

TAC ATTACK

MAY 1968



A SMOOTH APPROACH
TO ACM page 4

for efficient tactical air power

TAC ATTACK

MAY 1968

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TACTICAL AIR COMMAND

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current interest

A SMOOTH PATH TO ACM	Pg 4
An expert speaks up	
COMBAT AND SAFETY	Pg 10
Some thoughts from Gen. Bond	
SIMULATOR TRAINING FOR PERFECTION	Pg 12
Ever try a simulator safety program?	
F-111 CREW MODULE EJECTION	Pg 16
A success story	
PROGRESS REPORT	Pg 25
On Mission Safety 70	
SPRING WEATHER	Pg 28
About those thunderstorms	

departments

Angle of ATTACK	Pg 3
Pilot of Distinction	Pg 7
A 2nd Look	Pg 8
Chock Talk	Pg 18
Flight Leaders	Pg 20
TAC Tips	Pg 22
Crew Chief/Maintenance Man Award	Pg 29
Letters	Pg 30
TAC Tally	Pg 31

TACRP 127-1

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

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Angle of ATTACK

A BETTER HELMET

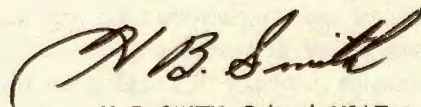
One of our continuing projects in the Office of Safety centers on helping TAC aircrewmembers obtain an improved flying helmet. For a long time we've had to live with the problem of an ill-fitting, uncomfortable, noisy, helmet. Thunderchief pilots are probably exposed to this problem more than most since they must wear ear cotton due to the adverse physical effects and fatigue associated with the cockpit noise level.

It has become fairly obvious that a custom-fitted helmet for each crewmember is the most satisfactory answer. This is the only approach found so far that will guarantee a comfortable fit with maximum protection and sound attenuation. The recent Air Force Life Support Conference verified this fact. Although they cost a little more, the longer useful life of a custom-fitted helmet more than compensates for the higher initial cost. Pilots who've had them a while report up to five year's wear without problems.

With the Commander, TAC, supporting the helmet-improvement project we're making headway. A test program was approved in June of last year and money is now available. The test helmets will consist of custom-fitted liners inserted into the standard Air Force shell. Pilots at Nellis, Eglin, and Homestead will do TAC's evaluating.

This is a step in the right direction, toward a helmet as personal as your toothbrush or flight boots. Those of you fortunate enough to participate in the test program should be critical and thorough in your evaluation. If it doesn't suit your needs, say so. The test is being conducted for your benefit.

One of the reasons we've been living with an uncomfortable hard hat for so long is that the users didn't complain long or loud enough thru the proper reporting channel ... the Unsatisfactory Report. Keep in mind that TAC's concern is to provide you with equipment that is both comfortable and safe. But you, the user, must help us identify problem areas by prompt, accurate reporting of deficiencies. Hopefully we'll soon have a flying helmet that satisfies our needs.



H. B. SMITH, Colonel, USAF
Chief of Safety

A SMOOTH PATH TO ACM



by Capt John Patrick Dickey
USAF Air Dmstrn Sq
"Thunderbirds"

Those fighter pilots, and there are many, who have flown the Supersabre through a loop, starting at 400 knots and topped out at 120 knots, or made a vertical recovery starting at 150 knots, can appreciate what it takes to make a Thunderbird demonstration.

Flying with the Thunderbirds is not unlike flying fighter maneuvers in the air-to-air environment as aerial combat training includes the full performance envelope of the tactical fighter. So does the Thunderbird demonstration. Both are acid tests of the professional skills of the fighter pilot.

During the course of an aerial demonstration, the Thunderbird pilot will find a number of flight conditions in which only one combination of flight controls is available to prevent loss of control at an unrecoverable altitude.

Aerial combat tacticians know that safe flight through these critical flight conditions is only achieved through experience and intense, closely supervised training. Each year three new pilots join the team. The months of January and February are devoted to their intensive training.

Regardless of the position that the new member flies, his first phase of training is basically close formation practice - hours of hanging on the wing through all flight conditions. This close formation training is probably the most useful method of teach-

ing the accurate flight control applications required to make an aircraft respond correctly through all flight conditions, including adverse yaw.

When the flight leader enters the high-angle-of-attack regime and makes a turn, the wingman must respond with proper flight control applications to maintain the sight picture (formation reference). Should he use the conventional combination of aileron and rudder, he will encounter adverse yaw which will instantly show up in aircraft movement in the opposite direction. The wingman must, therefore, apply the right combination of flight controls, i.e., lots of rudder into the turn, or lose his sight picture and possibly fall out of formation altogether.

Close formation training also teaches the pilot to apply smooth-but-positive control corrections. An example of this is the close formation loop. The loop entry is at high airspeed where aircraft response to control pressure is rapid. Very little stick movement is needed to make a correction.

As G is applied to start the nose up, the wingman must pull exactly with the leader. Otherwise he will drop low and require additional G to regain his sight picture. The resultant excess G force causes the wingman's aircraft to decelerate, and power must be added to catch up.



A SMOOTH PATH TO ACM

Then, as the wingman regains the sight picture, he must relax G or find himself going too high. Furthermore, unless he also reduces power, his aircraft will accelerate ahead of his proper position.

As the formation approaches the top of the loop, airspeed decreases very rapidly and more stick pressure is needed to maintain required G. Also, more stick movement is needed to make pitch corrections. These corrections must be smooth or a high speed stall or "dig-in" will result, causing the wingman to fall out.

Moreover, any lateral movement during the first part of the loop is corrected with conventional application of rudder and aileron. But, as the airspeed decreases to minimum, more rudder and less aileron is needed to make the same correction. Down the backside of the loop, the airspeed increases, and lateral corrections are again made with conventional flight control applications.

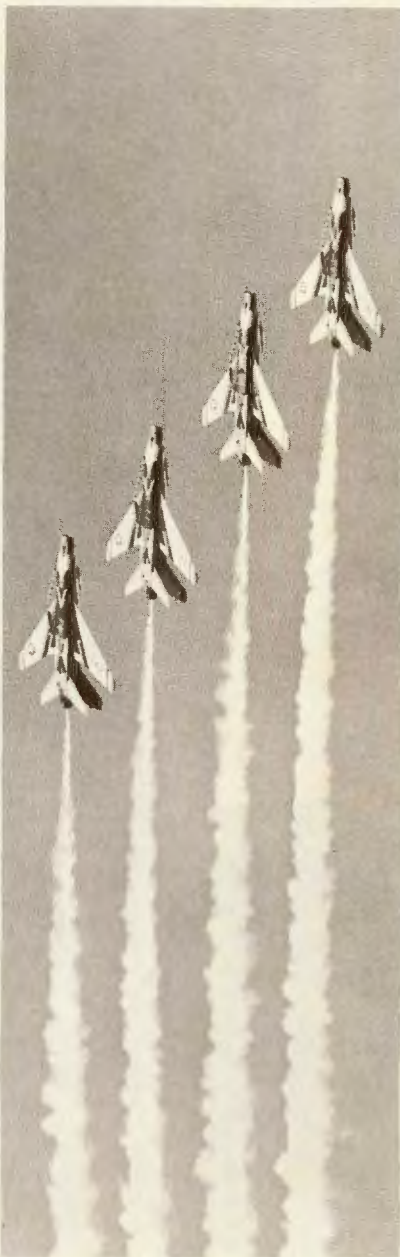
Thus, close formation training is a most useful method of teaching the student instant recognition of those situations bordering on the edge of the maneuvering envelope and the corrections needed to counter them.

Although our close formation practice continues ad infinitum with the new man now flying his position in the six-ship aerial demonstration, we next interject "confidence maneuvers."

Again in two-ship formation, the new man is exposed to a few zooming climbs to well below minimum control speed and under little or no Gs. In these conditions, he quickly learns to appreciate the tremendous stability of the Super-

sabre-or almost any other aircraft in the Air Force inventory for that matter.

He finds that the bird will recover from even zero airspeed without spinning provided he has the confidence to let go of the stick and allow the aircraft to fly itself



out of trouble. Needless to say, excellent rigging and wing slat operation are musts under these conditions.

These first few training sorties, then, are used to show the pilot exactly what the aircraft will do for him if he flies it properly and what will happen if he doesn't. The rest of the training season is devoted to loops and rolls, in many combinations of formations with one leader - Thunderbird One.

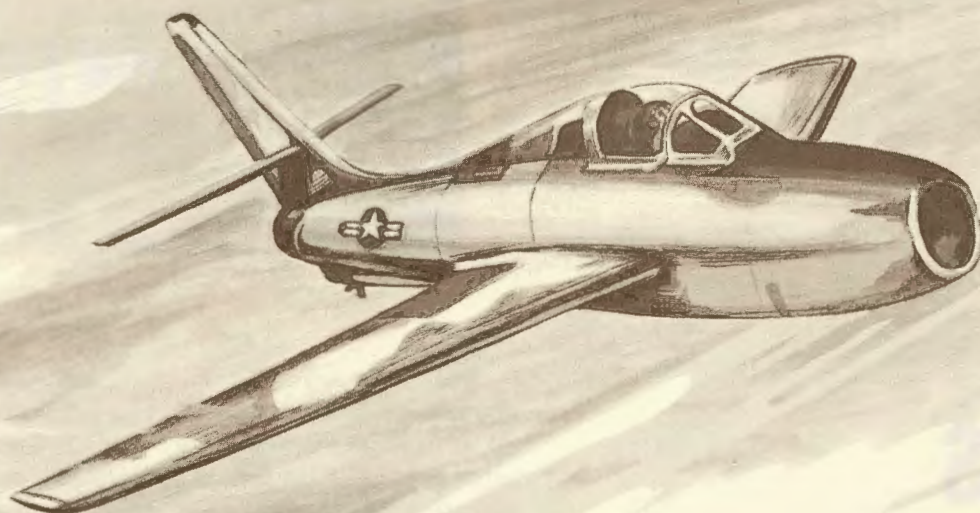
The leader is solely responsible for keeping the Supersabre within its flying limits while performing the many aerial maneuvers over exact ground reference points in a minimum of time. He must be, and is, the absolute master of all the team members. Each man relies solely on lead's judgment to keep from entering a situation from which the aircraft is unable to recover.

