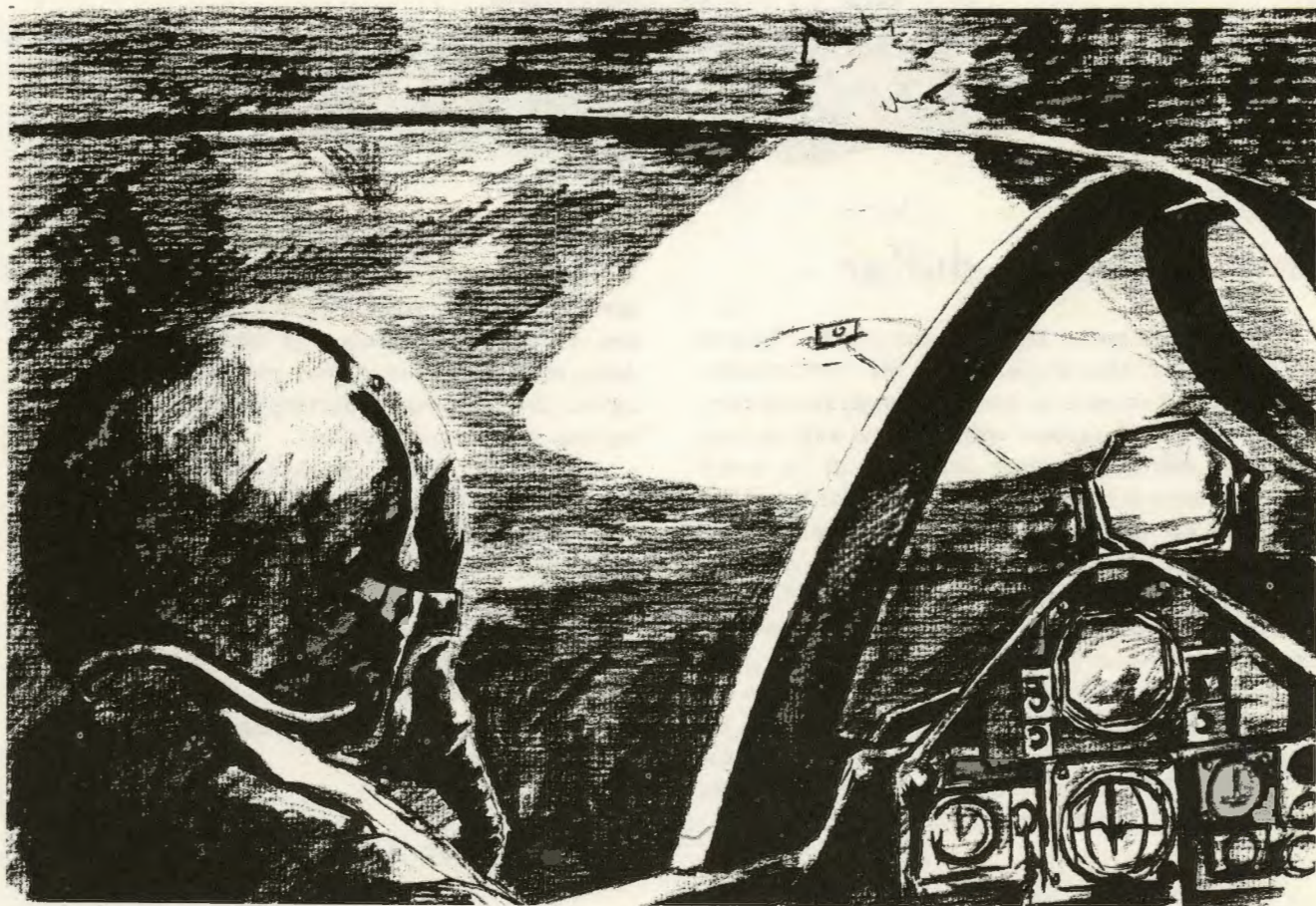


courtesy of AMERICAN YOUTH Magazine



# a 2nd look at ...

# FATAL



**A**n F-4E aircrew rode their smooth flying Phantom into the floor of a night darkened forest. The ensuing fireball was spotted by the range officer about a mile and a-half from the flare-lighted target.

Findings of the accident board stated the primary cause as "operator error in that the aircraft commander misjudged his final approach during a night low-level bomb attack and allowed the aircraft to descend below minimum altitude where it struck the trees. He failed to follow prescribed procedures for a night low-level attack in that a minimum dive angle of five degrees was not maintained until within the flare-lighted area."

This immediately raises the question, "Why did two well-qualified pilots allow the error to catch them." The board was thorough in their investigation,

and ruled out power and control failure. The bird hit the ground at about 400 knots with both engines operating at high power settings. Examination of scattered flight control components indicated that all were apparently functioning normally at impact.

Point of impact indicated that the left turn on final was started about two miles out and a little early; their heading was 105 degrees instead of an on-course heading of 090 degrees. The board decided to fly a night mission, simulating the fatal sortie, in an attempt to determine visual stimuli or other conditions that might have a bearing on the crash. The board president, who had not flown the range, took the front cockpit hoping that his first impressions might provide a clue to circumstances which occurred on the fatal flight.



# ILLUSION

By Don Reynolds

Two simulated attacks were made in which a downwind and base altitude of 3000 feet MSL were maintained until halfway through the final turn...descending during the remainder of the turn. Wings were level on final approach at 2700 feet MSL at a distance of one and a-half to two miles from target. Descent at 10 to 12 degrees was made from this point to the level-off point under the flares, about 1000 feet from the target, at 100 feet AGL. Throughout the final turn and approach the front-seater had excellent visual reference to the lighted target area and accomplished his attacks without difficulty.

