

# TAC ATTACK

Tac Attack

Aug 1968

AUGUST 1968



TRAINING & DISCIPLINE  
...page 3



for efficient tactical air power

# TAC ATTACK

JULY 1968

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# TRAINING AND AIR DISCIPLINE...



by Capt M. A. McPeak  
Lead Solo  
USAF Thunderbirds

## key to maximum performance

**A**ny fighter pilot worth his flight pay can do low altitude acrobatics...with practice. But if he attempts to fly upside down at skip bomb altitude, then the important consideration is his success rate. The Thunderbirds demonstrate sustained inverted flight literally a thousand times a year, at 100 or more

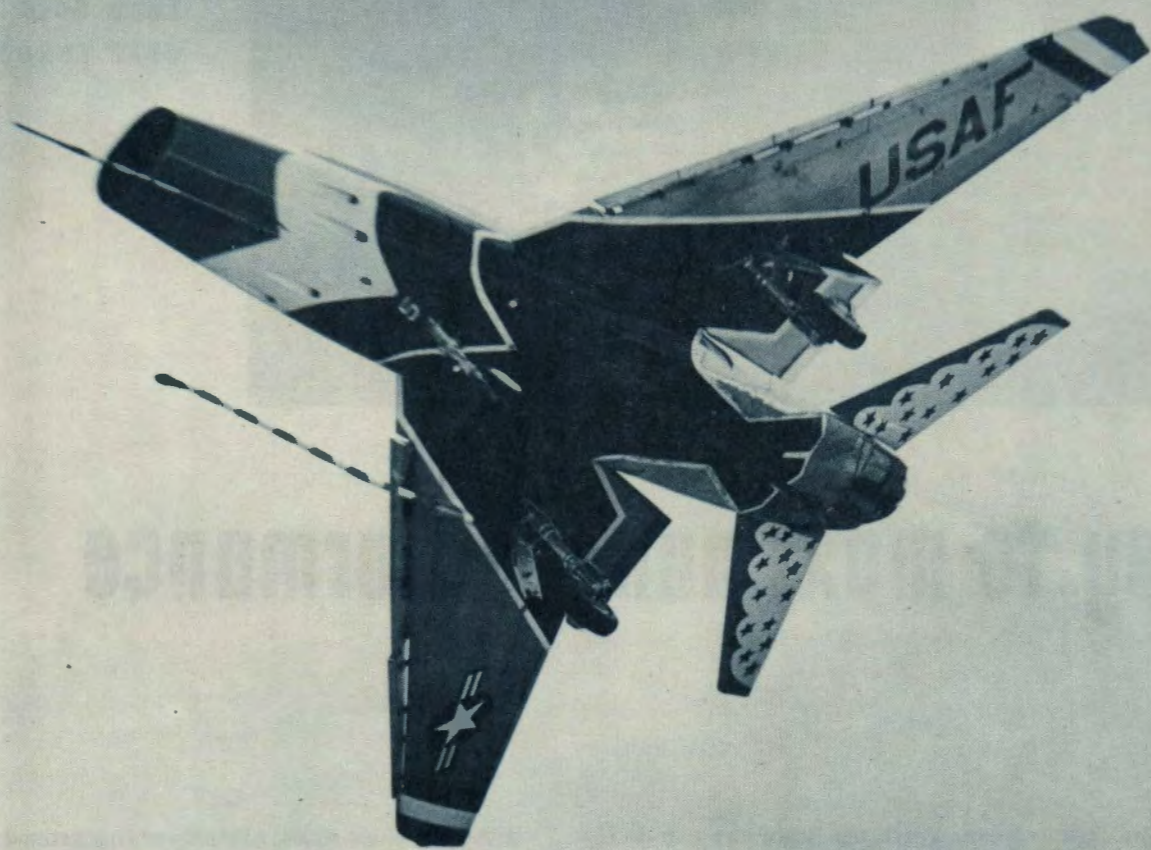
different show sites, around varying ground obstacles and with show site elevations ranging from sea level at Langley to about 6500 feet at the Air Force Academy. And, of course, the only acceptable success rate is 100 percent.

Thunderbirds Five and Six are the solo pilots,

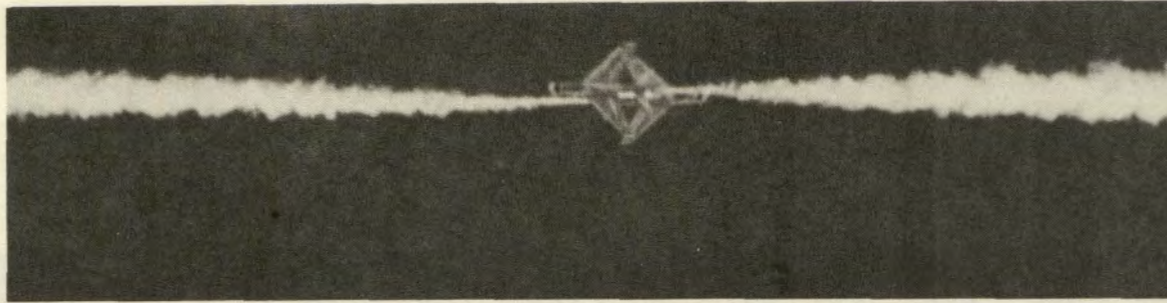
Photos by Robert L. Lawson



# TRAINING AND AIR DISCIPLINE







number Five being the lead solo, and number Six the second solo. While the pilots of the "Diamond" formation demonstrate the beauty and grace of precision formation acrobatics, the solos are in the maximum performance business, flying upside down, doing maximum deflection rolls, or demonstrating low speed handling characteristics, all with minimum terrain clearance. During a routine airshow, the solo pilots make five head-on opposing passes with a programmed closure rate of 850 knots and a miss distance of 25 feet.

To the uninitiated, these and other solo maneuvers seem to be hair-raising "stunts" reminiscent of the old barn-storming days. The truth is that the traditional military concepts of training and discipline are the building blocks of our airshow. How this is so, can be understood by examining some of the "inner workings" of the operation.

#### TRAINING

The Diamond pilots, lead, left wing, right wing, and slot, fly one position for their entire two-year tour with the team. However, a solo pilot spends his first year as solo wingman and then one year as solo leader. When he graduates to lead solo, number Five trains his new number Six. This is an ideal progression, since the year spent as number Six provides the best possible preparation for solo leadership and for the execution of some of the more difficult maneuvers performed by the lead solo singly.

Initially, the new solo pilot learns to fly precision formation. During the first few training sorties, he does very little on his own. This is important because number Six spends quite a lot of time on the wing. During the Calypso Pass for instance he flies a normal wing position on the lead solo who is inverted. Moreover, the solos fly the outside wing positions for six-ship acrobatics. The outside of a six-ship roll or loop is not very comfortable if you can't formate. In addition, as Capt Jack Dickey, our slot pilot, pointed out in the May issue, we feel that formation training

is ideal preparation for maximum performance flying.

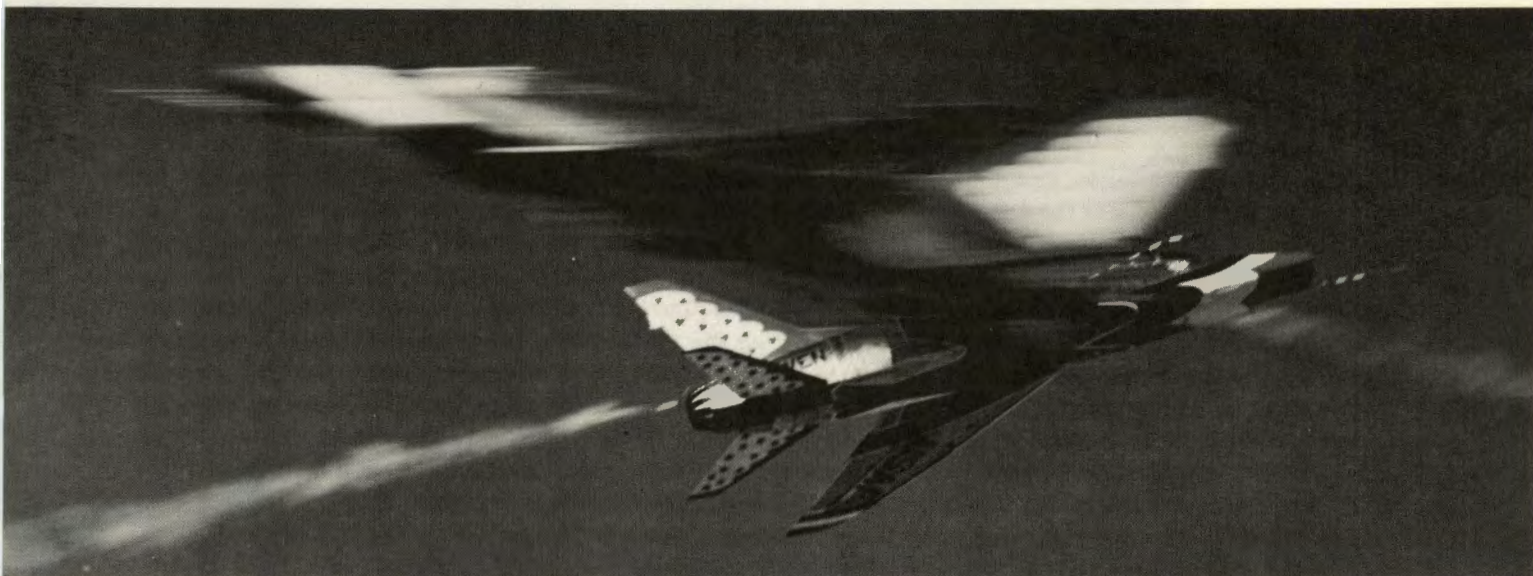
So, at the outset we emphasize formation proficiency and take relatively short breaks for solo work. During the breaks, number Six will start learning the more simple maneuvers, such as the slow roll or inverted flight. He learns to do these maneuvers at altitudes well above show height while being chased by the solo leader, who calls each maneuver. As his formation proficiency increases, more time can be devoted to solo maneuvers and terrain clearance. These can gradually be decreased, and the more difficult maneuvers, such as the roll on takeoff, point rolls and over-the-top maneuvers can be introduced. Only after the second solo has demonstrated mastery of these maneuvers do the solos begin to fly them head-on. Even then the lead solo pilot calls all the shots. The second solo tries to match the altitude and nose rotation rates of the leader for each maneuver. Thus the training process is phased from the relatively easy to the more difficult. Each phase is mastered before the next step is taken.

