

# TAC ATTACK

DECEMBER 1969

December 1969



HARDISON



for efficient tactical air power

# TAC ATTACK

DECEMBER 1969  
VOL. 9 NO. 12

TACTICAL AIR COMMAND

COMMANDER  
GÉNÉRAL WILLIAM W. MOMYER

VICE COMMANDER  
LT GEN GORDON M. GRAHAM

Published by the Chief of Safety  
COLONEL R. L. LILES

Chief Safety Publications  
LT COL C. E. PEARSON



editor

Maj Bill Richardson

assistant editor

Don Reynolds

art editor

Stan Hardison

layout & production

TSgt John K. Miller

managing editor

Mariella W. Andrews

printing

Hq TAC Field Printing Plant

JAMIE SEZ:

Better a flock of sheep led by a lion, Than a pride of lions  
led by a sheep.

Horatio Lord Nelson

## current interest

NOVEMBER TO APRIL	Pg 4
THREE LITTLE DEVILS	Pg 8
THUNDERBIRDS -	Pg 14
The Ringmaster	
THE NEW LOOK IN LAP BELTS	Pg 16
THE THING	Pg 20
THE LITTLE THINGS	Pg 26
SEJWAQ	Pg 30

## departments

Angle of Attack	Pg 3
Pilot of Distinction	Pg 7
TAC Tips	Pg 12
Chock Talk	Pg 18
Unit Achievement Awards	Pg 28
Crew Chief/ Maintenance Man	Pg 29
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.

Contributions of articles, photos, and items of interest from personnel in the field are encouraged, as are comments and criticism. We reserve the right to edit all manuscripts for clarity and readability. Direct communication is authorized with: The Editor, TAC ATTACK, HQ TAC (OSP), Langley AFB, Va. 23365.

Distribution FX, Controlled by OSP - TAC Publications Bulletin No. 22, dated 3 June 1969 Autovon 254-2937



# Angle of ATTACK

## the SPOILERS...

Along with the coming holiday season, we will have winter weather ranging from good to bad. Some of you at TAC bases in the sunny south may not be bothered by severe driving conditions, other TAC drivers will be axle-deep in snow, or barely able to move because of ice, fog, and rain. A prudent man will recognize when extra caution is required, a prudent man will also weigh the importance of his trip versus the locality and existing weather conditions.

Last December we suffered eight private motor vehicle fatalities, a large percentage of our yearly totals. I don't intend to describe them — we're interested in this December now — but the same accident circumstances will exist this year.

The Christmas and New Year season ushers in a period of goodwill, fellowship, and holiday cheer . . . sometimes too much "cheer." It is a time for happiness and gaiety, a time to be with our loved ones, and a time to give thanks.

Unfortunately, there are some drivers who don't care if you have a happy holiday season, and are too shortsighted to insure that both you and they will be around to participate in the exciting events of the year 1970. Therefore, during your holiday travels spend a good part of your time on the defensive against the "spoilers." If you don't need to drive — don't! If you must get out on the highways, do it knowing that there are others out there who don't have your family's happiness in mind. In short, don't trust that other driver!

A zero motor vehicle fatality rate can be achieved by zero exposure. Since that is impossible or impractical, operate your car as though your life depends on how you drive — it does you know. So have a happy, defensive holiday. Avoid the "spoilers" and we'll see you in '70.



*R. L. Liles*

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



# November to April



This is the time of the year when the "Northerners" in our United States (Alaska included) prepare for one of the most exciting and demanding seasons of the year. The leaves have long turned and fallen, the skis have been waxed, skates are sharp, and everyone is in winter clothing . . . dressed right for the occasion. These are the people who understand the real hazards of winter.

To the uninitiated others, the snow and ice of winter bring with them thoughts of difficult driving conditions and worry about the cold — about the physical discomfort and all the unexpected trouble it causes. As a result, this season will always bring joy to some and tragedy to others.

And it doesn't have to happen. Winter need not be cruel, or uncomfortable — but it will always be hazardous, in obvious and insidious ways. Accidental death attributed to the winter season need not concern anyone who changes their thinking with the leaves and adopts the correct and accepted behavior required to prevent it. Survival during the period of winter cold and snow is built

primarily on respect. Respect for Old Man Winter and what his charges can do to the novices or the stupid among us.