The Thunderbird leader is in the business of performing low altitude acrobatics, and the wingmen are carefully training to fly one position and follow only him. Each year a rigid training schedule is established with safety the prime consideration. The new member does not start out flying loops and rolls in close formation, but gradually works toward that goal.

I don't for a moment recommend that every one race out and practice close formation acrobatics in order to learn more about their bird. Fighter squadrons must utilize available flying time to achieve other goals. They cannot devote enough flying time to make formation acrobatic practice completely safe. I do suggest, however, that more close formation drill prior to the practice of basic fighter maneuvers would be a safe approach to aerial combat training.

TACTICAL AIR COMMAND

PILOT OF DISTINCTION



Captain Samuel C. Planck of the 182 Tactical Fighter Group, Peoria, Illinois, has been selected as a Tactical Air Command Pilot of Distinction.

Captain Planck was number four in a flight of four F-84Fs making a wing formation takeoff at Alpena, Michigan. He was positioned on the right wing of the second element. Captain Planck encountered a violent right roll tendency just after takeoff which he was unable to control by using full left aileron. Captain Planck stopped the rolling tendency by applying nearly full left rudder and retracting the landing gear and wing flaps. He jettisoned his external fuel tanks in Thunder Bay while

making a shallow left turn around the airport. Continuing the left turn he climbed to 6000 feet and performed a control check after extending the wing flaps and landing gear. From the high base leg he made a straight-in approach. By using left rudder to stop the roll tendency Captain Planck made a successful landing without further incident. Inspection revealed the left aileron control rod disconnected and locked in the full down position during the takeoff roll.

Captain Planck's demonstration of outstanding airmanship in this critical situation qualified him as a Tactical Air Command Pilot of Distinction.

a 2nd look

nine steps toward eternity

by Maj John M. Lowery



The USAF Aero Club program is a valuable part of our service fringe benefits. This program provides all of us a chance to learn to fly, or in the case of a rated pilot, take the family flying. Sadly, some pilots seem to forget that the same principles of flying and good judgment which apply to our high performance aircraft also apply to the lighter and less complicated aero club birds.

A recent fatality has vividly illustrated how a professionally trained military pilot can make a series of small errors in judgment and lose his life in the process.

This pilot, a member of another service, was a recent graduate from flying school. He joined the aero club and promptly checked out in the club's sporty T-34. He'd flown this airplane in primary flying school and his club instructor said he really knew how to handle it.

On the day after his checkout the new club member, with his wife in the back seat, took off for a visit in the New England area. Although he'd checked the weather he didn't file a flight plan. Since he was departing an uncontrolled field the board assumed he



planned filing his flight plan enroute. This is permissible under club rules. But once in flight he couldn't get the VHF radio to operate. He'd forgotten how to tune the receiver. Mistake number one ... not completely familiar with the aircraft's equipment.

He was overheard to estimate his time enroute at two and a half to three hours, with a 45 knot headwind. Significantly, there was no evidence to indicate the flight had been planned out in advance. Mistake number two.

Next, our pilot found himself cruising on top of an overcast. The VOR helped him navigate, although his wife said that a couple of times they dropped thru a hole in the clouds to check their position. Then they climbed back on top of the overcast. With no radio receiver, no flight plan, and on top of an overcast, the pilot had now made mistake number three.

On nearing destination, the pilot decided to land earlier than planned at a small private airfield "to refuel." He spiraled down through a hole in the clouds, tried to establish radio contact on Unicom (VHF), then finally landed. Though he was on the ground about 20 minutes, for some reason, he did not

refuel. Instead, he called the flight service station at his destination for a weather check.

With a total of four hours fuel on board, he had now logged 3 hours and 45 minutes. Aero club rules for the T-34 require one hours' fuel reserve at destination. Their final destination was 20 to 25 minutes away. Failure to refuel now adds up to mistake number four.

The trip from the small airfield to his destination airport was uneventful except that it was now quite dark. On sighting the runway the pilot was again unable to contact the airport operator on Unicom ... although they could hear him transmitting. Finally, our pilot called "in the blind" to have the runway lights blinked. By this time, according to the airport manager, the pilot's voice was high pitched and quivering.

Soon after, the aircraft was spotted approaching the airfield for a downwind landing, winds 15 to 18 knots. As you'd expect, he passed midfield still 30 feet in the air and "moving fast" according to a witness. Low on fuel, add some panic, a downwind landing, and you have mistake number six.

Seeing he couldn't possibly land, the pilot added power for a go-around. As the aircraft passed the end of the runway it was seen to enter a right climbing turn. At this point the engine quit. The aircraft appeared to stall, fall off the right wing and crash in a nose low, near inverted, attitude. Total flying time indicated on the recording meter was 4.2 hours. Failure to maintain flying speed after the engine quit was mistake number seven.

Investigators found the fuel selector handle in the OFF position. The pilot had flown a different model of the T-34 in flying school. The fuel selector in the club's aircraft operated differently than the model in which he'd trained. The investigators theorized that the pilot accidentally turned the fuel selector to the OFF position while trying to select another fuel tank which still had a little fuel. This was mistake number eight.

He had pointedly briefed his wife to wear her shoulder harness and she was uninjured. But it appears the pilot forgot or neglected to use his own. He was pulled from the wreckage by onlookers with head injuries that the shoulder harness would have prevented. In his rush to depart the small private strip and get to his destination this ninth and final oversight appears to have sealed the pilot's fate.

Had this highly-trained pilot taken corrective action at any one of the nine critical points he may have survived or even prevented this accident. But haste, and a series of thoughtless oversights led him step by step down the path to eternity.



by Major General Charles R. Bond Jr.



COMBAT and SAFETY



Major General Charles R. Bond Jr., now Commander of Twelfth Air Force at Waco, Texas, joined the American Volunteer Group, better known as the "Flying Tigers," in September 1941. Commanded by General Claire Chennault, the group compiled an enviable record against Japanese forces prior to the entry of the United States into World War II. Flying the P-40 Tomahawk from unimproved Chinese and Burmese bases, AVG pilots inflicted heavy damage on the invading Japanese forces.

General Bond was credited with the destruction of nine enemy aircraft in air-to-air combat and was decorated with two Chinese military medals. He returned to Thailand in 1966 (where 25 years earlier he had flown his first combat mission) as Deputy Commander of the Seventh and Thirteenth Air Forces.

Command emphasis, recently highlighted in the TAC ATTACK editorial by General Graham, coupled with the most professional job of flying and aircraft maintenance that I have seen in three wars, have combined to reduce accidents in the combat theater to an all-time low.

My experience was with the "out-of-country" or Thailand-based strike force, where it became abundantly clear that safe flying habits practiced state-side were equally important in the combat zone -- even more so, because the problems were compounded by battle damage, fuel, and weather considerations.

First of all, to understand "out-of-country" operations, let me point out that in Thailand we now have some of the most modern bases ever built. Visitors are continually amazed at the fine facilities. These airfields did not come easy. They took a lot of time and money and the cooperation of the Thai government.

Never in my career have I been more impressed with the need for good maintenance... safe maintenance. Maintenance people there are responding with Herculean efforts. I can cite no better tribute than that of one of the wings which flew seven months in combat without an accident. Their flying commitments were very high -- as much as 1600 hours and even 1800 hours in one fighter squadron in one month. A fighter utilization rate of approximately 74 hours per month per aircraft was maintained during much of 1966 and 1967. This kind of effort can easily degenerate into a sloppy, careless operation unless tight safety discipline and continuous command attention to safety are made the way of life.

In our efforts to reduce the operational hazards to a minimum, we developed certain practices which are not common to USAF operations in other parts of the world.

To respond quickly and efficiently to the many variables inherent in recovering a strike force there -- such as battle damage, fuel shortages, weather, runway conditions -- we kept the ground radar and TACC controllers closely attuned to the overall situation so that they were able to direct tankers, furnish weather information and other help to mission commanders as rapidly as needed.

The compelling need to keep runways open dictated that the runway recovery teams and equipment be maintained in peak condition, and that up-to-the-minute plans be efficiently executed. A 30-minute time limit for clearing runways was established as a basic criterion.

In spite of the pressure for "turnarounds," we learned not to overfly suitable airdromes on recovery from strikes when weather, fuel, or battle damage was a factor in safe return. The veteran pilot quickly learned to make it the safe way rather than press ahead to sleep in his own bed that night.

In the expansion program of the Thai bases, we reaped unexpected benefits from one unplanned occurrence. At this particular base, the runway was extended some 4000 feet, after the barrier had been installed. We then had a midfield barrier. We found that this midfield barrier gave aircrews an added feeling of confidence. They knew they had the capability of engaging a barrier in case of aborted take-offs heavily loaded with bombs and fuel. In the case of blown tires where loss of directional control can easily occur, the midfield barrier can be a lifesaver. It furnished a more acceptable solution to the F-4s which, in some emergencies, were forced into approach-end engagements. Many battle-damaged aircraft were saved by this third barrier.

The monsoon season presented problems which do not occur in CONUS operations. Operating off extremely wet and flat runways, where water easily pooled, several "loss-of-control" accidents and incidents occurred. This situation was corrected to a considerable extent by cutting grooves crosswise in the runways. These grooves furnished much better traction by accelerating water runoff.

Unquestionably the greatest factor in our safety picture was the mature leadership with which we were fortunately blessed. Our wing, squadron, and flight commanders were outstanding in this respect. Many of these officers have grown up in an atmosphere where safety is truly paramount with a commander. The close supervision which they furnished reflected the acute safety awareness which any modern commander must have. There was no doubt that TAC and other CONUS commands were sending us their best.