Equally as important, we train hard. The solos normally fly twice a day during the training season. The missions last one hour, and there isn't much droning around turning cold air into hot. Although we do only one set of opposed aileron rolls in the airshow, we may spend days doing one set after another up and down our training area. "Train hard, fight easy." It's usually a relief to wind up training and hit the road. Flying official airshows then takes care of most of our training requirement.

During the training period we develop the habit patterns that are used throughout the show season. The importance of developing correct habit patterns cannot be overemphasized. From engine start to shut down we strive to make each Thunderbird performance identical. All radio calls are broadcast in the same way every time. After start checks are made in the same order, every time. Even certain "jokes" are



## TRAINING AND AIR DISCIPLINE



Opposing maneuvers are flown at closure rates of 850 knots, with a 25 foot miss distance.

Solo pilots perform the calypso pass. Lead solo flies inverted at idle power to reduce demand on standard 1.6 gallon inverted flight fuel tank. Wingman uses partial speed brake so that some power is available to maneuver.





cracked, every time in the same way. They get a little corny but if they weren't said it would affect the rhythm of show, disrupt the habit pattern or possibly counteract consistent performance. And consistent performance is the name of the game. No matter what the elevation of the show site, or how bad the show line, or who is watching, proper habit patterns protect us from fatal mistakes. It's often the unplanned, unpracticed maneuver that gets a jock into trouble.

#### AIR DISCIPLINE

Training insures that each man knows what is required of him and how to accomplish it. Air discipline is based on a grim determination to do the job properly. Pretty close is not close enough. Solo pilots, for instance, never approach a show with the attitude, "Today, I'm really going to show them how low I can fly inverted." We try to show everyone the same inverted pass we were trained to make. We don't get any points for frightening ourselves or the spectators, so we strive to do the maneuvers as programmed. We are required to enter and exit the show maneuvers at some minimum safe altitude; we shoot for that and no lower.

Discipline permeates all of our ground and air operations...even those not directly involving the airshow. For instance, on flights between show sites we cruise in "Thunderbird Spread" formation. In spread, the wingmen move from three-foot wing over-lap out to wing-tip clearance where they can

help navigate and visually clear the flight. Wing-tip clearance is then held throughout cruising flight. In other words, the fact that no one is watching is not allowed to breed sloppy work.

Air discipline means that we try to fly every maneuver in every airshow perfectly. So far as I know, none of us has ever succeeded. Perfection is an elusive thing. But the airshow is spectacular and crowd-pleasing and safe because of this disciplined approach.

#### CONCLUSION

These ideas about the worth of

training and air discipline are based on the contributions made by over fifty pretty good fighter pilots who have flown with the team over the last fifteen years. Each year the accumulated knowledge and tradition is passed on to the new team members, making it possible for us to operate the way we do. Indeed, these concepts are endorsed by successful military organizations everywhere, and the fact that they form the cornerstone of the Thunderbird operation should not surprise the old, and still bold, TAC fighter pilot. ➤

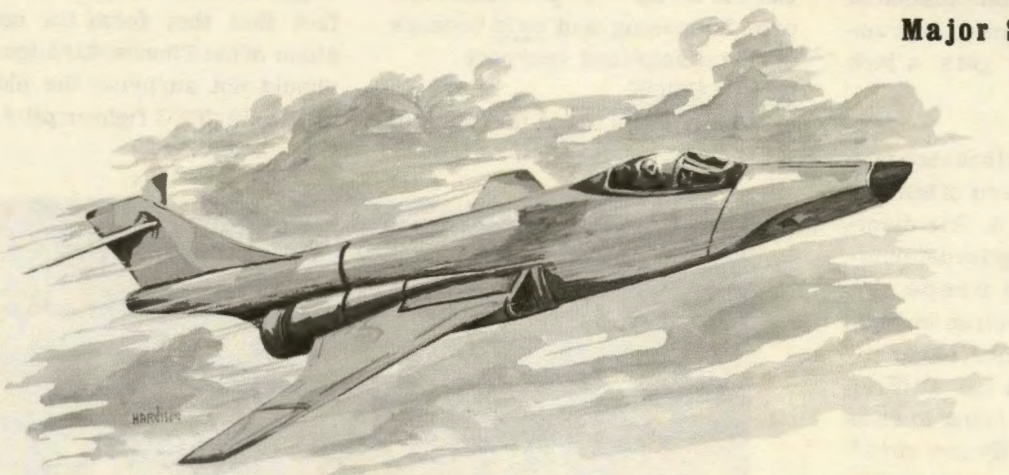




# PILOT OF DISTINCTION



**Major S. L. Sisco**



Major Sanford L. Sisco of the 29th Reconnaissance Squadron, Shaw Air Force Base, South Carolina, has been selected as a Tactical Air Command Pilot of Distinction.

Major Sisco was flying a functional check flight in a RF-101A. Immediately after takeoff, he heard a muffled explosion. The camera compartment overhead light illuminated and the aft camera compartment temperature gauge began rising rapidly.

Checklist emergency procedures failed to control the temperature. In less than three minutes, the gauge indicated 150 degrees and smoke entered the cockpit. Realizing the gravity of the situation, Major Sisco selected 100 percent oxygen, completed the emergency checklist, and declared an emergency.

He quickly maneuvered the heavy aircraft into a modified landing pattern at a required final approach speed in excess of 200 knots. Despite smoke in the cockpit, he skillfully landed without tire or brake damage.

Later investigation revealed the hot air shut-off valve controlling air from the 16th stage of the engine compressor had failed. The intense heat had severely damaged the aircraft wiring and charred several structural members.

Major Sisco's professional airmanship undoubtedly prevented loss of the aircraft. His calm and superior approach to flying qualifies him as a Tactical Air Command Pilot of Distinction.





# The F-111A crew escape module

by Grover C. Tate  
General Dynamics



COL HENRY BROWN (STANDING RIGHT) AND LT COL JOE JORDAN (LEFT) WERE THE FIRST TAC PILOTS TO SUCCESSFULLY USE THE F-111 CREW ESCAPE MODULE.

**A**n article describing the F-111 crew escape module concluded, "When all of this becomes reality, and when everything works as advertised, crewmembers will have a more reliable, safe escape system with their own bird's nest on the ground." (USAF AEROSPACE SAFETY, June 1964.)

Since that article appeared, F-111s have accumulated more than 9000 flying hours and during that time the escape module has been used four times. The reasons and conditions were different on each flight, but in each case the module did perform "as advertised" and the crewmembers escaped without injury.

These four successful module ejections demonstrate that the escape systems of high performance aircraft are now matching the flight envelopes of the aircraft. A scant 15 years ago, 93 percent of all airborne escapes were over-the-side bailouts. By 1964, only eight percent were over-the-side jumps and the more exotic ejection systems were in the majority.

The crew capsules of the B-58 and the B-70 were the next major advances in the art of aerial escape. However, these did not provide static escape. In addition, the added weight of the individual capsules imposed an undesirable penalty.

The F-111 crew escape module is the newest approach to the crew survival problem and has now been successfully demonstrated.

During design of the module an attempt was made to consider all aspects of the escape and survival

situation. First, the performance envelope of the module had to be as good as that of the aircraft. This meant that it had to have an operational envelope from zero speed, zero altitude, through supersonic at sea level and up to 2.5 mach at altitudes above 60,000 feet.

The load factors imposed upon crewmembers under any of these conditions had to be within human tolerance. The module had to be stable when separated from the aircraft under all operational conditions.

It was necessary that the module have its own oxygen and pressurization systems and that it afford crewmembers protection from windblast and cold. The shock of landing normally, or under adverse conditions, had to be attenuated. Provisions for post-landing survival had to be made.

A major culprit in post-ejection fatalities has been water landings. The F-111 escape module was designed to float and as a backup, in case of module damage, flotation bags were added. Locating aids and survival equipment were also required.

The F-111 module met the design challenges and is now an integrated portion of the forward fuselage, including the pressurized cockpit and a portion of the wing-glove, so that the normal environment of the cockpit is retained in the module. Thus, the module serves as both an operational cockpit and as an escape vehicle in an emergency.

Either crewmember can initiate ejection by





squeezing and pulling a handle located on each side of the center console. Pulling the handle will fire an initiator that will sequentially retract powered inertia reels and ignite the 47,500-pound-thrust rocket motor. As rocket motor pressure builds up, two other initiators are fired by the pressure.

The first of these two additional initiators detonates an explosive train resulting in actuation of emergency oxygen and pressurization systems, chaff dispenser, and crew module severance systems.

The severance systems ensure complete detachment of crew module-to-airplane splice plates by disconnecting or cutting of all controls, tubing, and wiring. This disconnecting of the module-to-aircraft splice plates is achieved by an explosive formed in an inverted "V" cross section and sheathed in a thin metal cover. It is made up in exact lengths for use in the severance system and is called a Flexible Linear-Shaped Charge (FLSC). This charge is shaped to the form of the particular skin or cover that is to be cut. Shielded mild-detonating-cord detonates the shaped charge and initiates cutting action of the severance system.