Two attacks were made in which a descent from 3000 MSL was begun on base leg and the altitude prior to initiating final turn was 1500 feet MSL (approximately 1350 feet AGL). On each of these two attacks, the final turn was relatively level, 35 to 45 degrees of bank, with the front-seater making attitude and altitude cross-references with the flight instrument against the visual picture through the windscreen. Roll-out on final was at 1200 feet MSL and at an estimated distance of one and a-half to two miles from target. Descent was started at five to seven degrees from this point to the level-off point under the flares. During the descent, the front-seater still had good reference to the lighted target area and he felt no uncertainty as to altitude versus distance from the target.

The next profile flown by board members was similar until midway through the final turn. Descent from 3000 feet was initiated on base leg. The final turn was begun approximately two miles from the target at 1500 feet MSL. They used 35 to 45 degrees of bank, with the nose held relatively level by cross-reference to front seat flight instruments for the first 30 to 40 degrees of turn. At this time, the front-seater purposely ignored the flight instruments and went completely visual while the rear-seater continued to check the instruments. Halfway through the final turn, the front-seater relaxed stick back pres-

sure to simulate easing a turn to compensate for undershooting the final run-in. As backpressure was relaxed, the rate of descent increased rapidly; altitude decreased rapidly, although the aircraft was still at least one and a-half miles short of the flare cone and lighted target area. The back seater gave warning of rapid altitude loss and the front seater rolled wings level, stopping the descent at 700 MSL (550 feet AGL). The front seater sensed no increase in rate of descent during this maneuver and his eyes did not register a changing visual picture of the lighted target area ahead. Instead, he had an insidious sensation of well-being and of being on as safe an approach as flown in the prior passes.

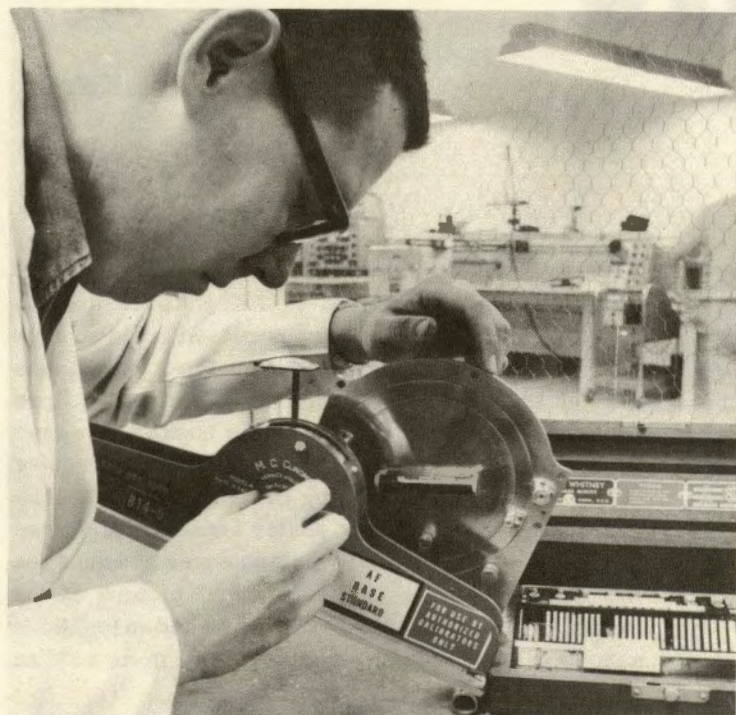
Investigation showed that the aircraft impacted the trees in an upright, wings-level, eight-degree dive. The bottom fuselage of the aircraft made first contact with the trees, clipping the top of a 63 foot pine tree at an elevation of 143 feet MSL. The dive shallowed slightly to seven degrees, and 200 feet from the first treetop contact; the right and left wings began cutting pine tree trunks ten to sixteen inches in diameter.

TDR of the stabilator actuator indicated that full aft stick was applied when the right stabilator made first contact with the ground. The aft section of both engines dragged along the slight upslope of ground for 150 feet, shedding pieces of the afterburner and parts from the bottom of the fuselage, before the massive explosion.

The board recommendations included that TACM 55-4 be amended to preclude a descent prior to turning final approach. It also recommended that the physiological limitations of night vision be thoroughly reviewed by aircrews, with training assistance rendered by Flight Surgeons and Physiological Training sections, and that a physiological training device be investigated that would demonstrate to pilots the unreliability of night visual references during bombing/landing approaches.



an ounce of prevention may offer a pound of cure,  
depending on....



PMEL accuracy is vital. SSgt Don Hodges, 15 TFW, MacDill AFB, aligns a protractor with base standard, accurate to plus or minus one minute.

## HOW MUCH IS AN OUNCE ??

by Don Reynolds

**A** shapely, job-hunting model routinely reports her physical measurements to prospective employers. However, they may be considerably different when compared to dimension observations of a street corner homesteader as she joins his passing scene. Both use standard terms, but their calibration base undoubtedly varies. This kind of "guestimate" liberty makes for pleasant living, offering little restriction to human imagination. But in aircraft production and operation, a unit of measure is exact. Calibration cannot vary. That's why the Precision Measurement Equipment Laboratory (PMEL) is Air Force's guardian for true measurement.

Countless difficulties would occur in the Air Force if torque wrench pressures varied from one base to another, or if flightline voltmeter equipment indicated differently than those in base maintenance shops. Almost endless is the variety of equipment that would malfunction if frequency counters were not consistent, from manufacturing stages through operational activities.

After an F-100 wing experienced seven tire failures on landing during a very short period of time, they discovered that a couple of in-use tire gauges were out of calibration.

An F-105 unit had several silver-cell batteries explode while airborne. They found an out-of-calibration voltmeter being used on the line.