That these men were successful is self-evident when you consider that the Air Force attained a near all-time low accident rate last year despite the "natural" hazards of Southeast Asian operations.

The utmost in supervision, from top to bottom, in instilling each ground and aircrew member with the need for good safety practices is unquestionably necessary not only in Southeast Asia but anywhere we fly. It is a must!

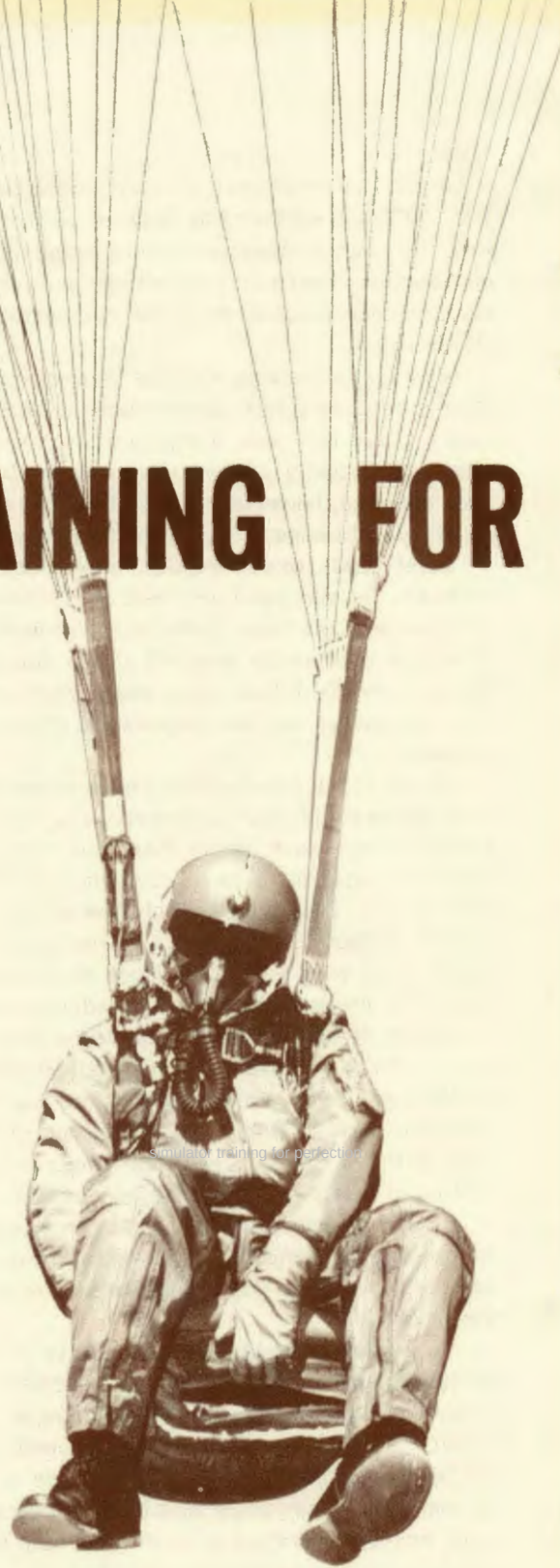
SIMULATOR TRAINING FOR

The 140th TFG can show you how!

by Lt Col Robert C. Cherry
140th TFG, Colo. ANG

Occasionally the TAC Safety Staff runs upon a unit that has some facet of its safety program so unique that it bears telling to the entire command. The 140th Tactical Fighter Group at the Buckley ANG Base, Colorado, falls into this category.

With their part-time fighter pilots working full time at civilian jobs (prior to recall) this unit felt that every minute of their training or active duty time should be put to good use. Many of us complain about simulator training. But the Colorado Guard has not only recognized its value, it has gone to great lengths to see that every phase of flight - except gunnery of course - is simulated. This includes not only the obvious, start, taxi, takeoff, instrument departure, inflight emergency procedures and such, but ejection seat training, ground escape, parachute training, survival kit operation and the details of using every item of personal equipment. They refer to their program as Simulator/Safety Training. The following article was extracted from a letter written by Lt Colonel Cherry, Commander of the 140th, to Brig General Spruance of the Delaware ANG describing the 140th's simulator safety program.



Manually forcing the zipper open to deploy the survival kit

In 1959 the Colorado ANG switched from F-86Ls to F-100C aircraft. There were no F-100C simulators available at the time, so the Simulator Section converted an F-86L simulator to the F-100C configuration. The simulator's local call sign is ZILCH 13, but the pilots refer to it as 01' ZILCH.

PERFECTION

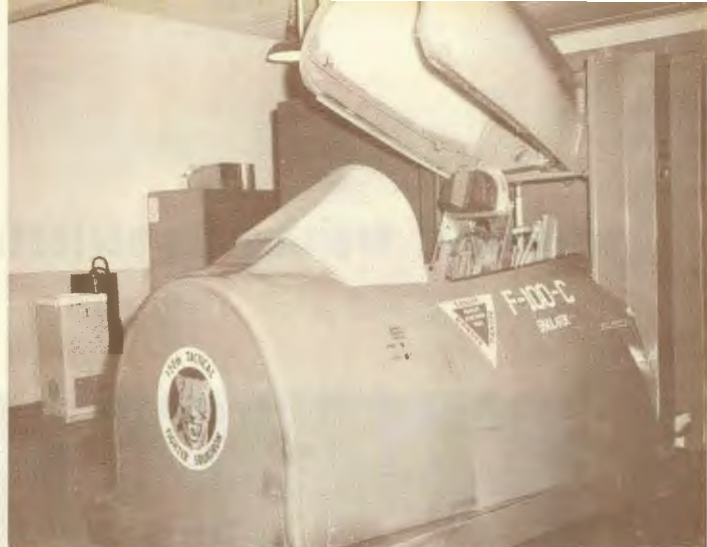
Aircrews must actually be a part of the entire simulator safety program. When a pilot arrives for simulator training he must never be turned away. If it is already busy he should be requested to assist, monitor the mission or perform an IP check of the pilot involved. This is equally effective for second lieutenants and unit commanders. If the simulator is down for maintenance, then ejection seat training, survival kit review, rescue procedures or many other areas can be covered. Example: How many pilots have practiced MANUALLY deploying a survival kit when the raft fails to inflate?

Movies and lectures may be the easiest way to conduct meetings but are the least desirable. Aircrews must see and handle the items being discussed. Ideas and opinions should be solicited - again, making the pilot a part of the program, not a passive recipient. All ideas should be checked out and incorporated into the program whenever possible.

Local modifications and innovations should be encouraged. This may require a Depot Representative who can receive, evaluate and answer requests without delay. Awaiting published TCTOs and Kits can ruin the program. A "Go" or "No Go" with simple instructions for local modification will work wonders and you'll be surprised at the stimulation of interest.

Our pilots actually visit the simulator section just to see what's new. And we try very hard to add something each month. Most additions of course are the results of pilot suggestions - once more, part of the program.

TAC ATTACK



FLIGHT SIMULATOR EJECTION SEAT: This seat is located inside the cockpit. It has been modified (See arrows) with microswitches to indicate to the instructor when 1) the Zero Delay Lanyard is connected to the Parachute D-Ring, 2) when the Oxygen Bottle is activated, 3) when the pilot's head is in the headrest, 4) when the pilot's feet are in the stirrups, and when the Ejection Seat Safety Pin is installed. Original equipment that indicates when Handgrips are raised and Triggers squeezed is also used in training.

CONTINUED

simulator training for perfection



This locally fabricated Ejection Seat Trainer is used to demonstrate the seat and its components to pilots, base rescue personnel, city firemen, city and state police. This mobile unit can be transported easily to any location. Pilots find it convenient for practicing emergency ground escape from the F-100C cockpit. Best escape time to date is 4 seconds.



Pilots practice low, medium, and high altitude ejections until procedures are smooth. The trainer is also used to demonstrate proper ejection seat preflight procedures. F-100F passengers use the trainer for familiarization.



The proper position of the body and knowledge of equipment plays an important part in ejections. 140th Tactical Pilots also practice one-handed ejections where it is necessary to keep feet on rudders and one hand on control stick in order to maintain control of aircraft.



Several fatalities have been attributed to pilots not squeezing the triggers after the handgrips were raised and the canopy jettisoned. During the past years many articles have been published about the handgrip and trigger arrangement. It is the consensus among pilots of the 140th that a working knowledge of the ejection seat and repeated ejection practice is well worth the effort.

This is what happens when the life raft deploys in the cockpit. The pilot is suddenly raised approximately six inches; pilot's leg is forced off the left rudder; and the control stick is forced forward. This test was performed at Buckley ANG Base in the simulator and in an F-100C aircraft.



Base firemen receive instructions during Pilot Rescue Course. Each rescue member is required to demonstrate a functional knowledge of pilot personal equipment, the ejection seat and the aircraft cockpit and canopy.



This unit is used to increase pilot proficiency in locating and releasing the Parachute Canopy Releases while actually being dragged.



All of the equipment that would be worn by the pilot and firemen is used in this simulated Pilot Emergency Evacuation. Shown here, Base Firemen getting a pilot ready for emergency evacuation from the simulator cockpit.

The 140th TFG has left no stone unturned in their drive toward professionalism. Their example is well worth following.

Ed.

F-111 CREW MODULE EJECT

A SUCCESS STORY . . . told by Lt C

Colonel Brown and I were scheduled to fly on a M-61 gun firing test mission. Colonel Brown, as the aircraft commander, performed the flight briefing. The main objective of our mission was to perform a series of live air-to-ground strafing passes on the Edwards AFB gunnery range.

Aircraft preflight, taxi, takeoff, and range entry were routine. To get the feel of things we made several dry (nonfiring) passes on the strafe panel targets while waiting for the chase aircraft to arrive and photograph the actual gun firing.