Separation following severance is achieved by the rocket motor. The motor has a design thrust of 47,500 pounds with a total burning time of .67 seconds. Rocket thrust propels the crew module to a height of approximately 450 feet at zero airspeed, zero altitude, providing safe on-the-deck recovery. Crew module severance is accomplished almost simul-

taneously with rocket motor firing, although the rocket is actually fired first.

The rocket motor has a dual thrust capability: normal, or reduced. The reduced thrust mode is used above 380 knots to avoid excessive G forces on crewmembers. Thrust reduction is achieved by actuation of a Q-sensing selector, normally dormant until separation is initiated. It then fires a mild-detonating-cord train (at 380 knots) to detonate a shaped charge which severs the lower ring forging of the rocket nozzle housing. This allows a nozzle insert and extension to be ejected. The resulting increase in exhaust flow area will shift the motor operating pressure to a lower value resulting in reduced thrust and extended operating time.

After separation the forward portion of the aircraft wing glove, which remains a part of the module, acts as a stabilizer until the recovery parachute is deployed and supporting the module. This stabilization glove contains one of the module's self-righting bags, two flotation bags, and a stabilization chute. Pitch flaps in the under surface of the glove assist in horizontal stability.

The stabilization-brake chute is ejected aft from a compartment on the top side of the glove. It is timed to deploy .15 seconds after rocket motor ignition and is fully effective at time of separation. This brake chute is a ribbon type with a six-foot flat diameter.

A seventy-foot flat diameter recovery parachute



is housed in a container between the seat bulkhead and aft pressure bulkhead. Two bridle lines attach the parachute to the crew module. Recovery action is initiated by the rocket motor through a pressure-actuated initiator. A Q-actuated selector monitors aircraft speed. It selects an appropriate time delay to assure module deceleration to a safe parachute deployment speed prior to actuating a barostat delay. The barostat delay prevents parachute deployment above 15,000 feet.

A manual override is provided and may be actuated at the crewmembers discretion. Upon reaching 15,000 feet the barostat bellows is compressed enough to release the firing pins that fire a catapult which forcibly deploys the recovery parachute. The parachute is deployed in a reefed configuration. A line cutter dereefs the parachute after line stretch is reached. Once the catapult fires, an explosive-operated pin retractor releases a repositioning cable, and the crew module assumes correct touch-down attitude.

After the recovery parachute has been deployed, another train of events causes nitrogen bottle valves to be opened. These inflate a landing attenuation bag. Differential pressure between ambient (outside) air and nitrogen within the bag is automatically maintained to prevent possible bag rupture during descent from high altitude.

If the crew module lands in water after ejection, a crewmember can pull the flotation handle. This will cause the flotation and self-righting bags to inflate. If the module is still attached to a ditched aircraft, pulling the flotation handle will cause crew module separation without activating the rocket. In addition, the emergency oxygen bottles will be activated. Should both crewmembers be incapacitated and the airplane is submerged to a depth of between

ten and twenty feet, an underwater severance initiator will perform all of the same functions and float the crew module to the surface in an upright position.

The crew module is water tight and will float without additional aids. The aft flotation bags simply afford additional buoyance. Another flotation bag on the nose of the module can be inflated. Changing pin positions at the foot of the control stick will convert the stick into a bilge pump or an air pump for the flotation bags.

Search and rescue aids consist of a chaff dispenser that can be armed or disarmed prior to ejection, an AN/URT-21 radio beacon, and an AN/URC-10 radio. In addition, the module has a portable distress beacon that produces a powerful flashing light.

Standard survival equipment includes a .38 pistol, snake bite kit, first aid kits, gill net, fishing kit, ski socks, ski goggles, wire saw, lensatic compass, shark repellent, snare, ammo, knife, soap, minirad rate meter, moccasins, mosquito net, drinking water, life preservers, water container, survival manual, sleeping bags, file, SRU 18/P multi-purpose survival tool, rations, foil, and ponchos. This equipment can be changed to fit the potential environmental needs of the theatre in which the aircraft is flying.

Although it sounds as if all of the surprises of a Chinese New Year's celebration have been built into the F-111 crew escape module, she still behaves like a lady. Squeeze and pull a handle and the cockpit severs from the aircraft. It is propelled clear, stabilizes, slows down, and is gently lowered by a recovery parachute. The module can touch down on land or sea, and provides all survival tools necessary for its occupants.

The gap between aircraft performance and crew escape systems has been successfully bridged. ➤





# TAC TIPS

## emergency braking the F-4 (not noted in the dash one)

On landing rollout the brakes checked good, but near the turnoff, the pilot found they were ineffective. He pulled the emergency brake handle, noting no braking improvement. The Phantom stopped five feet short of the overrun.

The pilot did not deactivate the antiskid system, believing that the emergency system would override it. He was wrong!

Early model Phantoms will not respond to emergency braking if normal utility pressure exists. And if utility pressure is good but braking bad, antiskid is probably the culprit. So before normal or emergency braking can be effective, the malfunctioning antiskid must be turned off with the paddle switch or antiskid switch.

This deficiency was corrected by McDonnell, beginning with aircraft numbers RF-4C, 65-897; F-4D, 65-603; and all E models. The braking system was changed to give the emergency system precedence over the normal utility braking system if made ineffective by a malfunctioning antiskid. However, for best braking when antiskid malfunction is suspect, the Dash One procedure still holds:

Wheel brakes - RELEASE

Antiskid switch - OFF

Wheel brakes - REAPPLY

If braking returns, leave antiskid switch OFF; if not, activate the emergency brake system.

In early model Phantoms, emergency brake pressure is channeled to the brakes through a portion of the normal brake system. If normal brake pressure exists, it will block emergency braking.

In later model aircraft, a modified valve directs emergency brake pressure directly to the wheels, bypassing the normal braking system. Therefore, the antiskid system is bypassed during emergency brake operation. It is important to remember this difference between models, because retrofit of earlier models, with the modified valve is not planned.

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



## smoke switch

The OHR read, "Smoke bombs were delivered to the drop zone . . . The airmen stated they were from the Aerial Port Flight building and were supposed to be the ones normally used. But when the smoke bombs were activated a very loud explosion occurred resulting in the entire area being subjected to shrapnel-like particles of metal. I was hit by a portion of this metal and injured on the left hand and stomach. I heartily recommend all items of this nature be removed from the area."

Well guys, the reason for this mishap was relatively simple. The smoke bombs used to mark drop zones come in soft drink-like cans and have letters and numbers which read "M 18, Smoke, Yellow, PBA-1-30. The hazardous "item" mentioned above is contained in a pressure-like cylinder and its label reads, "Smoke, W. P." The W. P. stands for White Phosphorous. Best we start reading the labels on cans. Otherwise, we could be killed seriously dead.



## tail twisting tale

A recent near-accident in a C-130 was caused by failure of the pintle hook on a salvaged jeep during a practice LAPES delivery. The jeep was rigged on a platform with the extraction chute connected to the jeep's pintle hook. In this case the pintle hook opened and the extraction force was transferred to the main cargo chutes. These chutes opened while the load was still in the aircraft. The load was then extracted with a force sufficient to raise the platform approximately two feet off the floor. Had the load twisted or raised a bit higher, aircraft damage could have seriously effected the structural integrity of the empennage. A 10,000 pound tie down chain looped through the extraction chute clevis and around the vehicle frame structure is now a required safety measure to ensure retention of the extraction chute should the clevis hook fail.

## bum steer

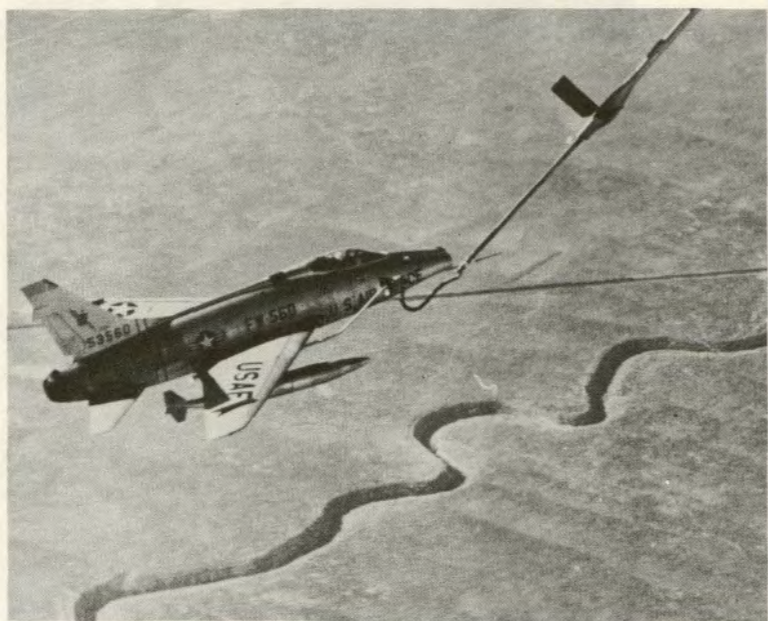
The Caribou crew shot six touch-and-gos and a simulated engine-out full stop landing. Then the IP changed student pilots. On the next takeoff the gear handle light stayed on after retraction. The flight mechanic found the nose wheel cocked at 60 degrees and jammed against partially closed doors.

The IP lowered the main gear normally, but the nose didn't move. He applied positive Gs to the C-7 and the nose gear slowly extended...but cocked 30 degrees to the right. A radio call to electrical specialists paid off. They told him how to bypass the nose gear strut switches and operate the nose wheel steering in flight. The IP "steered" the nose wheel to center and landed okay.