In both cases, because testing tools were indicating untrue measurements, aircraft were being flown with systems operating outside the minimum or maximum tolerances allowed by TOs and designers.

To make sure that measurements remain constant Air-Force-wide, more than 160 Base PMELs have been set up throughout the world... one at nearly every installation. PMELs are a part of an integrated USAF Calibration Program, administered from Newark Air Force Station, Ohio, and directed by AFLC.

The system is complicated, but its premise is extremely simple. A standard, or reference base, for each unit of measure is determined by a top echelon,



and a system is set up to maintain this standard through all echelons. The system works. And the way it works can be best described by starting with the first echelon... the working level where measurements are used daily to keep aircraft ready to fly.

Measurement tools and gauges include items like torque wrenches and protractors, voltmeters and ammeters, and specially designed test and adjustment instruments used for tuning and checking out aircraft systems. All of these working tools and testers are periodically certified... checked for accuracy... against Base Standards maintained at PMEL.

How does the PMEL echelon maintain their accuracy? They depend on the Newark Air Force Station, the next echelon. The system has a complicated series of checks and balances which insure accuracy, but stated simply, Newark provides each PMEL with a set of Measurement Standards, measuring tools and equipment, which they periodically exchange for newly certified equipment.

Newark has their Air Force Standards certified by the top echelon, the National Bureau of Standards, who maintain United States Standards... the final authority for all measurements used in government and industry.

TAC's 17 PMELs, staffed with specially trained men called metrologists, calibrate and certify measurement test equipment used in several fields: elec-

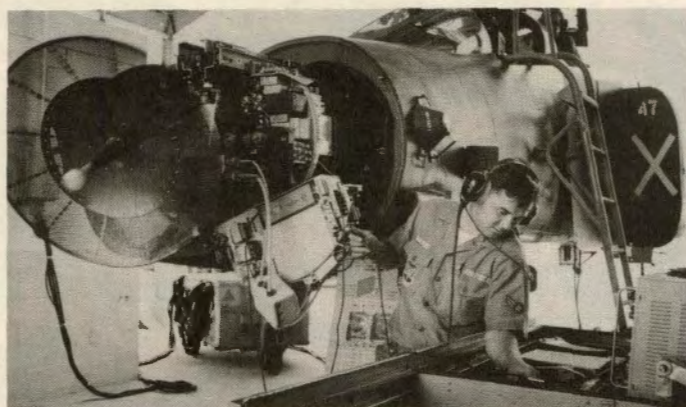
tronic, mechanical, electro-mechanical, dimensional, temperature, and radar/microwave.

Each echelon, except the field level, maintains at least two sets of Measurement Standard equipment for these several fields. One is called the Reference Standard and the other, the Working Standard. The Reference Standard is the equipment periodically exchanged with the higher echelon. It is used only to check the accuracy of the Working Standard. The Working Standard is the equipment used to check the lower echelon Precision Measurement Equipment.

Without going into the many methods and techniques used daily by PMELs, suffice it say that millions of dollars of equipment and the talents of thousands of men are making certain that aircraft systems are tuned and operating within the same critical tolerances in which the bird and its gear are designed to function.

More than one bird has been lost because of an incorrectly-torqued bolt, an improperly-tensioned control cable, inaccurately calibrated flight instruments, and a multitude of other adjustments that are entirely dependent on precision. In PMEL, where checks and balances are strictly controlled, a volt is a volt... no more, no less.

On the line where tools and test equipment are used daily, equipment can falter. And so does man if he is willing to accept that a volt, whether a big volt or a little volt, is a volt.



Periodic checks of line test equipment at MacDill AFB PMEL assures F-4 performance. A1C Robert Meyers, 47 TFS, calibrates Phantom's weapons control system with a Radar Test Set which, if misaligned by only .03 of a volt, can cause the F-4 system to be ineffective.





S.I.A.-7 B1



HARDISON



# Flight Leaders

by Lt Col Carl E. Pearson

The S.I.A.-7B1 couldn't be called a pilot's airplane. A reconnaissance bird, it's obvious that observers had top priority on seating arrangements in this Italian-built biplane. Pilots sat at a level below and behind a high, metal engine cowling in the deep, narrow fuselage, under the center of the upperwing. His upward visibility was nil. He peeked around the slab sides of the vertical, inline six cylinder power plant. If he leaned too far to the right for forward vision, he risked singeing eyebrows or mustache in flaming exhaust from six short stacks. A three-point landing in the S.I.A.-7 came about as close to "blind flying" as World War I pilots cared to find themselves. It must've been a great temptation... or SOP... to land in a yaw to see what's ahead of you.

Observers had a better break on visibility, but the small notch in the upperwing didn't help forward-and-up scanning for approaching German fighters. The importance of aerial reconnaissance and the reason for observers having the "best seat in the house" becomes readily apparent in the following transcript of an artillery spotter's fire direction during the silencing of a German battery. It had inflicted heavy losses on Allied positions. He tapped out his Morse Code on a transmitter with a range of about three miles, working close-in to receiving stations:

4:02 p.m. A very little short. Fire. Fire.  
4:04 p.m. Fire again. Fire again.  
4:12 p.m. A little short; line okay.  
4:15 p.m. Short. Over, over and a little left.  
4:20 p.m. You were just between two batteries.  
Search two hundred yards each side of  
your last shot. Range okay.  
4:22 p.m. You have them.  
4:26 p.m. Hit. Hit. Hit.  
4:32 p.m. About fifty yards short and to the right.  
4:37 p.m. Your last shot in the middle of three  
batteries in action; search all around  
within three hundred yards of your last  
shot and you have them.  
4:42 p.m. I am coming home now.  
Outstanding success on the part of radio-equipped

artillery spotters coordinating with searching Allied batteries brought quick German fighter retaliation. Their growing air armada took a heavy toll of slow, unarmed observation planes. Recce aircraft made up a large portion of combat kills by German "Kanones," their equivalent of fighter "Aces." In time German fighter pilots complained, "They are sending up twelve pursuit planes to protect only two observation planes."