Our tome this month is directed mainly to those of you who may still be enjoying balmy weather. Because we've traveled this route before. We know that some of you have not yet grasped the full implication of what this season means to your living or dying. Example: Transient T-bird chocks at Duluth in January, and out steps Captain Carefree resplendent in summer flying knickers and summer jacket. He then proceeds to raise the devil because the transportation troops didn't meet him at his bird — it IS a little chilly on the ramp with fifteen knots of wind off of the lake and the mercury touching a minus five. Poor Captain C, it was a balmy day when he left Texas that morning — and the temp at RG was pretty comfortable too. Tsk, tsk, what a fly boy has to go through just to take a little cross country trip. The crew transport finally arrives and our hoar-frosted hero makes it to Base Ops before frostbite gets to his fingers, covered



only by summer flying gloves. Captain C left the next morning and made it home. Ho hum, cheated death again. Another day — another dollar. End of lucky example.

Most situations such as the above end happily — happily. But why even tempt fate? Had complacent Captain C jumped out shortly after takeoff, he could have expired while watching the auto traffic on State Highway 53. And that's during daytime. At night it's just: close the book.

You don't have to be a native of the Northland to figure this out yourself. The problem is that it's really a mental conversion — this problem of clothing yourself to survive in the area you are flying over. No self respecting pilot flying out of Duluth would pull a dum-dum stunt such as flying in summer knickers — even if his home were in Miami. So, why should a jock from Miami do it inbound to Duluth?

The main dangers of being improperly dressed when you "jettison" an aircraft in the icy north are, of course, frostbite and death. Perhaps a brief review of some basic principles of the cold-versus-your-body struggle will turn on "the light" for some unthinking jocks and get this subject in the proper perspective.

Deep within the interior of your brain is a "thermostat" which is affected by certain sensors at or near your skin level. These sensors relay information to the brain's thermostat concerning temperature readings from different locations in your body. In extreme cold, the temperature control center takes positive action to shunt blood away from your skin and extremities to prevent loss of heat. This diverted blood is routed to the more vital organs such as the heart, liver, and stomach — they will have priority throughout your ordeal. Note the missing head!

## COOLING POWER OF WIND ON EXPOSED FLESH

ESTIMATED WIND SPEED (MPH)	ACTUAL THERMOMETER READING (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	EQUIVALENT TEMPERATURE (°F)											
CALM	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-21	-35	-49	-67	-82	-98	-113	-129	-145
40	26	10	-6	-20	-37	-53	-69	-85	-100	-116	-132	-148
	LITTLE DANGER (for properly clothed person)				INCREASING DANGER			GREAT DANGER				
	DANGER FROM FREEZING OF EXPOSED FLESH											

Trenchfoot and immersion foot may occur at any point on this chart.  
Wind speeds greater than 40 mph have little additional effect.



# November to April

And therein lies your problem. The extremities consist of your arms, legs, and would you believe — your head. This surprises most flying types. You have all felt the results of this blood priority action at one time or another . . . where your ears, nose, fingers, and toes began to feel uncomfortable.

A look at the Wind Chill Factor Chart will bring you up to speed on understanding the real killer involved. Wind of any velocity will steal body heat and it speeds up heat loss in localized areas such as your nose and ears if they are not covered. Use the chart to figure an equivalent calm air temperature and you'll see just how easy it is to suffer frostbite unexpectedly. One added comment on the chart, at actual temperatures above 32 degrees F, flesh will not freeze regardless of wind velocity, but body heat will continue to dissipate.

Frostbite, like burns, is classed by the degree of damage done. In first-degree frostbite, only the superficial layer of skin tissue is harmed. You may not have too much pain and after thawing, the affected tissue will peel off the same as a first-degree burn. Second-degree frostbite consists of freezing and damage to the skin tissue, and possibly the underlying muscle. It will usually produce some pain, blisters will form and you will experience considerable swelling. If a large area is affected it will require hospitalization to give the skin tissue time to grow again. To rate third-degree frostbite you must have your tissue destroyed completely. In simple terms, it — is — dead. The area will turn black and gangrene will set in. Amputation must follow to prevent its spread.