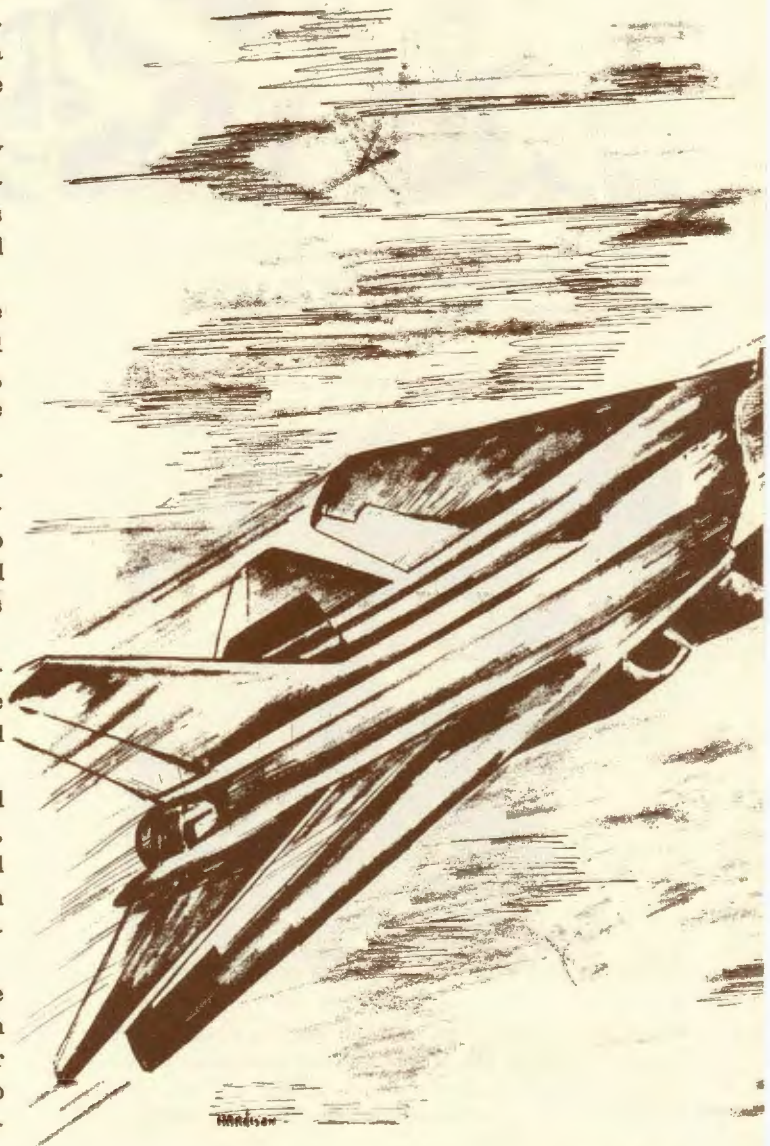
After the chase aircraft arrived we started the live firing passes. We completed five successful passes with no problem. On the sixth pass, however, the gun rotated, processing rounds through the system, but failed to fire.

The chase plane moved in and checked our aircraft. Everything looked normal so we continued flying in the test area. About five minutes later two rounds of ammo cooked off. We turned back toward the range and shortly thereafter three more rounds cooked off.

The chase aircraft reported that smoke was coming from the gun bay area. While we turned over the range a large quantity of ammo cooked off. It sounded almost like "popping" popcorn.

About this time several caution lights illuminated including yaw, pitch, and roll dampers and yaw, pitch, and roll channel amplifiers. The aircraft pitched and rolled violently to the right. Both of us had to get on the controls in order to roll the wings level and establish a climb.

The chase plane reported that fire and smoke were now coming from the gun bay area. Colonel Brown radioed Chase that we were gaining altitude in order to eject. During that radio call the ammo continued to cook off in large quantities. By this time approxi-



EJECTION

Colonel Joe B. Jordan



mately 60 percent of the caution lights were illuminated.

When the control stick froze at about 6000 feet Colonel Brown called that we were ejecting.

I pulled the ejection handle. The crew restraint harness tightened and locked automatically, then the crew module separated from the aircraft. It pitched up at about four to five Gs, then rolled violently to the right several times before the main parachute deployed. The opening shock was mild, and accompanied by two or three jerks prior to the module stabilizing in a level descent. Throughout the ejection sequence I could see small pieces of aircraft flying around outside. Then the crew module filled with smoke.

While descending we opened both canopy hatches in an effort to clear the smoke from the cockpit. Our descent was pleasant, with only a very mild parachute oscillation.

Prior to ground impact we closed both canopy hatches and fastened our oxygen masks. The crew module hit the ground right side first, bounced into the air, completed a 360 degree roll, turned 90 degrees and came to rest upright. Since we had a 25 knot surface wind the ground impact could only be described as severe. Even so, we weren't injured other than a few minor bruises.

Later on we found that the pyrotechnics to the stabilization chute and the flotation and self-righting bags were burned so much that they all failed to actuate during the ejection. The stabilization chute failure partially accounts for our wild ride during initial crew module separation. The most important fact of the entire ejection is that all the essential items of equipment functioned automatically and performed as advertised.

CHOCK TALK

soap opera

The S.O.A.P. program, saving pilots and aircraft by predicting imminent engine failure, needs some soap-box preaching to oil-sample-takers. An F-100 pilot just managed to reach home base after loss of engine oil pressure during his seventh pass on the gunnery range. The engine shop troops ran a series of engine checks. Each run brought lower oil pressure, until it finally reached one psi. When they disassembled the oil tank outlet line they discovered a blocked oil tank outlet port. Several hours later the right combination of shakes produced the brown phenolic cap of an oil sample bottle.

It was anybody's guess as to how long the cap had taken to work around the baffles and reach the outlet port. To remove future guess work surrounding who brought the pilot and airplane to the brink, the unit established some good corrective action and proposals:

- *Positive control of oil sample bottles with a signature for each issue.

- *Oil filler neck screen be installed to exclude foreign objects.

- *Remove and inspect the oil tank each 200 hour engine inspection.

T-39 flight controls

A recent investigation in another command revealed some rather startling facts concerning the maintenance of the T-39 flight control system. In short, they were not being maintained properly. The reason ... lack of thoroughness by maintenance types plus an overall low level of experience on the part of the airmen assigned.

The mechanics, it seems, failed to use all the technical data available during rigging operations. Though wooden blocks were called for in the T.O.s to hold the flaps in the correct position during rigging work, they were not being used.

The experience level of the younger airmen was so low that they were found unable to perform such simple tasks as inserting rig pins in certain bell-cranks, inspecting bungees, checking a cable tension, or performing operational checks.

... incidents and incidentals with a maintenance slant.

Allied to this situation was an overall lack of proper equipment. Only one organization was found to have adequate push-pull scales for measuring friction and stick forces. Some units did not have rig pins; another was using soft brass pins obviously unsuited for rigging.

Maintenance personnel were found not using wing riser and bubble protractors to establish the wing reference angle before attempting to rig ailerons and flaps. NONE of the command T-39s had ever had any of the lower aileron cables checked. Short cuts were found to be producing out of rig flaps thus causing the aircraft to have a rolling tendency with flaps up or down.

This is a good example of what can happen to our support birds. Since they are not first line aircraft we tend to give them second priority. Yet the most important people in the command use them.

Many units have one or two of these great little airplanes flying almost continuously. If your organization has one perhaps a close check by your Quality Control inspectors is in order.

ring finger

It was early morning. The weather was low hanging fog. The mechanic had just finished the cockpit preflight. But as he stepped down the ladder he slipped. The next thing he knew he was hanging in mid-air. When he finally broke loose he found his ring finger pulled completely away from the palm socket. In fact, a later examination showed the finger tendon had been pulled away from the point where it joins the elbow. Similar incidents have happened at almost every one of our TAC bases. The hazards involved in the wearing of rings while working on aircraft and ground equipment are too numerous to list. So, mechanics AND crewmembers, don't wear rings while engaged in aircraft operations or maintenance. Jewelry is for adornment ... don't allow it to become a harmful weapon.

From: Maintenance Memos
Hq ATC

Tire Neglect Tragedies

Would you handle TNT as casually as an old tire? Some people have. Of course they don't talk much about it. They're gone. Would you handle an old tire like TNT? A lot of people do. They can tell you about it because they've been around for quite a while.

An inflated tire contains inherent energy which can generate a force as destructive as TNT. The two following stories show how easy it is to trigger a compressed air explosion with tires.

A tire was to be replaced on a century series fighter wheel. The wheel arrived at the tire shop at the end of the duty day so it was placed on an assembly bench to be the first order of business for the following day.

The next morning, the shop supervisor directed an airman to "change the tire laying on the assembly bench." The airman started the dismantling process by cutting the safety wires. When he had removed three-fourths of the bolts, the rims snapped open like a clam shell. The escaping pressure shot the wheel toward the ceiling and knocked the airman to the floor. An unidentified object struck his head causing concussion and laceration above an eye.

His mistake? He had assumed the valve core had been removed. It was SOP that wheels delivered to the shop would not be accepted unless the tires were deflated. It is doubtful that this airman would have dismantled a gun without first checking to see if it was loaded.

An NCO, while on annual leave, was helping a relative landscape a residential construction site. The job called for using a road grader, which they had rented from a construction firm. It was loaded aboard a flatbed truck.

On the way to the site, they stopped to have the grader serviced. The NCO, believing one of the tires to be low on pressure, climbed aboard the flatbed and applied a pressure hose, gaging the tire pressure by eye-balling the slowly rising tread.

He over-pressured the tire. The rim was blown from the wheel with such force that the NCO was thrown bodily from the truck. As he neared the ground, his head struck a concrete block wall, but



the resulting concussion was only one of his fatal injuries. The flying rim had broken the sergeant's arm, fractured his jaw, and lacerated his neck from ear to ear.