The S.I.A.-7 became a trainer in the later stages of World War I. Its big-bore, water-cooled, six cylinder Fiat engine developed 260 hp at 1500 rpm, respectable thrust in its day. The nine foot, two-inch prop pulled it along at 115 mph at a max gross weight of 3460 pounds in sea level conditions. Airspeed dropped off to 110 mph at 6500 feet. Its calculated ceiling was 19,680 feet. Climb time to 3,300 feet required three minutes forty-five seconds, and reaching 10,000 feet dragged out to fifteen minutes fifteen seconds. The S.I.A. weighed 2359 pounds empty and lifted a total load of 1102 pounds, including crew, fuel, and armament. A 510 pound fuel load provided about four hours cruising.

Both wings spanned 43 and one-half feet. Only the upper wing was aileron equipped, broadening slightly at the nearly-square wing tips. The dihedral of the lower wing emphasized the straightness of the upper wing with its wide six-foot chord. The horizontal stabilizer measured over eleven feet in width and the attached elevators were unbalanced. V-struts supported the single-wheel main gear. Tail skids were standard, as they were on most World War I airplanes.

The vital need for aerial reconnaissance in World War I pushed development of observation equipment from balloons to higher performance aircraft in short order. However, defense from fighter attack didn't change very much. Recce pilots had little choice except to hit the deck and wrap the throttle around the forward stop. Course reversal and superior speed saved them... when they had it.

Can't you hear our current recce types mutter, "So what else is new?"



# CHOCK TALK

...incidents and incidentals  
with a maintenance slant.

## EURs can prevent accidents

The pilot's first indication of trouble was a number two generator failure. He attempted several resets, all unsuccessful. Oil pressure and nozzle indications appeared normal with throttle movement, yet, in short order the number two engine began to lose RPM. With still no change in oil pressure or nozzle indication, the pilot moved the throttle to idle. Finally, with RPM continuing to decay, he shut the engine down. Although no vibrations were evident, the pilot elected a single engine landing.

Maintenance investigators found an oil leak in number three bearing area. The leak was caused by a crack in the number three bearing, oil scavenge line... the result of excessive vibrations. Earlier TCTO 2J-79-1085 had been accomplished to prevent this very problem. The TO required mounting a support bracket on the turbine frame to lessen vibration loads which were causing scavenge line cracking in the hub area. In this case the TO had been properly accomplished, yet a crack developed. A quick check of other modified aircraft revealed the same latent problem. In each case, had these aircraft flown longer missions, complete oil starvation would have occurred.

As a result the unit submitted an EUR (E68-130). This timely action provided an immediate warning to all F-4 units. Most important, it gave prompt information to the depot for correction of a serious flight safety deficiency.

Are you prompt with URs?

## stingy service

On a functional check flight for a number one prop change the C-123 pilot checked out its feathering response in flight. Number one prop streamlined smartly. When he worked his way thru his unfeathering checklist, the prop oil low-level warning light blinked on and stared at him brightly. Our Provider

pilot shut down number one engine. The offending light went out. He landed okay with one caged.

Prop specialists examined their prop-change handiwork and found a simple solution. Somebody short-serviced the prop oil reservoir. They blamed their stingy service on trapped air.

We've been changing oil-governed props on reciprocating engines for a few years now. There's not much excuse for air in the prop governing system if you follow proper oil servicing procedures.

Before some unsuspecting aircrew test hops a double-prop-change bird, let's learn how to oil service the props.

## case of the booming tap

Munitions handlers in TAC, experienced by a tour in SEA, can suffer the same malady as the long-time professional race driver who "bought the farm" backing out of his driveway.

An example: A rack of BDU-33 practice bombs was being armed. One crew removed striker assemblies while another crew inserted spotting charges and replaced the striker assemblies. Unfortunately, several bomb lots had a large rejection rate because of poorly-fitted striker assemblies, frustrating the armorers' workflow. This didn't justify an "easy" tap to seat the assembly (strictly forbidden by TOs). But that's what happened! The tap forced the firing pin into the charge. BOOM! One man lost a finger and another suffered second degree burns.

Handling a daily frag of 25-pound practice bombs may be a piece of cake, compared to handling several hundred 750-pounders... maybe. Maybe the explosive force in a 25-pounder isn't as great as 750s, but the possibility of accidental detonation is more likely. Practice bombs are usually handled with firing pins and spotting charge intact. True, the explosion won't wipe-out the whole arming area, but its small charge can cause some big hurts... like separating fingers from hands... and burning eyes from sockets... or worse!



## history repeats

It was a long overwater haul and the A-26 pilot launched with max fuel. About 20 minutes after take-off, at cruise, number one generator overheat light flashed on... and burned steadily. He turned off all electrical equipment but it didn't help. With the warning light still glaring at him, he feathered his left engine.

Center cleared him to reverse course, but he couldn't hold his assigned seven-to-eight thousand block altitude on one engine. About five minutes after engine shutdown the generator overheat light blinked off. Assuming his problem corrected itself, the pilot restarted number one engine and requested and received clearance to resume his ocean crossing.

About ten minutes farther out to sea, history repeated itself. Finally convinced, he feathered number one engine, dumped fuel, and obtained clearance back to his staging base. Number two engine brought him back okay.

Maintenance types found a generator air blast hose clamp disconnected. They solved a history of generator overhead lights on the bird by reconnecting the air blast cooling hose.