Inspectors found the pins attaching the top centering cam to the nose strut had failed. This allowed the nose gear to retract without centering. They figured that extended use of nose wheel steering with very light nose wheel loading during a crosswind takeoff may have failed the attaching pins. They suggest adjusting the nose gear weight switch so it will actuate before axle travel reaches one and a half inches from full extension.

Also, they'd like careful use of nose wheel steering under minimal nose landing gear loading by some oversteering pilots.

## TAC ATTACK



## basket case ?

An F-100 pilot recently brought the refueling basket home due to an apparent breakdown in communications between the boomer and pilot. While taking on fuel the flight leader was told, "You have one-half hose length." The flight leader then asked, "What does that mean?" The boomer explained that by being too far forward the receiver runs the risk of fouling the refueling hose with the fighter's probe.

This is a required call to warn the receiver that he is inside the normal contact position (ref T.O. 1-1C-1-3, page 4-8). However, a check shows that it is not listed in the F-100 refueling manual T.O. 1-1C-1-10.

While recycling, the number Three pilot was given the same warning "...You have one-half hose length." He replied, "Roger," but moved further forward. This allowed the hose to loop around and over his probe. The boomer then asked the receiver to hold his position so that the hose could be untangled. Instead the pilot dropped back and caused a brute force disconnect. The basket did just what you'd expect... broke off and stayed with the fighter's probe. Though everyone landed without further problems the incident points out the need for very close teamwork between the boomer and receiver. It also looks like a good reason for an AFTO 847 on the F-100 refueling manual.





Academy Cadets in advanced parachute training get specialized instruction for aircrew egress, including free-fall stabilizing techniques.



**life support training...**

# THE ULTIMATE

**by Major John J. Garrity, Jr.  
OIC, Parachute Branch  
USAF Academy, Colorado**

The Air Force Academy's program for training future Air Force officers reaches far beyond the three "Rs" and close order drill. The breadth of instruction and leadership experiences offered to these future airmen exceed any program possible through the ROTC or OTS commissioning sources.

The most professionally related programs of the Commandant of Cadets are those offered by the Airman's Division. These include T-33 orientation flights, a 35 hour T-41 training course, the Cadet Aviation Club with Cessna 172s, five soaring programs, and six parachuting activities. All courses and activities are directed toward putting the cadet into the air and motivating him toward a rated career in aviation.

The parachuting courses are unique within the Air Force and encompass activities from Army paratroop training to national competitive jumping. Each year some 450 cadets volunteer for the exhausting three weeks of airborne infantry training at Fort Benning, Georgia. There they train side by side with the Army's combat paratroopers who are destined for Vietnam. The program not only builds within the cadet a spirit of courage and manhood but also gives him a better understanding of the Army's role in modern warfare. It establishes a rapport between the ground soldier and the future pilot who one day will support his sister service with airlift and fighter-bomber operations. Through this training, many of our cadets who are physically unqualified for aircrew duty are motivated toward active careers as combat controllers or the various parachuting





Collapsing canopy with quick release clips (left), and practicing parachute landing falls (below) eliminates chuting hazards for cadets.



activities of the Air Commandos.

After airborne school the cadet may volunteer for more parachute training, this time, specifically directed to the aircrew member's need for knowledge. The Academy's Advanced Parachute Training Course is based on the premise that aircrews have a better chance of survival and will sustain fewer injuries on bailout if they are given a basic understanding and practical application of free fall parachuting.

The course consists of some 35 hours of ground training including extensive use of practical training aids and simulators. This training is followed by 10 parachute jumps. Each of these jumps consist of a ten second free-fall prior to manually activating the parachute. The first eight jumps are made with large training parachutes. The last two are a close facsimile of the real emergency bailout.

The student is equipped with the HGU-2AP aircrew helmet, face shield, oxygen mask, aircrew B-20 parachute and MB2 survival kit firmly attached beneath the buttocks. Free fall while breathing oxygen under pressure is followed by the sharp crack of the opening parachute. Air Force tech order procedures are then followed in cutting four marked lines of the canopy and deploying the survival kit. The jumper then turns his now maneuverable chute into the wind and follows through with a parachute landing fall on the Academy's drop zone which is some 6500 feet above sea level. Although this program may at first appear hazardous, a record of one "lost time injury" in 1967 out of over 4000 jumps speaks for itself. Other parachuting opportunities at the Academy include a

weekend professional continuation course for those who want to make more than the ten training jumps.

Once each year a Jumpmaster Course is offered to the more advanced parachutists. In addition to more ground and aerial training, it encompasses night, water, and altitude jumps from 18,000 feet. The more motivated cadets progress through a series of courses culminating with their assignment to instructor duties as assistants to the training staff.

For the sport-minded cadet, the Cadet Competition Parachute Team offers a challenge found in few other places. Their athletic field lies in the skies over Colorado. This team competes against other colleges and universities, military teams and civilian clubs throughout the United States. While enjoying the sporting nature of parachuting and favorably representing the Academy in their various tournaments, these future pilots are building a fierce desire in the area of competitive aviation which may one day pay off in the field of combat over Hanoi or some other distant land.

The parachute courses offered by the Academy are closely related to the life support training of the Tactical Air Command, and one day may influence Air Force wide implementation of a similar parachute training program. In the interim, it behooves each aircrew member to take maximum advantage of the training and literature available to him through his local training programs. For one day they too may be a parachuting pilot but without benefit of the Academy's training.



# scuba & you

**A** young pilot sustained grave injuries while stationed in Southeast Asia, because he disregarded the hazards of SCUBA diving. Had he been completely indoctrinated in the principles and techniques of SCUBA and had he followed the rules, he would have avoided his near fatal incident.

He made his first dive to 150 feet, staying down about 35 minutes. The diving tables state that he should have made two decompression stops on ascent, one at 20 feet for eight minutes and one at 10 feet for 24 minutes. He exceeded the tables by a great margin on this first dive but without ill effects. One hour and 15 minutes later (he should have waited twelve hours) he again descended to below 150 feet and stayed down until his air was gone... about 30 minutes. The ascent was again made without stops, in the usual "slow but steady" manner.

According to the tables, this time decompression should have lasted two hours and seven minutes in ascent. The pilot was playing with fire and this time was burned... badly. Luckily, it was not fatal. He developed joint pain and bilateral leg paralysis soon after the second ascent. He was quickly flown to a facility with a compression chamber. There he spent 38 hours before returning to sea level pressures. Completely paralyzed from the waist down, he was transferred to the Air Force's largest medical facility where the best in neurological care was available. Several months later the paralysis disappeared but a year later he was still unable to walk without leg braces and two canes.

The use of self-contained underwater breathing apparatus, or SCUBA diving, has gained enormous popularity as a recreational pastime. The use of SCUBA gear enables the diver to go to considerable depths for extended periods of time because he can take his own air supply with him. However, the SCUBA diver is faced with several hazards. Not only is he faced with environmental hazards, which he readily accepts, but most important, the physiological danger of the direct effects of pressure.

Just as 40,000 feet is an alien world for the aviator, so is 100 feet to the SCUBA diver. As a pilot is informed about the effect on his body of rarified atmosphere, so should the diver be informed about



hyper-baric (increased pressure) conditions.

The greatest danger to the diver is decompression sickness, better known as the bends. Bends are produced in the following physiological manner: increased air pressure in a diver's lungs during respiration brings about increased absorption into the blood stream of all components of respired air. The primary ingredient of air involved in creating bends is nitrogen. Nitrogen in the air is in equilibrium with the gaseous nitrogen dissolved in man's tissues. The equilibration between air nitrogen and tissue nitro-



by Capt C.R. Hoyt  
Flight Medical Officer  
and  
Capt P.J. Sheffield  
Physiological Training Officer  
Langley AFB, Virginia



gen is carried out via the lungs.

An ascending aircrewmember loses nitrogen through breathing, thereby equalizing reduced nitrogen pressure at altitude with tissue nitrogen. Conversely, when diving, the diver is breathing air at many-atmospheres pressure, causing additional nitrogen to dissolve in the diver's tissue. On return to the surface, the excess nitrogen which was absorbed is diffused from the tissues into the blood stream and then is eliminated by the lungs. If ascent is too rapid and excess nitrogen cannot be eliminated

fast enough, in the above manner, nitrogen in the tissue "bubbles" producing pain with sometimes lethal results.

So it is with an aviator. A pilot ascending from sea level to 33,000 feet is subjected to the same degree of decompression as a diver coming to the surface from a depth of 100 feet. However, various tissues take up nitrogen at different rates so that short exposures to increased air pressure won't produce the bends upon rapid ascent.

If a pilot SCUBA dives and flies soon afterward, he would experience an even greater and more rapid nitrogen differential thereby accentuating the severity and onset of the bends. AFR 50-27, paragraph 8e, states that "no individual is to be exposed to cabin pressure of more than 18,000 feet within twelve hours after SCUBA diving to a depth of 30 feet or more."

Decompressing, or going from high pressure to lower pressure, can be safe if standards (calculated for time and depth) are followed. These standards are available in tables published in the U.S. Navy Diving Manual.

When repetitive dives are undertaken (dives less than twelve hours apart), excess nitrogen is not completely lost from the body. This excess nitrogen is then added to the absorbed nitrogen in the tissues resulting in consequences similar to the SCUBA diving pilot. Again, the Navy diving tables were designed to prevent this.

Don't risk possible injury through ignorance of the physiological forces of an alien environment. Learn from the experiences of others. Adhere to the following rules of SCUBA diving:

1. Before diving be completely familiar with the principle and technique of SCUBA through a formal course of instruction by a certified SCUBA instructor.
2. Know basic anatomy and physiology as related to underwater diving.
3. Use the diving tables in the US Navy Diving Manual... don't make ANY dive without first consulting these tables.
4. Dive with a buddy, never alone. If you dive into the dangerous decompression region be certain that both you and your buddy are equipped with the best gear available.
5. SCUBA diving and flying during the same day is an open invitation to disaster. It is also an infraction of an Air Force Regulation.
6. Know the location of Air Force and Navy decompression chambers throughout the U.S.A. and overseas areas where you may be stationed.