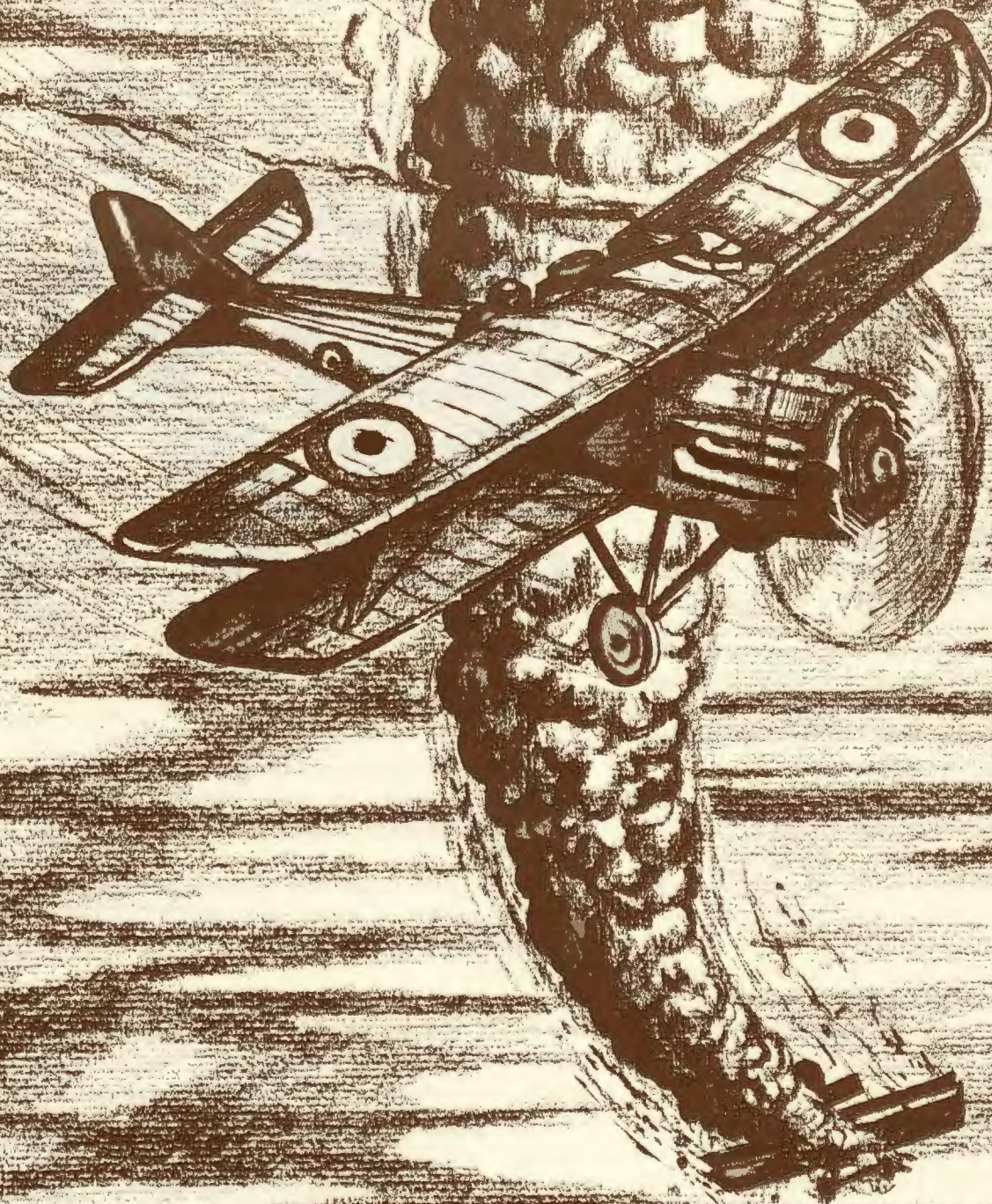
The NCO's mistake was guessing at the proper pressure instead of determining the manufacturer's recommended pressure and checking it with an accurate gage.

In these two examples, one tire was large, one was small. One was high pressure, one was low. Both led to disaster. The explanation is simple. Total energy is a combination of pressure and volume.

When handling a wheel mounted tire, think of it as TNT. It's a realistic comparison. An exploding tire on a fighter's main gear can create a force comparable to at least two hand grenades. And an exploding C-130 main gear tire can generate a force equal to about a half pound of TNT, or several grenades.

The next time you change a tire, take a second look... it may be loaded!

THE S.E. 5



The S. E. 5 had V-8 power.

That's not startling in the light of present-day power plant standards, but it was revolutionary in World War I. The advanced design ideas incorporated in the new Hispano-Suiza aircraft engine opened the door to mass production of engines. Higher horsepower output with reduced weight, fuel carburetion and engine throttling, improved reliability and reduced silhouette, all greatly impressed the British. So, they designed a new pursuit plane around the 150 hp Hispano-Suiza V-8 ... the S.E.5.

At noon on 20 November 1916 the then-secret S.E.5 prototype was ready for final acceptance inspection. By 2130 hours the same day it was stamped "approved." The S.E.5 made its first flight on the morning of 22 November 1916, about five months from the drawing board stage.

The early S.E.5s mounted a Vickers machine gun left-of-center on the fuselage. The breech extended into the cockpit under an over-size celluloid windscreen for pilot access to the cocking handle. A Constantinesco C.C. synchronizing system kept the wooden prop from "stub" status ... most of the time. The Aldis telescopic sight provided precision gun sighting.

The S.E.5 added firepower with an upper-wing Lewis gun covering about 90 degrees of arc from horizontal to near-vertical. Firing straight-up, the drum-loaded Lewis gun backed down and aft on its Foster mount to a "lap gun" position in the cockpit. The Lewis' ring-and-bead sight allowed quick target sighting and range estimation.

Several hundred pounds heavier than the Sopwith Camel and Nieuport, the Hispano-Suiza powered S.E.5 climbed slower, but held its own in straight and level flight up to 10,000 feet. Its structural strength allowed it to excel in a dive. Its gun mounts were also superior. Early pilot worry about combat vulnerability of the water-cooled Hispano-Suiza didn't prove to be a problem significantly greater than rotary engine combat damage.

Flight testing was important then as now. The S.E.5 test pilot wrote, "Lateral control insufficient, especially poor at low speeds ... almost uncontrollable below 70 mph in gusts." He concluded, "Time

for complete turn of 360 degrees, 12 seconds. Length of run to unstick, 95 yards; to pull up, engine stopped, 105 yards." His recommendations on aileron control resulted in a higher gearing of ailerons. And if you hadn't noticed, that S.E.5 rate of turn is a fancy 30 degrees per second.

When the production models arrived at the front, pilots found that the oversize windscreen interfered with forward visibility and created excessive drag. Sharp edges on the "greenhouse" threatened a pilot's face and upper body in a crash landing. Realizing that the designers had lost touch with combat needs, the squadron commander grounded his birds and replaced the windscreen with a smaller one made of Triplex glass. They also added a head fairing behind the cockpit. Now battlefield modified, the S.E.5 entered combat a safer and faster fighter.

As is often the case, an accident and investigation made the S.E.5 a better airplane and structural giant of its day. The number two prototype broke up in midair on a test run. Witnesses stated that the interplane wing struts collapsed on one side. Unable to find an actual cause the investigators theorized that either the prop disintegrated and sliced thru the wing strut or a wheel driving the gun synchronizer gear broke loose, shattering the strut.

Not satisfied with the "undetermined" cause factor, a persistent investigator searched until he found the suspected fragments and pieced them together. He proved they weren't the real causes. Eyewitness accounts convinced him that the lower wing failed in downward torsion. On his urging the lower wing was opened on number one prototype. They found signs of incipient failure in the compression rib between front and rear spars. Any failure of the compression rib allowed the wing struts to pull out. Beefed-up compression ribs and wing strut attachments solved the problem. Following its modification the S.E.5 gained a reputation for ruggedness and ability to absorb punishment in World War I combat flying.

And importantly, an accident investigator who refused to accept "undetermined" as an accident cause made the S.E.5 an important part of the Allied aerial victory.

TAC TIPS



SPECIAL VFR...A CHANGE

Effective 30 April 1968 special VFR operations of fixed wing aircraft will be banned in the control zones of 33 major civil airports. Formerly under special VFR rules you could fly in a control zone anytime the weather was low as one mile visibility and you were able to remain clear of clouds.

Under the new FAA regulation certain airports must have VFR minimums or the pilot must fly under Instrument Flight Rules. Normal VFR requirements in a control zone are, 3 miles visibility and be able to maintain 2000 feet horizontal, 1000 feet vertical above, and 500 feet beneath, all clouds.

Special VFR operations will still be permitted in control zones of other airports served by radar capable control towers. However, landing and takeoff priorities will be given to IFR traffic. If no radar is available special VFR will be approved only when no IFR traffic is flying.

Airports where special VFR will be prohibited are:

1. Atlanta, Ga. (Atlanta Airport)
2. Baltimore, Md. (Friendship)
3. Boston, Mass. (Logan)
4. Buffalo, N. Y. (Greater Buffalo)
5. Chicago, Ill. (O'Hare)
6. Cleveland, Ohio (Cleveland-Hopkins)
7. Columbus, Ohio (Columbus Municipal)
8. Covington, Ky. (Greater Cincinnati)
9. Dallas, Tex. (Love Field)
10. Denver, Colo. (Stapleton Municipal)
11. Detroit, Mich. (Wayne County)
12. Honolulu, Hawaii (Honolulu Int.)
13. Houston, Tex. (William P. Hobby)
14. Indianapolis, Ind. (Weir-Cook)
15. Kansas City, Mo. (Kansas City Muni.)
16. Los Angeles, Calif. (L. A. Int.)
17. Louisville, Ky. (Standiford Field)
18. Memphis, Tenn. (Metropolitan)
19. Miami, Fla. (Miami Int.)
20. Minneapolis, Minn. (Minn.-St. Paul)
21. Newark, N. J. (Newark Airport)
22. New York, N. Y. (John F. Kennedy)
23. New York (La Guardia)
24. New Orleans, La. (Moisant Field)
25. Oakland, Calif. (Metro. Oakland)
26. Philadelphia, Pa. (Philadelphia Int.)
27. Pittsburgh, Pa. (Greater Pittsburgh)
28. Portland, Ore. (Portland Int.)
29. San Francisco, Calif. (San Francisco Int.)
30. Seattle, Wash. (Seattle-Tacoma)
31. St Louis, Mo. (Lambert-St. Louis)
32. Tampa, Fla. (Tampa Int.)
33. Washington, D. C. (Wash. National)

All airports located within the control zones of these hub airports are affected by the rule prohibiting special VFR.