The pilot's decision to resume his transoceanic flight after his first generator overheat warning light twenty minutes out, in a bird with a maintenance history of repeat writeups, leaves a lot to be desired. That second warning light could've waited until point of no return. There's a quotation by William Saroyan that fits the occasion:

"History, like a mirror, can only look backwards; but those who fail to heed its lessons are bound to repeat its mistakes."

## little things mean a lot

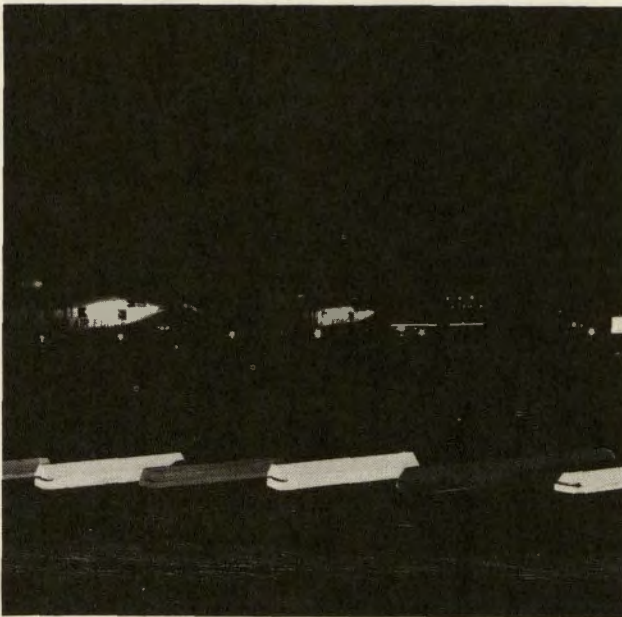
A successful night gunnery mission in an F-4 requires the utmost in pilot concentration and aircraft maintenance. At night small things can become extremely important. In this case, as an F-4D pilot pulled off his flare illuminated straffing target, he had double generator failure. While struggling to maintain an upright attitude on the flight instruments, he had to contend with severe yaw from the failing stab aug. As if he didn't have enough problems, the cockpit lights suddenly failed. Fortunately, he managed a safe landing.

Maintenance investigators later discovered a loose washer in the right supervisory panel. This washer caused arching in the panel resulting in freez-

ing of an important electrical relay.

Dropped washers, pieces of safety wire, a wrench, screwdriver; all these items have caused accidents in the past. In this case a mechanic's small oversight took two pilots to the brink of disaster.

## chucking chock incidents



Reflective painted chocks outshine the conventionally coated

Running over wheel chocks is an inherent danger, especially during night-time ramp operations. And when ground vehicles or aircraft strike a chock, it's usually called operator error. But any three striped lineman will tell you that a well-used chock is near-invisible, even to eyes keenly adapted to night-time operations. Keeping chocks freshly painted helps, but using reflective paint is a great improvement.

A brief, concise statement in TO 35-1-3 (para 2-15) specifies: "Wheel chocks used on the flightline will be painted with yellow reflective paint, color 7211, Federal Stock Number 8010-965-299."

Apply the paint by either pressure spraying or hand brushing. It dries to a tack-free surface in one to two hours. The paint is a suspension of special reflective elements giving a brightness of up to 40 times that of white paint with 80 percent reflectance.

The reflective coating maintains the brilliance and performs exceptionally well at all normal viewing angles. However, one note of caution. The reflection is reduced when wet.

It may not eliminate the overall problem but it offers a partial cure. And that's progress!





# HUNTING TIPS

## for

## 1968

By Major John M. Lowery

It was my first hunt in Africa. Nothing fancy... Several of us had gone out in the desert southeast of Wheelus in search of the swift and handsome Thompson Gazelle. In due time the cross hairs of my scope came to rest on the gazelle's chest. I fired and the "Tommy" took off across the sands. Quickly, I ejected the empty case and slammed the bolt closed on a new round. To my utter surprise and disgust the bolt handle of my new Sako broke off in my hand.

The Sako is a beautiful rifle. In order to customize it, a German gunsmith had cut off the old style bolt knob and welded on a more modern looking "butter-knife" handle. It looked great, only the weld didn't hold.

Thoroughly deflated, I placed the rifle in its case and returned to camp. Later, I unsheathed the weapon for cleaning and discovered an unpardonable error. I had thought the gun unloaded. Fortunately my habit patterns are such that before cleaning or handling any firearm I always open the bolt.

Using a screwdriver for leverage, the bolt snapped open. There in the chamber lay the fresh .308 soft point intended for the gazelle.

It was a humiliating experience to realize that an experienced hunter and woodsman could pull such a boner. But it happens too often, and usually to a new, inexperienced, gun owner. Trouble is, he isn't protected by previously established "backup" habit patterns. All too frequently, he points his weapon at the TV set or some other household object for some dry firing. Next thing you know he's explaining to the police or his commander how a loaded firearm happened to discharge in his home.

Sadly it's not always the TV set that is destroyed. One of our TAC members lost his wife because he made just such a mistake with his new and unfamiliar handgun.

The NRA Rulebook says, (1) "Treat every gun as if it were loaded;" and (2) "Keep the gun pointed in a safe direction." Everyone of us, regardless of experience, can slip-up. Then our "unloaded" gun becomes an instrument of tragedy.

The National Safety Council says that each year we have approximately 2100 fatalities from firearm accidents... 1150 of these in the home. Almost half of these home fatalities involve victims under 20 years of age. Another NRA safety rule, "Guns in the house are unloaded." This, of course, applies equally to guns in your automobile.