# CHOCK TALK

Chock Talk

...incidents and incidentals

## aviation maintenance and mathematics

Aviation maintenance and mathematics have an interesting point in common. There is no such thing as a little mistake in either.

In mathematics,  $2 \times 2 = 3$  is not a smaller mistake than  $2 \times 2 = 7$ . Each is a deviation from the principle of mathematics, each is wrong and each is intolerable. And there are no small, unimportant deviations from the principle which governs our work. All deviations are intolerable, if we are to do a safe and acceptable job.

Recently we read of a serious accident that occurred because someone installed a mild steel nut where the specs required one of high tensile, stainless steel. This might have been called a small mistake, confusing one 5/8 inch nut for another of the same size. But the threads of the soft nut stripped, permitting nose wheel shimmy, which caused excessive side loads and failure of the gear. The small mistake wasn't small. It was vastly important.

Every aviation mechanic should face up to the fact that the code or principle under which he works is strict, always. We can find another parallel in mathematics.

$2 \times 2$  will always be 4. The principle that makes it 4 is strict and unchanging.  $2 \times 2 = 3$  will never be true, because it is not in accord with that principle. Actually, it is not even mathematics. It is just a mistake about mathematics that brings us trouble as long as we think it is true.

Knowledge, craftsmanship and integrity will always be the basis and the backbone of aviation maintenance, because they comprise its unchanging principle. Anything less, any ignorance or sloppiness or unreliability is totally unrelated to our way of work. Anything less is a trouble breeding mistake, which, fortunately, we need not make.

Adapted from: MECHANIC'S BULLETIN

## tight'n that nut, safety that bolt !

An F-100 pilot rolled down the runway after a satisfactory pre-takeoff control check. At 150 KIAS, he applied aft stick pressure for rotation. The stick wouldn't budge from neutral position!

After aborting, the Supersabre hit the BAK-9 and MA-1A barriers at 120 knots, and stopped a little more than 600 feet into the overrun with external stores intact.

Inspectors found that a bolt had backed out of the link connecting the control rod turnbuckle to the horizontal stabilator bell crank. Disconnect wasn't complete but the protruding bolt jammed the linkage in place. They found the nut in the bird's belly but the cotter pin was conspicuous by its absence.

Fortunately, this was just a hairy incident. Is there a maintenance man who cares to name the end of the game, had loss of lateral control occurred a few minutes later... at the end of the pilot's ordnance delivery dive?

## cross control ?

A sergeant came on duty at 0800 hours. He was monitoring and launching aircraft in 'B' Section. The accident happened while he performed the flight control check after engine start. The flaps were cleared for full down and BLC checked, then cleared for the one-half position and BLC checked. The pilot received clearance for his flight control check. The stabilator was checked full up, and down. The sergeant then squatted down and placed his right hand on the corner of the right flap to check for clearance. You can probably see the accident on its way! The pilot then moved the stick full left; the right aileron worked as advertised and clobbered the sergeant's right hand between the flap and aileron. He then went to the flightline dispensary and was sent to the hos-



with a maintenance slant.

pital. One tetanus shot and eight stitches later, he was released for duty.

This incident re-emphasizes the need for constant coordination between aircrews and ground crews. The danger of an aircraft with its engines running to a busy ground crewman can't be over-emphasized: the flaps can crush you; the flight controls can clobber you; the engines can swallow you; the tail area can singe you; the tires can mash you. Need we say more?

## drag chute door latch

The preflight, end of the runway check, and take-off were all normal for an F-100C. However, approximately 3 minutes after clearing the base, the

pilot felt a thump, and his wingman informed him that he had lost his drag chute. A no-chute landing was subsequently made without further incident.

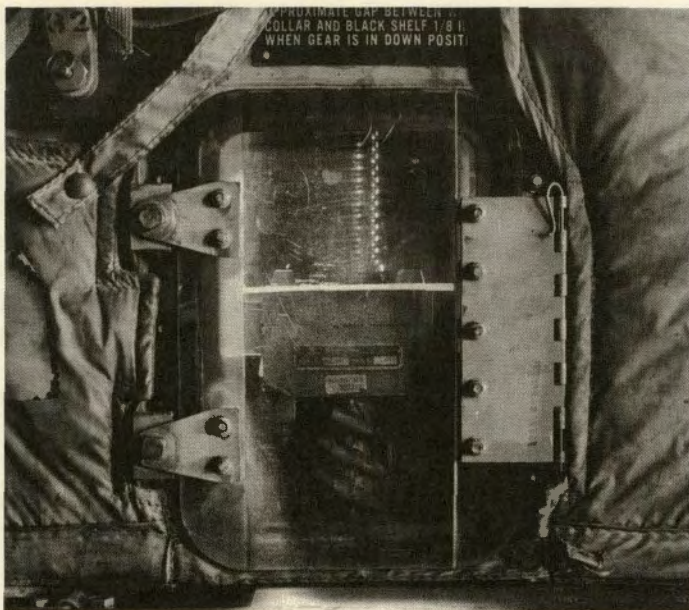
When the drag chute system was checked, it was seen that the drag chute doors had not been fully latched at the time the drag chute was installed. Because the door latch was bent, the door latch channel did not fully bottom.

The technical manual, "Fuel and Utility Systems," T.O. 1F-100( )-2-2, contains specific instructions for securing the drag chute door latch.

Read and heed.

Operations And Service News  
North American/Rockwell Corp  
Mar 8, 1968

## HERKY GEAR-DOWN CHECK



LANDING GEAR IS DOWN AND LOCKED WHEN THE TRAVELING NUT IS ALIGNED WITH THE WHITE REFERENCE LINE.

Visual gear-down inspection for C-130s has been improved by painting a white line on the face of the four main landing gear inspection windows. The line eliminates guess work by giving the loadmaster a positive reference point in determining down and locked position.

When the top of the traveling nut, raised and lowered by a jack screw, is level with the white line, the landing gear is in correct landing position. If the top of the nut is not at line level, gear is not down and locked.

Herkys in the 316th TAW at Langley AFB and in PACAF are using the inspection technique. A Class 1 modification is expected to be approved in TAC for command-wide application of this positive gear-down inspection method.



# keep yourself



by Lt Col J. L. Lillie, Jr., USMC

**A**ircraft accidents involving unexpected flight into or through instrument conditions often occur because a pilot failed to initially establish his aircraft in a basic normal flight attitude. It sounds simple, but too often it's true! Pilot disorientation!

The causes and effects of this phenomenon are well documented, are frequently emphasized, and the basic techniques to avoid such situations are known. However, with the arrival of the summer "good flying" weather it is human nature to relax a little and consider such matters as seasonal affairs and not of real concern. But even in the summer there are those days ... and nights ... when such complacency could lead to trouble and perhaps prove fatal.

The following accidents involve, in various ways, rapid transition to instrument flight or pilot disorientation:

An A-4 wingman disappeared from view of other flight members when the flight unexpectedly entered instrument conditions at 29,000 feet. The aircraft was later found to have struck the ground in a near vertical dive. The pilot ejected near the base of the weather at 500 feet.

Two aircraft collided and flew into the ground on a GCA final just after the leader was requested to visually check his no-radio wingman's landing gear.

A helicopter wingman flew into the water from about 500 feet after losing sight of the leader during marginal weather at night.

Each of the above cases involved an unexpected situation and resulted in accidents which could have been avoided by the application of basic techniques.

If faced with unexpected instrument conditions, don't be too quick to change the aircraft attitude. Initially establish a level flight attitude as a primary effort. After a moment, a normal instrument scan can be developed. Then, and only then, the pilot can consider his transition complete and aircraft maneuvers can be attempted. All of this takes but a moment but is often a step-by-step process... especially if unexpected!

When something other than flying instruments needs to be done, such as adjusting power, switching frequencies, or checking on matters outside the cockpit, don't look away from the instruments without assurance that the aircraft attitude will be the same when instrument scan is resumed. Trim the aircraft for "hands-off" flight. When engaged "otherwise," frequently glance back at the attitude gyro just to be sure that the "right side is up."

During instrument flight, pilots must avoid unintentional displacement of the controls as a result of head movement. This is a natural tendency that can result in an aircraft turning in the direction a pilot turns his head. Another reason to be trimmed up for hands-off flight. Your wingman would appreciate a special effort in this regard!

As visual references are lost, pilots must recognize the situation and make an immediate decision to transition to instruments. Searching for visual references in marginal weather conditions is a sure path to disaster. At night the odds are really stacked and there is no choice. Be willing to accept the circumstances and go on the gauges without delay!

All pilots have talked about it, heard about it, and may have experienced disorientation at one time or another. However, how many pilots have seriously considered how this phenomena can be countered and what steps should be taken when the time comes? A few minutes reflection on the ground could result in great returns in the air. And don't be lulled into complacency because summer has arrived. Think about it and ask yourself a few questions.

From: THE PROFESSIONAL  
First Marine Air Wing



# WATER WORKS

Water Works

Mark-24 flares burn underwater but can be extinguished with a spray of H<sub>2</sub>O.



Grabbing a 5,000 degree candle by the tail is a part of student loadmaster training of the 4412th CCTS, England AFB. Students learn that a Mark-24 flare, ignited while airborne, can be pitched overboard or extinguished with a container of WATER.