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

NEW RULES GOVERNING VFR FLIGHT between 10,000 and 14,000 feet MSL started on March 16. On that date, VFR operations in this range will be prohibited unless pilots have at least five miles visibility and can remain at least 1,000 feet vertically and one mile horizontally from cloud formations. These weather minimums are already in effect for VFR flight above 14,500 feet.

The previous minimums for VFR flight below 14,500 feet were 1,000 feet above clouds, 500 feet below, and 1,000 feet horizontally.



F-4 FLAT MODE SPIN

On 7 September 1967 the F-4 spin evaluation program was brought to an abrupt halt with the loss of the spin evaluation bird at Patuxent River.

The intended spin was to be a 'normal upright spin to the right. The aircraft was stalled at 44,000 feet and after 17 seconds when the 'pro-right'

spin controls had produced nothing, the pilot attempted to terminate the maneuver by neutralizing controls. The aircraft yawed to the left once, and without further warning entered a steady-state flat spin to the left. Aerodynamic recovery controls were ineffective. The aircraft drag chute was deployed at 31,000 feet but only streamed. At approximately 28,000 feet the 30-foot "spin" chute was deployed. It also streamed. Then the 16-foot drag chute failed to separate as designed upon deploying the spin chute. The pilot cycled the controls rapidly in an effort to inflate the spin chute. But this only served to increase the rate of rotation (up to 120 degrees/second). Finally, at 10,000 feet the pilot ejected using the lower handle. Thirty-three turns after initial spin entry the aircraft stopped abruptly in the Maryland marshes.

The Accident Board found the primary cause, "failure of the spin recovery chute to inflate due to design deficiency."

Also quoted from the conclusions ... "A flat spin mode exists in the F-4 airplane. The exact entry conditions that produce this mode (vice a steep oscillatory mode) are not known and recovery using only airplane control surfaces and drag chute is apparently impossible."

This last statement is not quite as grim as it may sound. The chances for entering the flat spin are remote. However, we do not know why the airplane (on only two known occasions) has chosen to go "flat" instead of "steep oscillatory."

From CROSSFEED, Nov 1967

Since this was written an Air Force F-4D has been lost due to a flat mode spin. The board found that the aircraft commander stalled the aircraft while attempting to avoid another aircraft.

Ed.

TACTICAL AIR COMMAND UNIT ACHIEVEMENT AWARD



117 Tactical Reconnaissance Gp, Birmingham MAP, Ala.

128 Air Refueling Group, Gen Mitchell ANG Base, Milwaukee, Wis.

363 Combat Support Group, Shaw AFB, S. C.

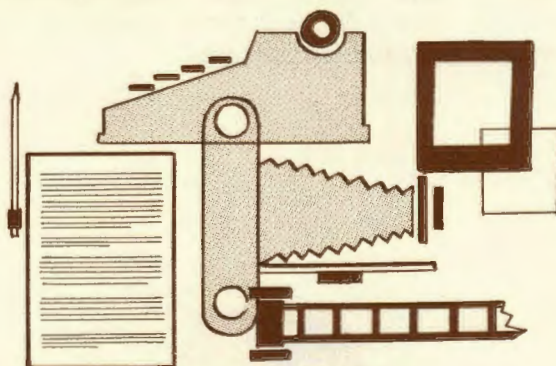
481 Tactical Fighter Sq, Cannon AFB, N. M.

4409 Support Sq, MacDill AFB, Fla.

4415 Combat Crew Training Sq, Shaw AFB, S. C.

4531 Tactical Fighter Wg, Homestead AFB, Fla.

WANTED...



why not write an article !

TAC ATTACK is looking for people who have something to say. You don't have to be a Hemmingway. We can help with the mechanics of writing. But do you have a message that you think could help the TAC mission ... perhaps make it safer?

Some good examples can be found in the March issue of TAC ATTACK. There you'll find an article by Major Edward Sutton from McConnell AFB. On page 14 you'll find an outstanding article by an F-4 backseater, 1/Lt William Riemer from Seymour Johnson AFB. Back in August SSgt Frank P. Nollet, from Nellis, provided an excellent input on personal equipment. We would like articles on maintenance,

flying, diving, skiing, shooting -- anything you care to try. If it doesn't fit in with our needs we'll tell you how to change it or let you try again. So sit down and write. LET US PUT YOU IN PRINT.

attention photographers !

Do you have photos that you feel should be in print? We are looking for outstanding photos to use in TAC ATTACK. If you are an amateur or even a professional AF photographer and would like to see some of your photos published, send them in and let us have a look..

Your photograph may even appear on the magazine cover. All photos used will be accompanied by the photographer's credit line. ➤



1969



1968



1967



1966



1965



progress report

In a February 1965 memorandum to all heads of executive departments and agencies President Johnson stated, "I have initiated today Mission Safety 70 - a new, practical safety effort designed to reduce Federal work injuries and costs, year by year, until a total 30 percent reduction is achieved by 1970."

The "how-goes-it" line graphs on the following pages picture TAC's progress in the eight Safety 70 categories in relation to the "goal-line." The Federal Safety Council established 1963 accident experience as the base year for all Federal departments to put them on the same start marker. Goal figures for end 1970 are 70 percent of TAC's 1963 accident rates.

On the positive side, in 1965 TAC's major aircraft accident trend line dropped below the goal line and continued showing progress since then. In flight safety we've got the momentum and the 7.2 rate by 1970 is within TAC's reach.

TAC's combined major and minor aircraft accident rate dropped sharply in 1964 thru 1966, with a slight upturn in 1967. Again, we've established a pattern of aircraft accident reduction and the goal figure of a 10.1 rate in 1970 is attainable.

Accidents in USAF motor vehicles are in line with Safety 70 goal figures. Civilian injuries and military injuries are slightly above desired end-1967 figures. Greater concern for on-the-job safety on the part of each individual in TAC, military and civilian, can bring the red trend lines below 1970 goal figures this year ... and keep them there.

Our most serious Safety 70 problem centers on the privately-owned-vehicle. We're farthest off target figures in three categories influenced directly or indirectly by automobile and two-wheeler accidents. The POV Injury and POV Fatality trend lines represent car and cycle mishaps exclusively. The third category, Total Fatalities, includes all of TAC's accidental deaths, but it's heavily weighted by motor vehicle deaths ... over two-thirds of its total number. The three major killers continue as causes in TAC's accidents, driving under the influence, excessive speed, and fatigue.

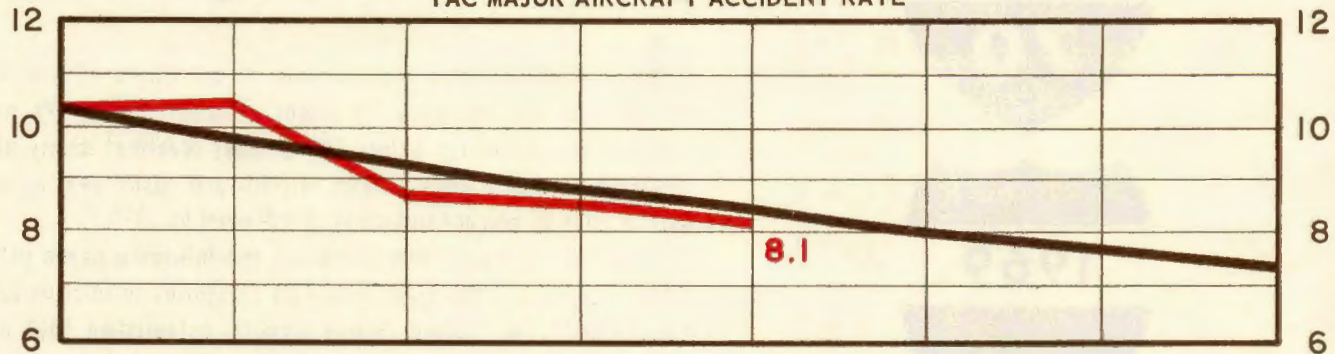
In the flying game we've learned from past errors. We now set time limits from bottle to throttle, set standards for flight maneuvers from takeoff to landing, and require adequate crew rest before flight coupled with max hours in a cockpit.

Unfortunately, we can't say the same about drivers and driving - because it's mainly a matter of individual discipline. It's also a matter of common sense and self preservation. Each driver in TAC must set his own sensible driving rules ... and keep them.