You, being a gunowner, have no doubt trained your offspring to leave your weapons alone unless Dad is there to supervise. Unfortunately, statistics show



that it's the visiting playmate who becomes fascinated with the adventurous looking rifle, pistol, or shotgun and begins to "play" with an easily accessible firearm. All weapons should be locked in a gun cabinet unloaded and the key left in a secure place. (Don't leave them in the closet encased, or they'll sweat and rust.)

Your ammunition should be stored separately from the guns. Again, the visitor is the one most likely to try loading your 30-06 or that 12-gauge automatic.

If you are one of TAC's younger troops, a new gun owner, or if your teenager is about to start hunting, before going afield, get some qualified instruction in gun and hunting safety. This is usually available thru the local rod and gun club.

Most fatal shootings afield occur in good visibility, at short range, and with the shooter firing intentionally. This no doubt stems from a variety of causes, but generally it involves "overeagerness." Deer hunters are common offenders.

To a few individuals, everything that moves looks like deer. The National Safety Council reports that each year a number of deer hunters, fully clothed in red, are accidentally shot by some eager beaver. Alcohol is also an occasional factor. Poor eyesight plays a part, as does a total lack of training in the identification of the animal being hunted. In some of our western states hunters on horseback have had their mounts shot out from under them by an excited novice.

Binoculars and scope sights are required hunting equipment in Germany to preclude this sort of accident. The minimum optical equipment any big game hunter should carry afield is a good set of binoculars for target identification. (They will also save you a lot of walking.)

One type who quickly alienates farmers, ranchers, and fellow-hunters, is the shooter who fires unaware of where his bullets go if they miss the target. Many farm buildings are hit, livestock wounded, and lives endangered by the hunter who shoots toward the skyline of a hill at a running deer, disregarding what may be on the other side. Or maybe he swings and fires at a pheasant flying between himself and some farmer's home.

All of us suffer from the actions of those few irresponsible souls who shoot at signs, telephone lines, and power transformers. Many times you'll see the results of their handiwork inside the city limits. Beside the hazard involved, you can well imagine the reception you'll get from a farmer who's

just had a 24-hour blackout because a "sportsman" shot out the local power transformer.

Picking up and setting down a loaded gun accounts for many of our annual accidents. A friend of mine blew off his left arm at the shoulder with a 12 gauge load of #2's. He picked up the weapon mid-barrel after a coffee break in a duck blind. Some geese had passed earlier and he'd neglected to safety the trigger. Upon lifting the weapon, a limb from his brush-camouflaged blind hooked the trigger.

Tripping or falling with a loaded gun also accounts for a number of victims. If you're going down a steep incline, climbing a fence, or jumping a ditch, stop and take time to unload.

Several years ago while deer hunting along a river in my native Alabama several of us were using a boat for transportation. One of our number was an avid hunter and gun collector. Of all people, we thought he would be safety conscious. Instead, he insistently handed the barrel of his 30-06 to the man on the dock using it as a handhold to pull the boat alongside. This, plus leaving his gun loaded in camp, in the car, and a tendency at promiscuous shooting, caused him to



Would you do this?



# hunting tips for 1968

rapidly become as popular as a MIG 21 at a 100 mission fly-by.

About BB guns... if your child owns a BB gun and you allow him to use it unsupervised, then in my opinion you're guilty of near-criminal negligence. Each year a substantial number of youngsters lose one of their irreplaceable eyes due to the potent punch of a copper-coated BB pellet. These "toys" are weapons as much as a .22 rifle or .410 shotgun.

Last spring the 15-year old son of a friend of mine asked if he could buy a BB gun. His Dad told him, "No." He was already an advanced marksman with both shotgun and rifle. To obtain an accurate-firing pellet gun would require an investment equal to the price of a new .22 rifle. But the boy had a paper route and his own income.

Next morning he was waiting for the Hobby House to open. He paid \$11.00 for the cheapest model they carried. Then he and several friends went to some nearby woods and proceeded to shoot at everything that moved.

Late in the afternoon the lad learned a lesson that he will no doubt remember for some time. While carelessly cocking the weapon, with the butt against the ground for leverage, he shot himself between the eyes.

The injury wasn't serious. It was the blow to pride and his shame at being disobedient... and getting caught... that really hurt. His dad told me the boy had attended three shooting-safety courses, owned a .22 rifle since age eight, and was a 20 bird skeet shooter. Yet he very nearly blinded himself with a BB gun.

Think of the hazard posed by a 10 or 12 year old who's never had any training in firearms safety. You see them in every neighborhood.

Let's enjoy our privilege to hunt this year but do it in complete safety and in the spirit of good sportsmanship. If you're looking for turkey, go to Alabama; deer, try Wheeler Peak in Nevada; for the best quail and dove shooting in the world, try Arizona; for ducks, try Back Bay, Virginia. And if you've got something cornered not mentioned here, invite TAC ATTACK. We like to travel!

## HUNTERS GARB

A series of tests conducted at Fort Devers, Massachusetts, in 1959 proved that fluorescent orange is the best color to wear in the field. Ever since, Massachusetts has required blaze orange clothing. For the past

seven or so years they have enjoyed an exceptionally good hunter safety record.

Many hunters have resisted the fluorescent orange clothing... the hard surface is noisy in the brush and gets brittle in cold weather. Some don't realize that deer are apparently color blind and can't tell orange from green. (Movement alerts them.)

This year a soft fluorescent cloth material is available. Blaze orange is the only color that isn't duplicated in nature. Many states require only a cap or vest of red, yellow, or orange. Be safe and go all the way... blaze orange shirt and cap.

## COLOR CODED HUNTING AMMO

Two manufacturers now color code shot gun shells so that a hunter who uses a 20 gauge, and sometimes a 12 gauge, can't get the ammo mixed.