By Don Reynolds

**H**azards of a burning Mark-24 flare, ignited in the aircraft by malfunction or small arms fire, have given flare-launching loadmasters serious problems. The flare burns at max intensity almost instantly - almost 5000 degrees Fahrenheit and two-million candle power - which is comparable to heat of a welder's acetylene torch and as bright as 500 combined auto headlights.

To extinguish the flare by conventional methods is near impossible because it contains its own oxidizer and will actually burn underwater. The heat melts thick asbestos blankets. And in less than a minute of



## water works



This specially modified fire extinguisher will put out a Mark-24 flare (upper left) in from three to five seconds. SSgt John Miskelley holds the three and one-half inch stainless steel tubing and nozzle, installed on a standard two and one-half gallon, 100 pound pressurized water extinguisher. An 18 inch length of medium pressure hose connects nozzle tube. BELOW: TSgt Arthur Thompson installs a pair of extinguishers aboard an AC-47. The units are stowed on the bulkhead in extinguisher brackets used on fire vehicles.



the flare's three-minute duration, it can burn through the deck and skin of an aircraft. Its dense, toxic smoke will, in only a few seconds, cause temporary blindness and unconsciousness. It has happened!

At dusk, a C-130 took off with a PN 53000 flare launcher and 150 flares to illuminate a gunnery range for night fighter training flights. A flare jammed in the dispenser and, before it could be ejected manually, it ignited. The cargo compartment was immediately filled with brilliant light and toxic smoke. The loadmaster felt blindly for the dual rail release handles and quick-release tiedown chain. He was successful. A platform, mounting the launcher and burning flare, rolled aft through the open ramp door. The loadmaster's quick action saved the aircraft and its crew.

Another incident was disastrous. An AC-47 was flying a SEA mission. A flare ignited in the aircraft by mishap or small arms fire. Unable to jettison, and with no way to extinguish it, the loadmasters took refuge in the flight compartment. The pilot headed for the nearest landing strip, but all were apparently asphyxiated. Their bird flew into the ground as it neared the strip.

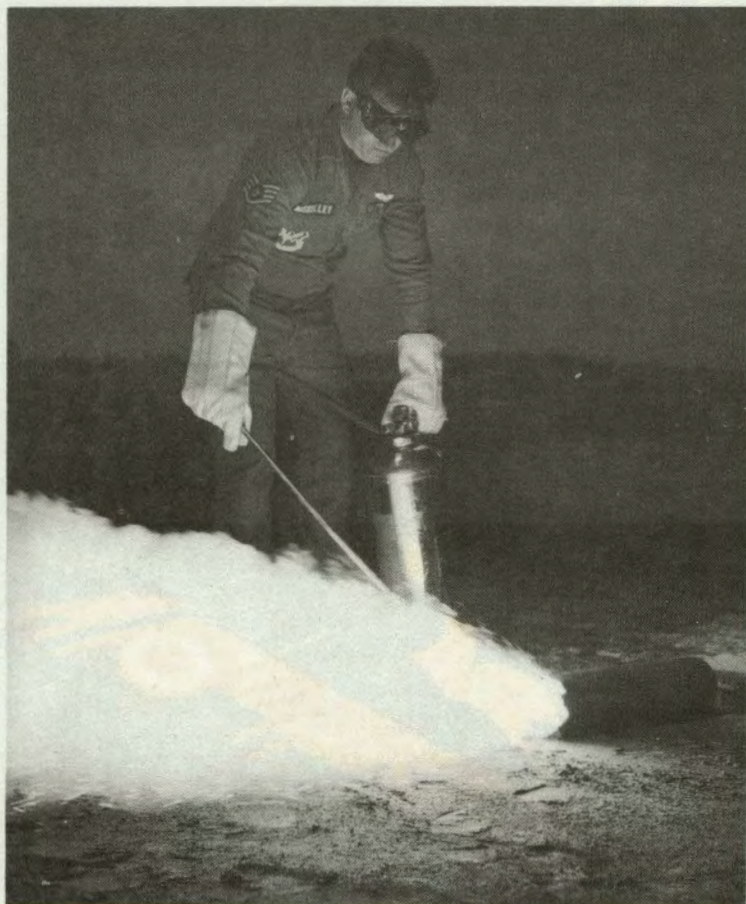
Until recently, the only way to deal with a burning flare has been to get it out of the aircraft - fast! And this is still number one. But loadmasters of the 4412 CCTS at England AFB have designed a portable extinguisher and given it an important role in their emergency procedures.

The extinguisher is as contradictory as it is simple. It is a conventional two and one-half gallon pressurized container filled with water. The stock hose and nozzle have been replaced with equipment specifically designed to extinguish the flare. It works in from three to five seconds. The water system works, even though the flare will burn underwater, because of dual action.

It's believed the pressurized water flushes away burning magnesium particles. These burn only on the surface without burning inward. At the same time, some of the water is transformed into steam which absorbs an enormous amount of thermal energy. Because the pressurized stream of water makes flushing and evaporation continuous, the temperature of the magnesium particles is quickly lowered below its flash point of about 1100 degrees Fahrenheit, and the fire goes out.

Positioning the nozzle to the burning surface is critical. The nozzle, which delivers a conical shaped





Brightness of a burning flare is apparent during a demonstration of the extinguisher by SSgt Miskelley, photographed in bright sunlight through welder goggles. Extinguisher is carried in one hand by a handle, which when squeezed releases water through nozzle held in the other hand. With number 5 or 6 welder goggles, the fire fighter can see to place nozzle in proper position for quick extinguishing action. The long tube is bent on the nozzle end to facilitate placing nozzle through flame to within two inches of burning magnesium. Water is released after nozzle is in position. UPPER: Critical position of nozzle can be seen as flare is nearly extinguished two seconds after water release. Asbestos gloves are required to protect hands from intense heat. Aboard aircraft, fire fighter's oxygen mask is used for protection from dense, toxic smoke generated by the flare.

spray, must be perpendicular and within two inches of the burning surface. Because of this limitation, the system is usually ineffective on a flare shattered and ignited by small arms fire. But regardless of this drawback, the extinguisher could have saved the day for several crews who have experienced fuze malfunctions and other mishaps.

The 4412th's emergency procedure calls for jettison as primary action and use of the extinguisher as backup. Their C-47 mission carries a pair of flare launching loadmasters. One is the launcher who throws the flares through the side door, and the other delivers flares from storage racks to the door.

The launcher wears welder's goggles on his forehead and keeps asbestos gloves and a snow shovel nearby. His assistant is equipped with an MB-1 Aircraft Firefighters' Assembly (face mask with portable low-pressure oxygen bottle set at 100 percent delivery), asbestos gloves, and the specially designed

pressurized water extinguisher.

If a mishap occurs, and a flare ignites in the aircraft, the launcher lowers his glasses to prevent being blinded, then jettisons the flare by scooping it out with the shovel. The flare position may prevent using the shovel, so he picks up the flare, using asbestos gloves, and throws it out.

If the launcher has not completed jettison within ten seconds, he will probably be overcome by smoke. By this time, the assistant has donned his mask and gloves, approaches the fire through smoke so dense that welders goggles are not required, and extinguishes the flare.

Smoke removal systems are now being designed and will be installed on flare launching aircraft. This will eliminate one hazard.

The 4412th believes their extinguisher can beat the remaining hazard and insure a successful mission. They know that water works! ➤



# Farman 40-A2



HARDISON



# Flight Leaders

by Lt Col Carl E. Pearson

Early in World War I the Farman 40-A2 biplane performed well as an observation plane and part-time bomber. It wasn't fast for its time, but the pilot and observer-gunner enjoyed great forward visibility. They also were exposed to wind blast and enemy fighter attack. Suspended between the wings in their bathtub-shaped "office" they shared it with fuel tanks and a 160 hp Lorraine or de Dion in-line engine driving a wooden pusher prop.

A workhorse in 1916, the Farman fell prey to rapid improvements in German fighters. As a result it became a trainer in the later stages of the war.

It wasn't a speedy reconnaissance type. Observation planes didn't need much until both ground fire and enemy fighters increased their ability to knock slow-moving planes out of the sky. At its max gross weight of 2480 pounds the Farman climbed to 6500 feet in thirteen and a half minutes, cruising at 80 mph. Climbing to 10,000 feet consumed twenty-four minutes and lowered cruise airspeed to 75 mph. It carried 150 pounds of ordnance. A 325 pound fuel load provided two and a half hours of full throttle operation at low altitude... respectable endurance for its day.

No sweep back, no dihedral, no wing stagger, the Farman couldn't be called classic in lines. Only the upper wings were aileron equipped and spanned 57 feet, twenty-one feet longer than the lower wing. The chord of both wings was the same at six and one-half feet.

The double-wheeled main gear was mounted on N-shaped struts. The stable, thirteen-foot gear spread helped pilots... and later students... avoid ground looping. Movable skids mounted between the paired wheels served as brakes.

Four tail booms supported the horizontal fixed plane and elevator, plus a big, balanced rudder. The Farman didn't sport a vertical fin. The elevator was trapezoidal in shape and had a cutaway section to allow full swing of the rudder. It may look frail, but proved airworthy.

It was among the first to ring-mount a machine gun. Forward field of fire was a full, 180 degree sweep. But fighters wouldn't cooperate. They attacked the unprotected tail. Although threatening in appearance, the huge bayonet-shaped exhaust stack

couldn't keep them off the Farman's tail. Formidable as it looks, the mortar-like tube belched smoke and flame only.

A battery of movable landing lights mounted forward of the lower wing gave the Farman a limited night operational capability. And for those who think Ram Air Turbines are a late aviation development check the outboard side of the lower left wing. It wasn't retractable, but it provided electrical power.

The rocket mounts aren't fancy, but they look deadly. The angle at which they're mounted suggests air-to-air use, but it would have to be close-in firing.