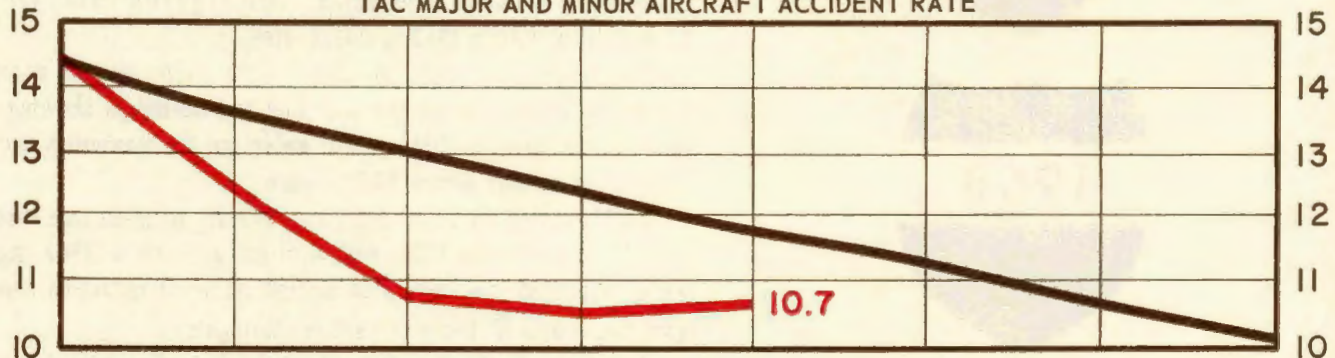


MISSION PROGRESS

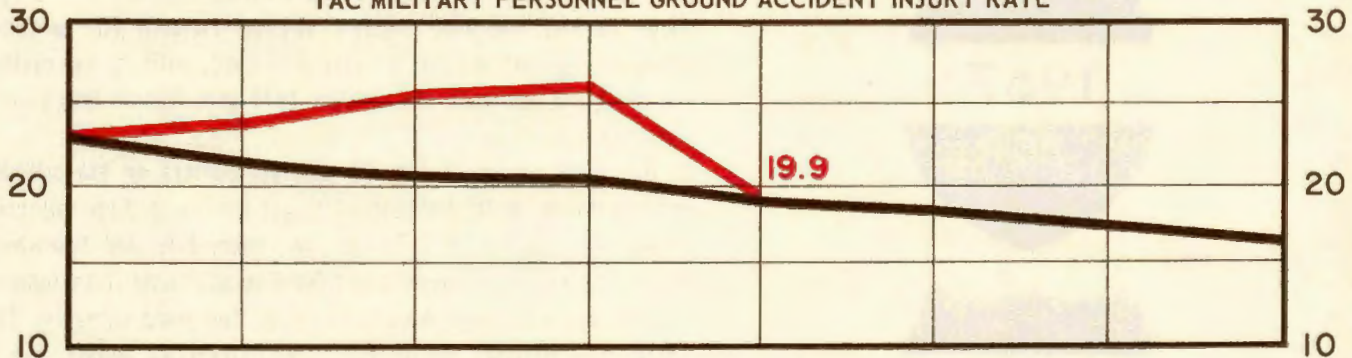
TAC MAJOR AIRCRAFT ACCIDENT RATE



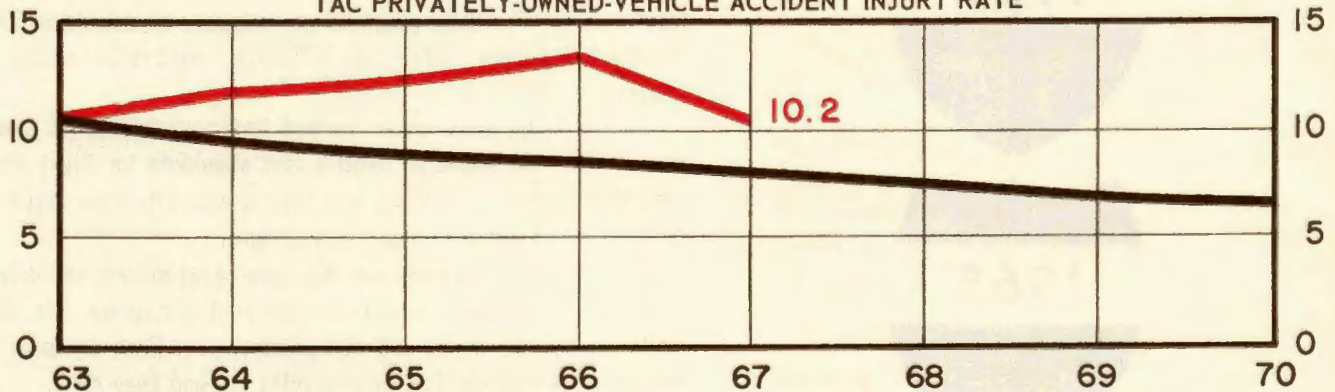
TAC MAJOR AND MINOR AIRCRAFT ACCIDENT RATE



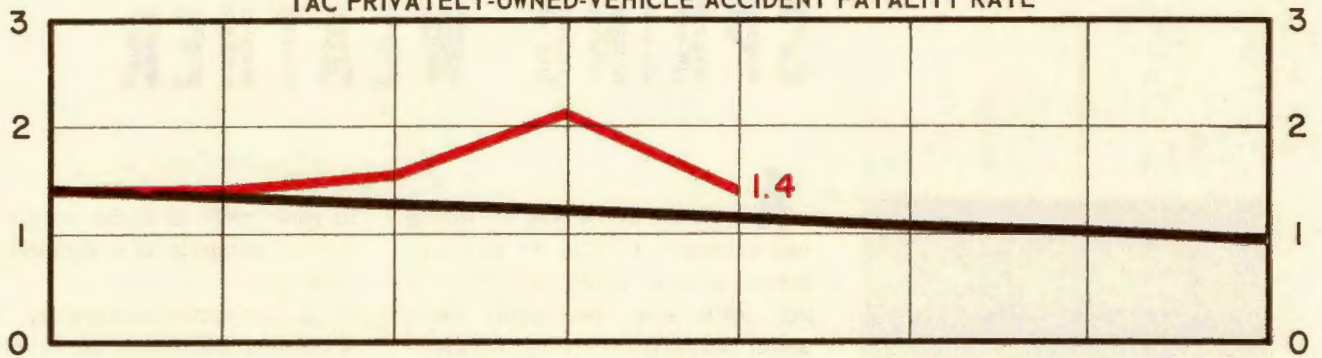
TAC MILITARY PERSONNEL GROUND ACCIDENT INJURY RATE



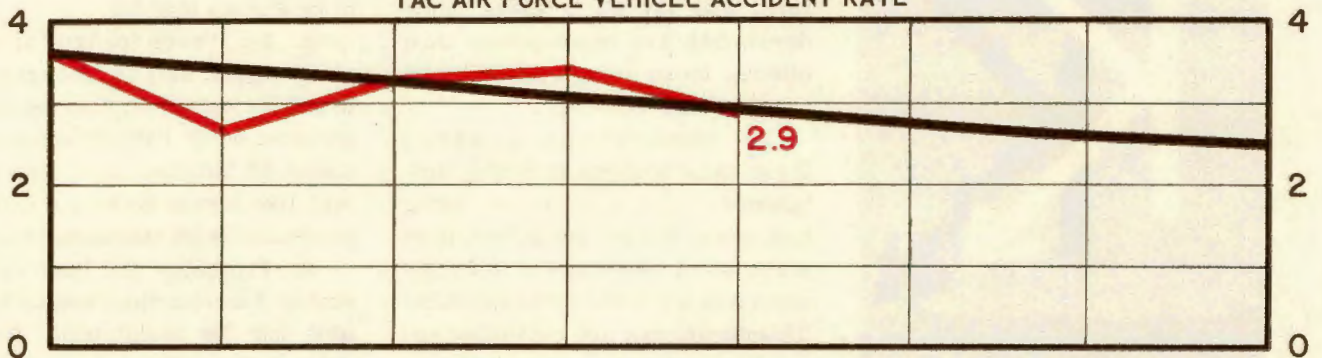
TAC PRIVATELY-OWNED-VEHICLE ACCIDENT INJURY RATE



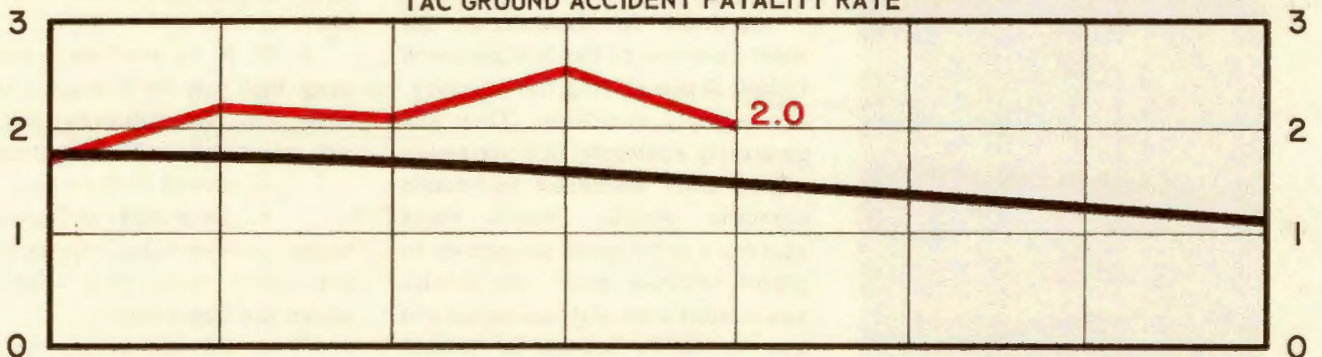
TAC PRIVATELY-OWNED-VEHICLE ACCIDENT FATALITY RATE



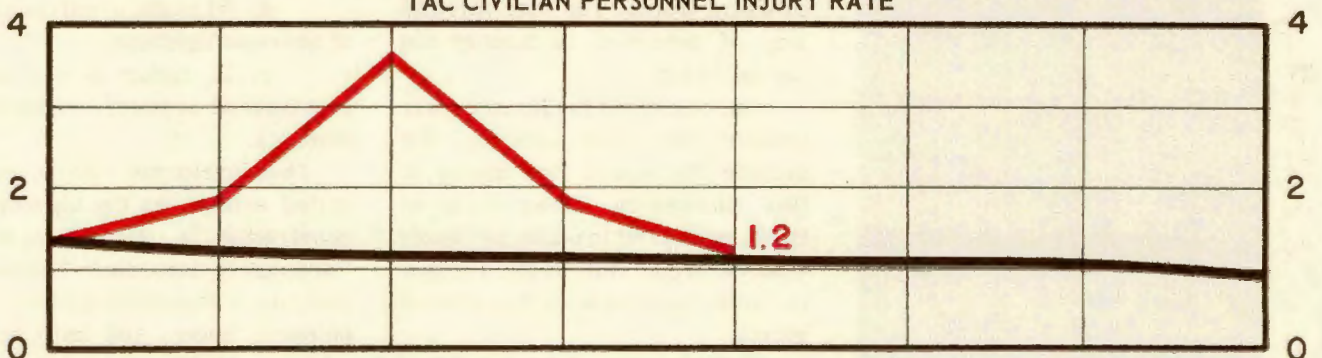
TAC AIR FORCE VEHICLE ACCIDENT RATE



TAC GROUND ACCIDENT FATALITY RATE



TAC CIVILIAN PERSONNEL INJURY RATE



SPRING WEATHER

As winter gives way to spring and summer, we find the thunderstorm season returning. First of all, let's state two basic facts about thunderstorms: (1) All thunderstorms have the same structure, and (2) while some thunderstorms are more severe than others, there is no such thing as a mild thunderstorm.