Each year, some unfortunate hunter or trapshooter accidentally gets a 20 gauge shell in his 12 gauge shotgun. The smaller shell slips down the barrel. Without thinking, the luckless shooter puts a new round in the chamber and fires. The results are at least a split barrel and too often the loss of an eye.

They're bright yellow in 20 gauge, red in 12 gauge. They may save you some grief.



For Mule deer try Nevada's Wheeler Peak.



**TACTICAL AIR COMMAND**

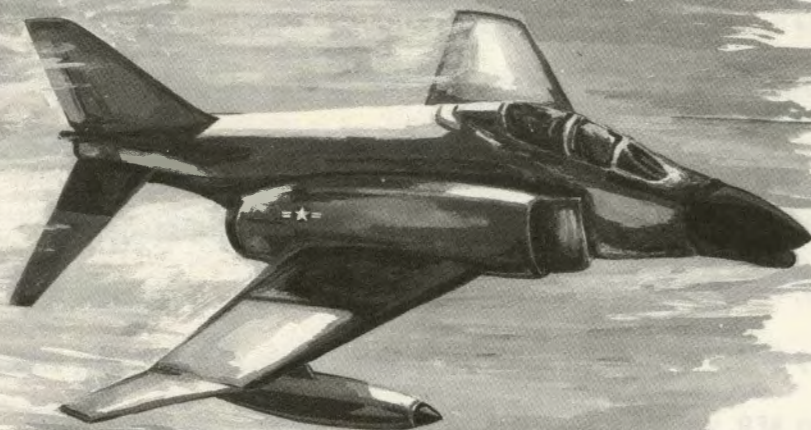
**PILOT**

**OF**

**DISTINCTION**



**Captain G. J. Higgs**



Captain Gary J. Higgs of the 479th Tactical Fighter Wing, George Air Force Base, California, has been selected as a Tactical Air Command Pilot of Distinction.

Captain Higgs was in the rear seat of an F-4D instructing a combat aircrew trainee on his third transition flight. On the fourth touch-and-go an alert tower operator saw the right wheel fall off. An F-4D in the pattern confirmed that the wheel and part of the strut was missing. Efforts to retract the gear were unsuccessful. Captain Higgs discussed the problem with ground supervisory personnel and decided on an approach-end engagement. Captain Higgs briefed the trainee on egress procedures and assigned him

the task of shutting down the engines upon barrier engagement.

Captain Higgs flew one low approach to assess his ability to hold the strut off the runway. His final approach was slightly higher than normal for better lateral control. Touchdown was made on the left main and nose gear. The Phantom traveled about 850 feet before coming to rest on the left main gear, nose gear, and right external tank.

Captain Higgs' demonstration of outstanding airmanship in a critical situation qualifies him as a Tactical Air Command Pilot of Distinction.





## TACTICAL AIR COMMAND

# UNIT ACHIEVEMENT AWARD

316 Tactical Airlift Wing, Langley AFB, Va.

478 Tactical Fighter Squadron, Homestead AFB, Fla.

939 Tactical Airlift Group, Portland IAP, Oregon

4442 Combat Crew Training Wing, Sewart AFB, Tenn.

4449 Combat Crew Training Squadron, Sewart AFB, Tenn.

36 Tactical Airlift Squadron, Langley AFB, Va.

37 Tactical Airlift Squadron, Langley AFB, Va.

38 Tactical Airlift Squadron, Langley AFB, Va.

40 Tactical Airlift Squadron, Lockbourne AFB, Ohio

126 Air Refueling Group, O'Hare IAP, Ill.

126 Air Refueling Wing, O'Hare IAP, Ill.

134 Air Refueling Group, McGhee Tyson Airport, Tenn.

135 Air Commando Group, Baltimore, Md.

150 Tactical Fighter Group, Albuquerque, N.M.

160 Air Refueling Group, Clinton County, Ohio

179 Tactical Fighter Group, Mansfield, Ohio

180 Tactical Fighter Group, Swanton, Ohio

## PEANUTS

Courtesy of Daily Press, Newport News, Va.  
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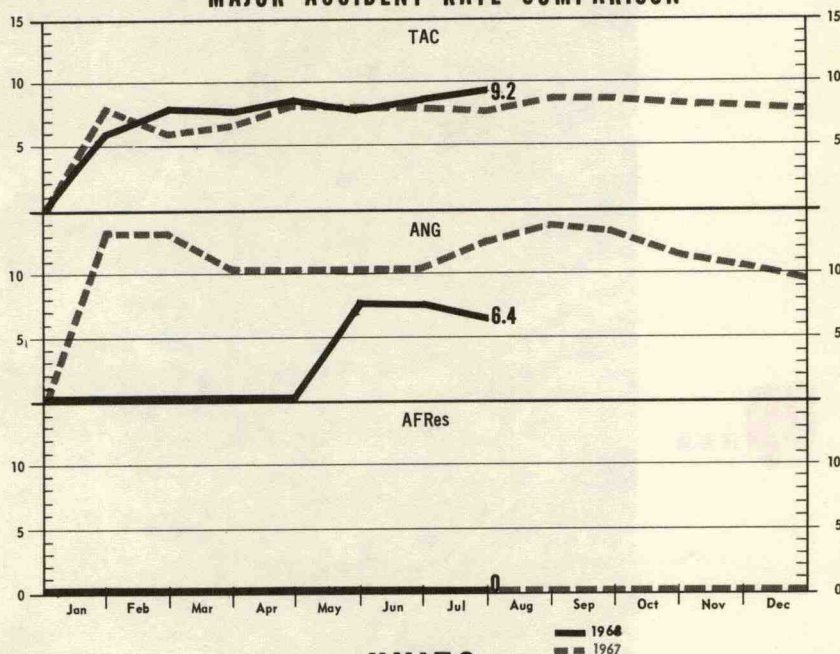