Normally, the Farman couldn't hold its own against the pictured diving Albatros fighters. On this flight it didn't matter.

It was a windy, gusty day in October 1916, Oswald Boelcke, then Germany's leading ace, holder of the famed "Blue Max"... nicknamed after its founder Maximilian Frederick... creator of the feared Jagdstaffel twelve-plane fighting formation, left his hunter-killer pack with his wingman. They dove on two bombers.

A member of his Jagdstaffel, Baron Manfred von Richthofen... then a fledgling student of Boelcke's... recorded his in-flight observations in his diary: "It was the usual thing. Boelcke would shoot down his opponent and I had to look on. Close to Boelcke flew a good friend of his. It was an interesting struggle. Both men were shooting... Suddenly I noticed an unnatural movement of the two German flying machines. Immediately I thought: Collision. I had not yet seen a collision in the air. I had imagined that it would look quite different. In reality, what happened was not a collision. The two machines merely touched one another. However, if two machines go at the tremendous pace of flying machines, the slightest contact has the effect of a violent concussion... Now his machine was no longer steerable. It fell accompanied all the time by Boelcke's faithful friend. The greatest pain was, of course, felt by the man who had the misfortune to be involved in the accident."

The "tremendous pace of flying machines" was then only a fraction of present fighter formation airspeeds. If midairs were deadly then, they're more so now.

Wingman, hold that fighting-wing position! ➤

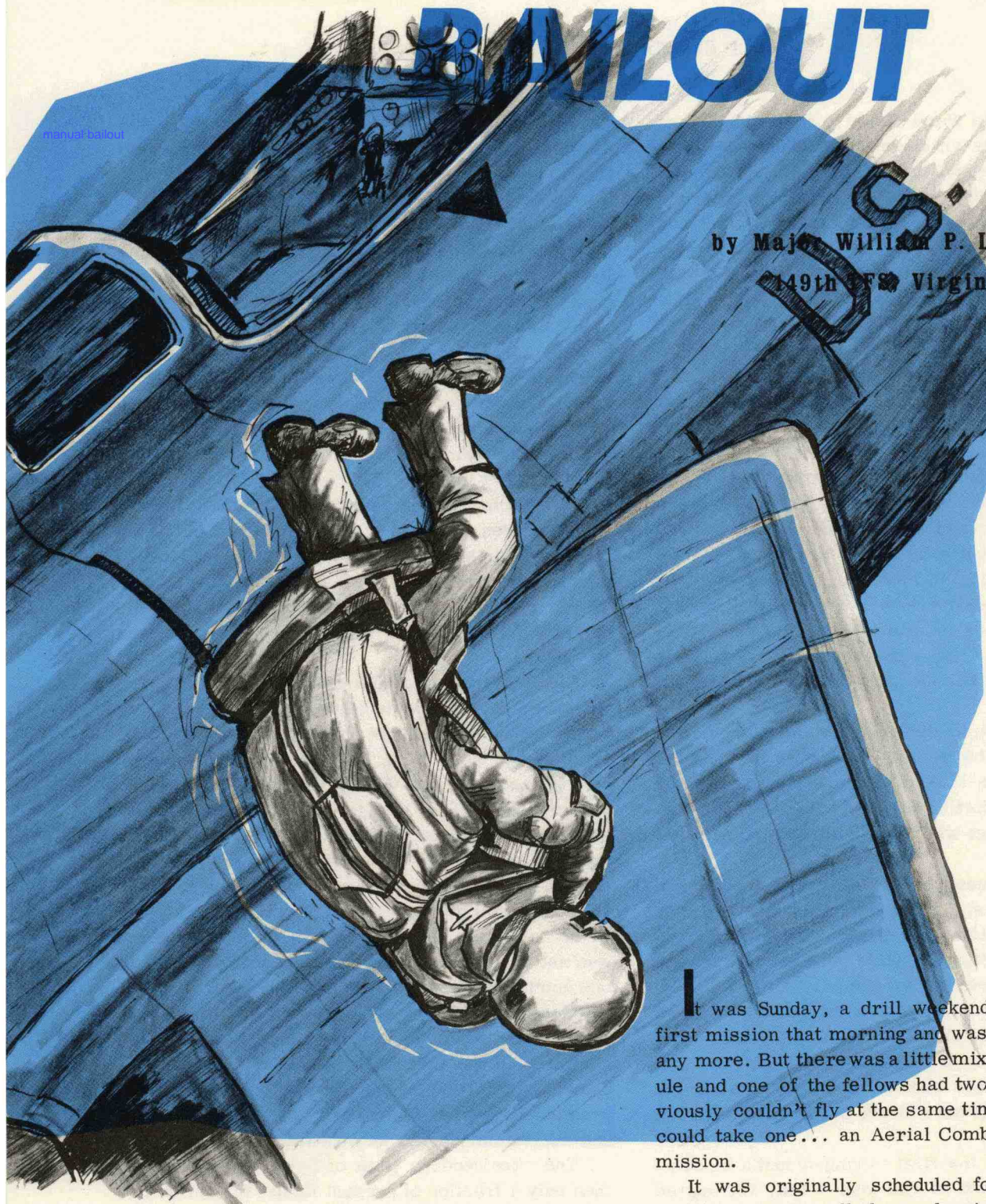


*manual*

# BAILOUT

by Major William P. Lemmond, Jr.

149th FS Virginia ANG



It was Sunday, a drill weekend. I had flown the first mission that morning and was not scheduled for any more. But there was a little mix-up on the schedule and one of the fellows had two slots that he obviously couldn't fly at the same time. So I asked if I could take one... an Aerial Combat Tactics (ACT) mission.

It was originally scheduled for four ships but maintenance cancelled one, leaving us with three. Lieutenants Charles Wintzer and Steve Anderson were the other members of the flight.



After lunch we briefed for ACT. It was going to be a demonstration flight. I figured it would be an opportune time to have them see what a defensive split looked like so that's what we briefed.

We took off and proceeded to the ACT area and began working below FL 240. Steve Anderson was flying number Three and made the first pass at us. The object was to teach Steve to recognize various degrees of overshoot and to keep his eyes on the high bird when the element splits. He made his pass and Charlie and I split. I went high and he committed himself to me. He overshot me so I called for rejoin. We rejoined, and I took the attack role. I came down for my attack. They made a left turn and called the split.

The first time I went low, then high rather than overshoot. I yo-yoed off the high bird to demonstrate that the attacker doesn't have to stay with either of them... that he can yo-yo up and away leaving them split up with no mutual support. I then alternatively positioned myself behind each of them.

Probably three minutes elapsed from the time I made my first pass, until I heard the explosion. Naturally, I was at full power... airspeed about 350 indicated and altitude between 15 and 18,000 feet. I was in a 30 degree dive when I heard it... a fairly loud explosion. Smoke began filtering in from underneath the seat.

About this time I started climbing, checked the gauges, and called that I had an explosion. At that point Charlie said, "I know, I saw it." The first gauge I looked at was EGT. It was above 1000 degrees and appeared pegged.

I made another radio transmission that I was shutting the engine down and heading for Langley AFB or Patrick Henry Airport. While making this transmission, I shut the engine down.

At that point I was still climbing... I don't really know how high, probably about 18 or 19,000 feet. Upon reaching 250 knots I leveled off.

In the meantime I was checking the other gauges. My main concern was whether I was going to get a fire warning or overheat light. It never entered my mind that I would want to re-start.

My major worries: Was I going to catch on fire; where am I going to land. The fire warning or overheat lights never came on, and the EGT finally did go down.

My concern then became where to make a forced landing. Ejection, of course, was my second option.

I had turned off everything electrical, but left the battery and radio on. I headed toward Patrick Henry

Airport which is near Langley AFB, Virginia.

I had been trying to transmit on both channel 12 and Guard but the sound in the headset indicated the UHF radio was channelizing continually.

Over Patrick Henry Airport I looked down and saw about five airplanes. With no radio I decided to try for Langley.

The controls felt pretty well locked up at this point. With both hands I could get five, maybe 10, degrees of bank out of the bird. The trim was still working all right. I was saving the emergency hydraulic pump for a last resort because it runs off the battery and you never really know how long it will last.

All things considered I decided to land at Langley. I continued in my descent, and very quickly realized that I'd be entering at the low-key point in a left hand SFO pattern for runway 25. This is a very heavily populated area, and of course in any flame-out approach there is always the chance of a miscalculation. Therefore, I decided not to try landing.

I paralleled the east-west runway and spotted a marsh off the end. I began putting things away, checklist, clipboard, and the bag of letdown books. I disconnected the G-suit hose, oxygen hose, and radio leads, and bottomed the seat, cinched up my oxygen mask and chin strap (the visor was already down), and waited until I got to a point where I knew the airplane would hit in the marsh.

Then I fired the canopy and squeezed the seat trigger. The canopy went fine, but nothing happened when I squeezed the trigger.

I was very careful to assume a very proper ejection position. In fact, I had the straightest back in the state at that moment... feet in stirrups, elbows in and everything. I didn't want to look down because I didn't want the seat to go with my neck bent.

Without moving my head I made a conscious forward movement trying to push the ejection handles back down. I pushed down, then pulled up and aft on both triggers. I released the triggers and squeezed again. Nothing happened. I had fired the canopy at about 3500 feet.

I checked the altimeter... below 3000 feet. I figured if I was ever going to get out, I'd better do it now. I was too low to invert. It was over the side or nothing.

I opened the lap belt and positioned myself in the seat, put my arm out and checked the wind effect. Cautiously I began to stand up. I got my head in the slipstream and again checked the wind. Airspeed at



# MANUAL BAILOUT

this time was 220 knots. I was a little concerned that the wind would pin me in.