All thunderstorms present three main hazards to flight: turbulence, icing, and hail, all being bad news. Every thunderstorm at some point and stage of development has all three in the extreme. Thunderstorms are classified according to the meteorological conditions under which they occur.

Airmass thunderstorms, the most common to the Southeastern United States during the summer, are usually avoidable. They are generally scattered and are associated with scattered to broken cumulus clouds. Warm front storms can be most dangerous to pilots because they are usually associated with IFR conditions and are normally hidden by multi-layered stratiform clouds typical of warm fronts. The only reliable way of detection is through the use of radar.

The cold front thunderstorm is usually the most severe. We include the squall line storm in this discussion. They form in lines, scattered to solid, and move with the front. Hail at the surface is quite common with this type of storm.

Realizing the necessity of flying when a thunderstorm may be

in your route of flight, we present the following list of suggested procedures:

1. In circumnavigating, keep a 10-mile clearance on the downwind side. Hail has been known to be thrown that far.

2. Fly "over the top" if possible. Again, stay far enough away to avoid ejected hail. Unintentional penetration of hail columns have occurred because anvil tops look just like cirrus decks not usually associated with thunderstorms.

3. Fly below the base of the storm if terrain clearance of 3,000 feet can be maintained. Strong down drafts under a thunderstorm make this much clearance advisable.

4. If it is absolutely necessary that you fly through a thunderstorm, the following policies are recommended for penetration:

- a. Avoid dark areas.
- b. Penetrate at high altitudes, provided that the cloud does not tower more than 5,000 feet above the flight level.
- c. Do not penetrate near the freezing level.
- d. At night, avoid the areas of heaviest lightning.
- e. If radar is available, penetrate at areas of weakest echo strength.

Thunderstorms can be penetrated safely, but the big word in penetrating a thunderstorm is "absolutely necessary." Know the hazards of thunderstorms -- turbulence, icing, and hail in the extreme. Need we say more?



by SSgt C. L. Bryant
Det 25, 24 WS
Maxwell AFB Safety Bulletin
March 1968

MAINTENANCE MAN OF THE MONTH

Staff Sergeant Charles Passante of the 62nd Tactical Airlift Squadron, Sewart Air Force Base, Tennessee, has been selected to receive the TAC Maintenance Man Safety Award. Sergeant Passante will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



SSgt Charles Passante



SSgt Richard L. Rees

CREW CHIEF OF THE MONTH

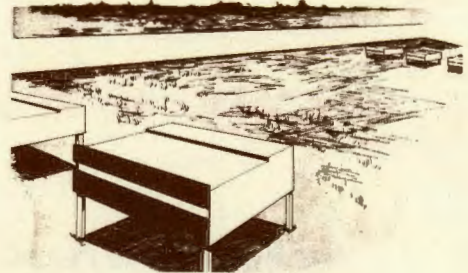
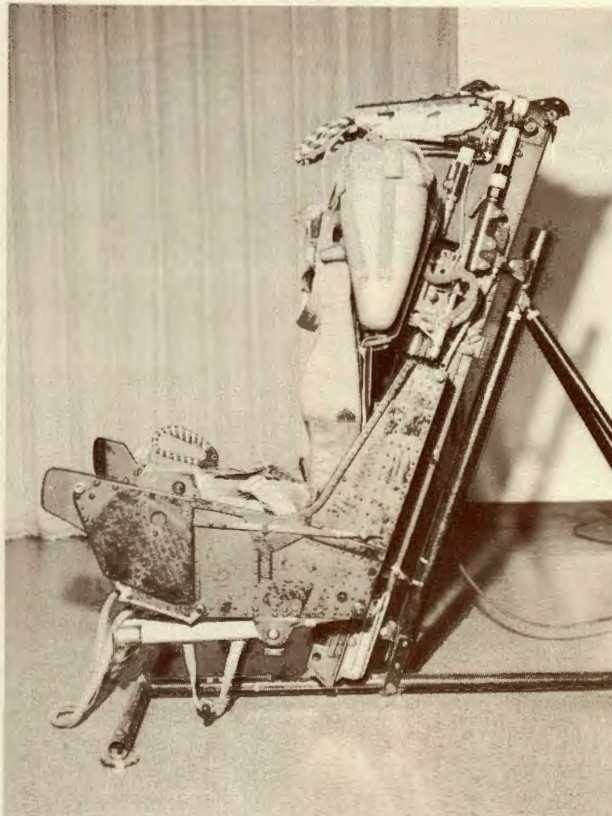
Staff Sergeant Richard L. Rees of the 47th Tactical Airlift Squadron, Forbes Air Force Base, Kansas, has been selected to receive the TAC Crew Chief Safety Award. Sergeant Rees will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



LETTERS ...to the editor

McDonnell Douglas Corp has pointed out an error in our Martin-Baker Seat article, Jan 68. Seems we illustrated the MK-DQ7 seat which is used in some NATO F-104s. Shown below is the correct photo of the H-7 Martin-Baker seat used in the F-4.

Ed



ATC has advised that our TAC Tip item (Jan 68) on their non-standard VASI lights at T-38 bases has an error. The non-standard VASI is NOT turned off when a transient aircraft is landing. The VASI remains on as long as there is student flying.

Ed

Death is nature's way of telling you to slow down!

PEANUTS

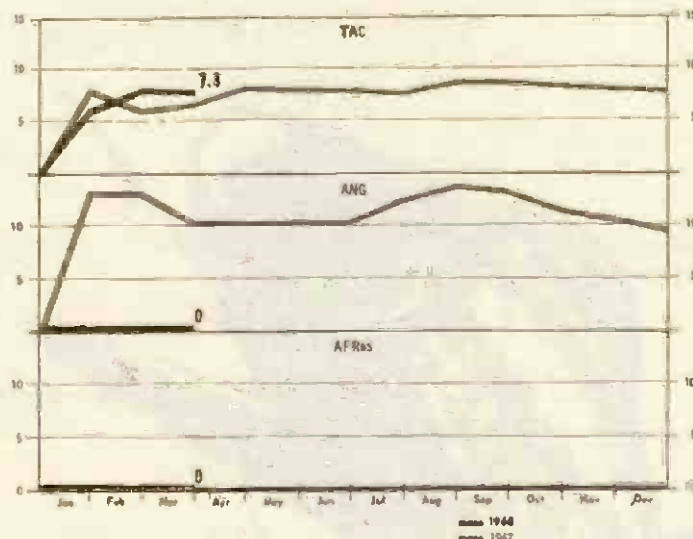
Courtesy of Daily Press, Newport News, Va.
© United Feature Syndicate, Inc. 1966



TAC TALLY

MAJOR AIRCRAFT ACCIDENT RATES as of 31 MARCH 1968

MAJOR AIRCRAFT ACCIDENT RATE COMPARISON



UNITS

	1968	1967		1968	1967
9 AF	9.2	6.7	12 AF	6.7	6.7
4 TFW	11.4	0	23 TFW	8.7	11.9
15 TFW	16.9	21.4	27 TFW	0	21.8
33 TFW	27.6	15.0	140 TFW	0	17.9
113 TFW	42.0	0	474 TFW	78.2	0
354 TFW	0	0	479 TFW	19.9	0
4531 TFW	21.6*	0	67 TRW	0	0
363 TRW	0	20.2	75 TRW	0	0
64 TAW	0	0	123 TRW	0	0
316 TAW	0	0	313 TAW	0	0
317 TAW	0	0	516 TAW	0	0
464 TAW	0	0	4453 CCTW	8.6	0
4442 CCTW	0	0	4510 CCTW	0	8.1
			4520 CCTW	0	0
			4525 FWW	0	52.8

* H-21 Accident

SPECIAL UNITS

1 ACW	0	0	4500 ABW	0	0
4410 CCTW	12.8	5.9	4440 ADG	0	0
4409 SUP SQ	0	0	4416 TSQ	0	0

TAC ATTACK

AIRCRAFT			1968	1967
TYPE	TAC	ANG		
A-1	27.5	0		
RB-36	0	0	24.9	0
F/RF-84	0	0	0	14.4
F-86	0	0	0	8.0
F-100	6.7	0	13.4	18.5
RF-101	0	0	72.0	17.4
F-105	8.5	0	15.1	0
F/RF-4	11.9	0	9.5	0
F-111	83.0	0	0	0
C-47	0	0	0	0
RC-97	0	0	0	0
C-119 (AFR)	0	0	0	0
C-123	19.0	0	0	0
C-130	0	0	0	0
T-29	0	0	0	0
T-33	8.1	0	0	0
T-39	0	0	0	0
O-1	0	0	0	0

* ESTIMATED FLYING HOURS

**2nd most violated
FAA Reg**

BUZZING !



HARDISON