# TAC TALLY

MAJOR AIRCRAFT ACCIDENT RATES AS OF

31 JULY 1968 \*

## MAJOR ACCIDENT RATE COMPARISON



## UNITS

THRU JUL 1968			THRU JUL 1967		
9 AF	6.9	8.2	12 AF	8.3	7.7
4 TFW	12.7	0	23 TFW	14.7	5.2
15 TFW	13.6	25.7	123 TRW	0	18.4
33 TFW	12.2	12.3	27 TFW	5.4	19.0
113 TFW	20.0	19.1	140 TFW	7.8	13.5
4531 TFW	17.2	0	479 TFW	11.7	10.0
363 TRW	4.2	13.0	474 TFW	45.0	0
64 TAW	0	0	67 TRW	15.8	8.2
316 TAW	0	0	75 TRW	0	16.7
317 TAW	0	0	313 TAW	0	0
464 TAW	0	3.9	516 TAW	0	0
4442 CCTW	0	10.3	4453 CCTW	12.2	0
			4510 CCTW	3.9	7.5
SPECIAL UNITS					
1 SOW	10.7	0	4500 ABW	0	0
4410 CCTW	19.7	7.3	4440 ADG	0	0
4409 SUP SQ	0	0	4525 FWW	30.0	21.7
			4416 TSQ	64.7	0

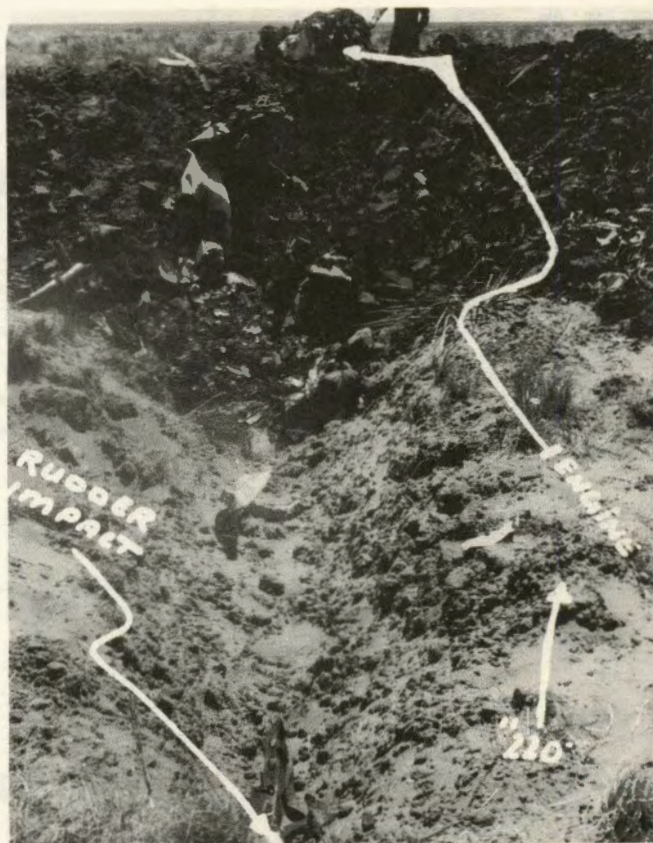
THRU JUL		
AIRCRAFT		
TYPE	TAC	ANG-AFR
A-1	54.5	0
RB-66	0	0
F/RF-84	0	7.1
F-86	114.2	28.4
F-111	58.1	0
F-100	10.1	0
RF-101	6.7	0
F-5	23.0	0
F-105	17.3	0
F-104	0	61.0
F/RF-4	13.5	0
C-47	0	0
KC-97	0	0
C-119	0	0
C-123	14.5	0
C-130	0	0
T-29	0	0
T-33	3.4	0
T-39	0	0
C-7	0	0
O-1	8.6	0

\* ESTIMATED FLYING HOURS

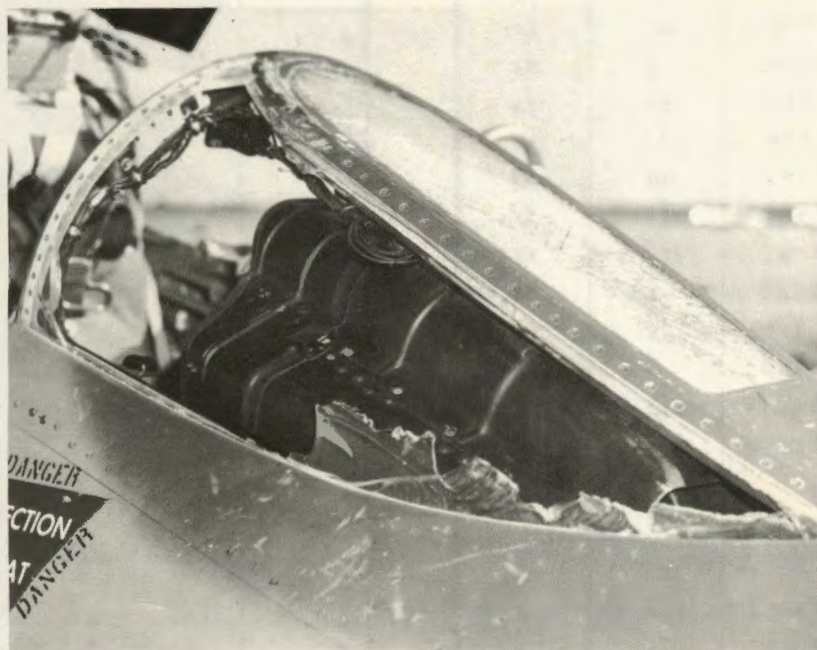


# BIRD STRIKE !!

visor up...



Visor up... visor down



visor down