While I was getting up, I checked the position of my D-ring so that I would have no difficulty in finding it when I got out. Then I stood up, my left foot on the canopy rail, my right foot on the seat or arm rest, and a handhold on the front windscreen.

I have always been told to dive at the wing in order to miss the tail. So that's what I tried to do. After that, the possibility of hitting the tail I didn't have much control over. Either I did, or I didn't.

I got into a position where I felt I could clear the aircraft with a positive launch. I jumped, tucked up, and attempted to roll over the right side. In this manner my back pack and the survival kit would be facing aft so anything I hit would be taken by either the parachute or the survival kit. Apparently I actually did hit the wing as I was diving at the upper surface because the bruises I got (none serious) were all on the right side.

The next thing I knew, I was on my back in the air in a semi-spread eagle position, and looking right up the tail pipe. I was almost dead 6 o'clock, about 25 feet behind the airplane. I pulled the D-ring but experienced some difficulty bringing my arm over to the ring.

I recall vividly seeing my hand holding the D-ring as far out as it could go. I felt the opening shock, which was mild. I didn't see the canopy... didn't have time to look up to check it. But I do recall seeing my risers taut. Then I hit the water... about 3 seconds after the opening shock. I must have gone completely

under because I got a mask full of water. Of course, I didn't know how deep the water was at that moment. All I knew was that I couldn't breathe with a mask full of water and my first effort was to get it off. That was no problem... just unfastened it in a normal fashion.

Next thing, I grabbed one of my quick releases on the right side, opened the cover and at that point my head came to the surface or my eyeballs caged... one or the other. I realized that my parachute was already collapsed so I pulled the lanyard on my right LPU and it inflated. Then my feet hit the bottom. I realized that I was in 3 or 4 feet of water. At that point I didn't see any boats.

About 300 yards away I could see the smoking wreckage of my bird. I decided to walk to shore so I kept the LPU in case it got deeper enroute.

About that time I turned around and saw some boats converging on me, private fishing and water skiing boats. The first one that got to me was a 16-footer.

The boat pulled up alongside and I told the boatman to cut his motor so that he wouldn't get all fouled up in the parachute lines. I took off all my equipment except my helmet, and handed it up into the boat. Then I climbed in over the stern.

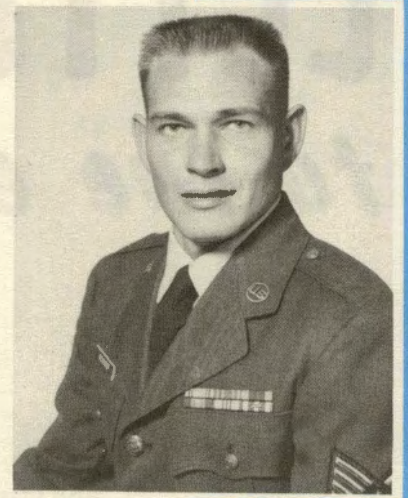
The boat owner took me to Langley AFB Yacht Club. A couple of off-duty headquarters types gave me a blanket. Then I phoned my commander and my wife. At the hospital they examined me, found nothing wrong... so I went on home.





## **MAINTENANCE MAN OF THE MONTH**

Staff Sergeant Roger L. Schmidt of the 333 Field Maintenance Squadron, Eglin Air Force Base, Florida, has been selected to receive the TAC Maintenance Man Safety Award. Sergeant Schmidt will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



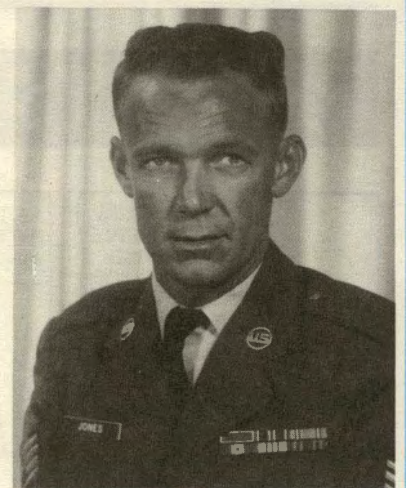
**SSgt Schmidt**



**SSgt Jones**

## **CREW CHIEF OF THE MONTH**

Staff Sergeant Jewel L. Jones of the 524 Tactical Fighter Squadron, Cannon Air Force Base, New Mexico, has been selected to receive the TAC Crew Chief Safety Award. Sergeant Jones will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.





# LETTERS

## *to the editor*

### UPDATING FLIGHT LEADERS

Our research on the Spad couldn't confirm the series of early deliveries to the 94th Pursuit Squadron in World War I. Our references pointed toward the Spad VII. Lt Col R. F. Rose, Jr., 33 TFW, Eglin AFB, provided the missing info. His copy of the 94th's diary identifies their birds as the more powerful, twin-gunned Spad XIII's.

*Thanks, Col. Rose.*

—Ed.

Reference your Drownproofing article in the TAC ATTACK, June 1968. The 4th Mobile Communications Group Safety Office at Altus AFB, Okla., established a Drownproofing program in 1967 and trained 544 personnel in this technique of survival swimming. So far this year 310 personnel have attended this training. These programs are held in conjunction with the Air Force's "101 Critical Days" campaign.

Credit was given to this Group's Drownproofing program last year, when a dependent child used the Drownproofing method to stay afloat after falling into deep water.

Drownproofing is an excellent technique of survival swimming and should be given additional emphasis throughout the Air Force.

JAMES H. THORMAN, SSgt., USAF  
Ground Safety NCO  
4th Mobile Communications Group  
Altus AFB, Oklahoma

*We appreciate your letter Sgt Thorman. Your base "drownproofing" program would be a worthwhile project for our Ground Safety types. We'll pass your message along.*

—Ed.

## PEANUTS

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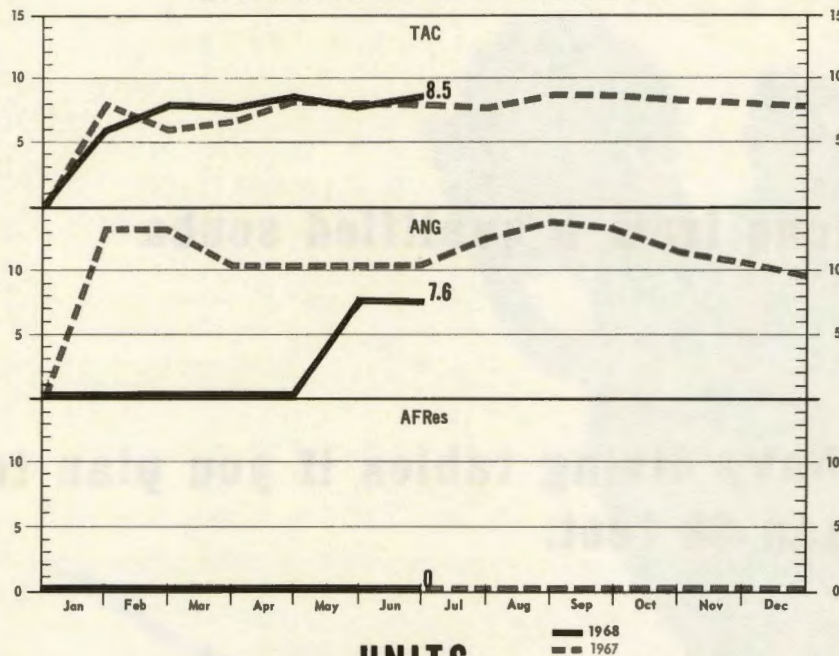


# TAC TALLY

MAJOR AIRCRAFT ACCIDENT RATES AS OF

30 JUNE 1968 \*

## MAJOR ACCIDENT RATE COMPARISON



## UNITS

THRU JUNE 1968			THRU JUNE 1967		
UNIT	1968	1967	UNIT	1968	1967
9 AF	7.5	9.6	12 AF	6.8	7.2
4 TFW	9.9	0	23 TFW	8.6	6.0
15 TFW	15.8	30.4	123 TRW	0	21.6
33 TFW	14.2	14.6	27 TFW	6.2	10.9
113 TFW	23.3	11.3	140 TFW	0	16.0
4531 TFW	20.0	0	479 TFW	13.6	7.8
363 TRW	4.8	14.9	474 TFW	52.5	0
64 TAW	0	0	67 TRW	0	0
316 TAW	0	0	75 TRW	0	20.2
317 TAW	0	0	313 TAW	0	0
464 TAW	0	4.5	516 TAW	0	0
4442 CCTW	0	12.2	4453 CCTW	14.2	0
			4510 CCTW	2.3	8.5
SPECIAL UNITS					
1 ACW	6.3	0	4500 ABW	0	0
4410 CCTW	17.6	8.3	4440 ADG	0	0
4409 SUP SQ	0	0	4525 FWW	28.0	24.7
			4416 TSQ	75.5	0

THRU JUNE		
AIRCRAFT	1968	1967
TYPE	TAC	ANG-AFR
A-1	47.7	0
RB-66	0	0
F/RF-84	0	5.4
F-86	0	25.6
F-111	67.8	0
F-100	11.8	0
RF-101	7.8	0
F-5	0	0
F-105	12.1	0
F-104	0	70.4
F/RF-4	12.7	0
C-47	0	0
KC-97	0	0
C-119	0	0
C-123	16.9	0
C-130	0	0
T-29	0	0
T-33	4.0	0
T-39	0	0
C-7	0	56.7
O-1	0	0

\* ESTIMATED FLYING HOURS



# SCUBA DO'S

- Get instructions from a qualified scuba instructor.
- Use the U S Navy diving tables if you plan to go deeper than 30 feet.
- Use the buddy system.
- Avoid diving within 12 hours of flying.
- Know the location of the nearest decompression chamber.
- Avoid diving with a cold.