The symptoms of frostbite are pretty obvious — you can't miss them. The affected area will first be cold and painful. Freezing is starting and at this stage you must begin to take necessary precautions. Your nerve endings and senses are telling you to warm the spot and you must heed them. If you don't (or can't) the area will next feel as though it has warmed up. It's sneaky, and this will only last for a short while. The last and final part of this freezing process is a numbness in the area. The tissue and nerve endings are now frozen.

Visually, the frostbitten area will appear white in color and have a waxy look. Sometimes, it may appear yellow. If you were to touch the area lightly it will have a smooth feeling. **DON'T PRESS OR RUB THE AREA.** Get medical help ASAP.

We'll leave you right here with your frostbite. If you want to know how to treat it, get your Flight Surgeon out

to the squadron. That is, if he hasn't already been over to see you about flying and surviving in winter weather. That includes Homestead, George, DM, and the other southern bases, by the way. An overnight stay in the Blue Ridge Mountains of sunny Virginia would freeze you solid right about now. Frostbite would be the least of your worries if you went down about a hundred miles west of Langley while inbound for a visit.

We said earlier that your extremities consisted of, among other things, your head. Think about it. It houses that same hunk of grey matter that rationalizes for you when you find an excuse for not being clothed properly on a flight into the Northland. When your built-in thermostat begins to divert blood from your extremities, it also slowly starves the brain of oxygen.

You will now start experiencing a series of symptoms that will end in death if not reversed. The medical term for this phenomena is hypothermia, or cold exposure. And you are considered to be in it when your body temperature is below 98.6 degrees. Here are the signs and symptoms of how you go. Unfortunately, you may only recognize the first three!

- Muscular weakness, stiffness of limbs.
- Fatigue and overpowering drowsiness.
- Sight grows dim, you stagger and fall.
- Unconsciousness.
- Respiration and pulse become almost undetectable.
- Body becomes rigid, without signs of life. Shortly,
- No life.

We won't go into first aid treatment of hypothermia either, we'll leave you here again and let your Flight Surgeon pick it up.

By now you should realize that getting on the ground safely is not your biggest problem if you go down in a cold climate — it's only your first. If you are one of those fortunate jocks enjoying balmy weather right now, it may take some effort to imagine yourself touching down in three feet of snow after an uneventful (?) egress. But it doesn't take much imagination to realize that any flight between the months of November to April has the potential to be over some honest-to-goodness winter weather. Regardless of where you start . . . or hope to terminate.

We have competent people on the payroll to brief you, issue you the proper clothing; do everything except take you by the hand and spoon-feed you. That is a fact. Another fact is that cold weather preparation and use of the proper flight gear is, and remains, your personal responsibility. After all, it's your life — isn't it? Don't rationalize your life away!



## TACTICAL AIR COMMAND

# PILOTS of DISTINCTION

Captain Lance G. DeYoung and First Lieutenant David H. Roche of the 334 Tactical Fighter Squadron, Seymour Johnson Air Force Base, North Carolina, have been selected as Tactical Air Command Pilots of Distinction.

Captain DeYoung and Lt Roche were flying wing in an F-4D loaded with AGM-12, SUU-21, SUU-23, and two 370 gallon externals. As gear and flaps were raised after takeoff, the right fire warning light came on. The aircraft lost thrust and developed a vibration. Captain DeYoung tried to retard the right throttle, but it stuck in the afterburner detent. As he reached for the right engine master switch the cockpit filled with noxious fumes. The tower advised that smoke and flames were coming from the rear of the aircraft.

The left engine was kept in afterburner to gain airspeed and the right master switch turned off in an attempt to extinguish the fire. Suddenly, the left fire warning light illuminated. He retarded the left throttle, but airspeed decreased rapidly and afterburner was again selected. During the emergency the aircraft was flown in an arc around the field; a turn to a straight-in final was made. External stores were not jettisoned because of the populated area. The gear and flaps would not lower normally so the emergency system was used. The flaps indicated unsafe, but a visual check confirmed the flaps were down. The final approach was continued and a heavy weight, single engine landing was successfully completed. Investigation revealed a ruptured fuel line in the right engine compartment caused the intense fire.

The coordinated efforts of both pilots during this takeoff emergency readily qualify Captain DeYoung and Lieutenant Roche as Tactical Air Command Pilots of Distinction.



**Capt DeYoung**

Capt DeYoung



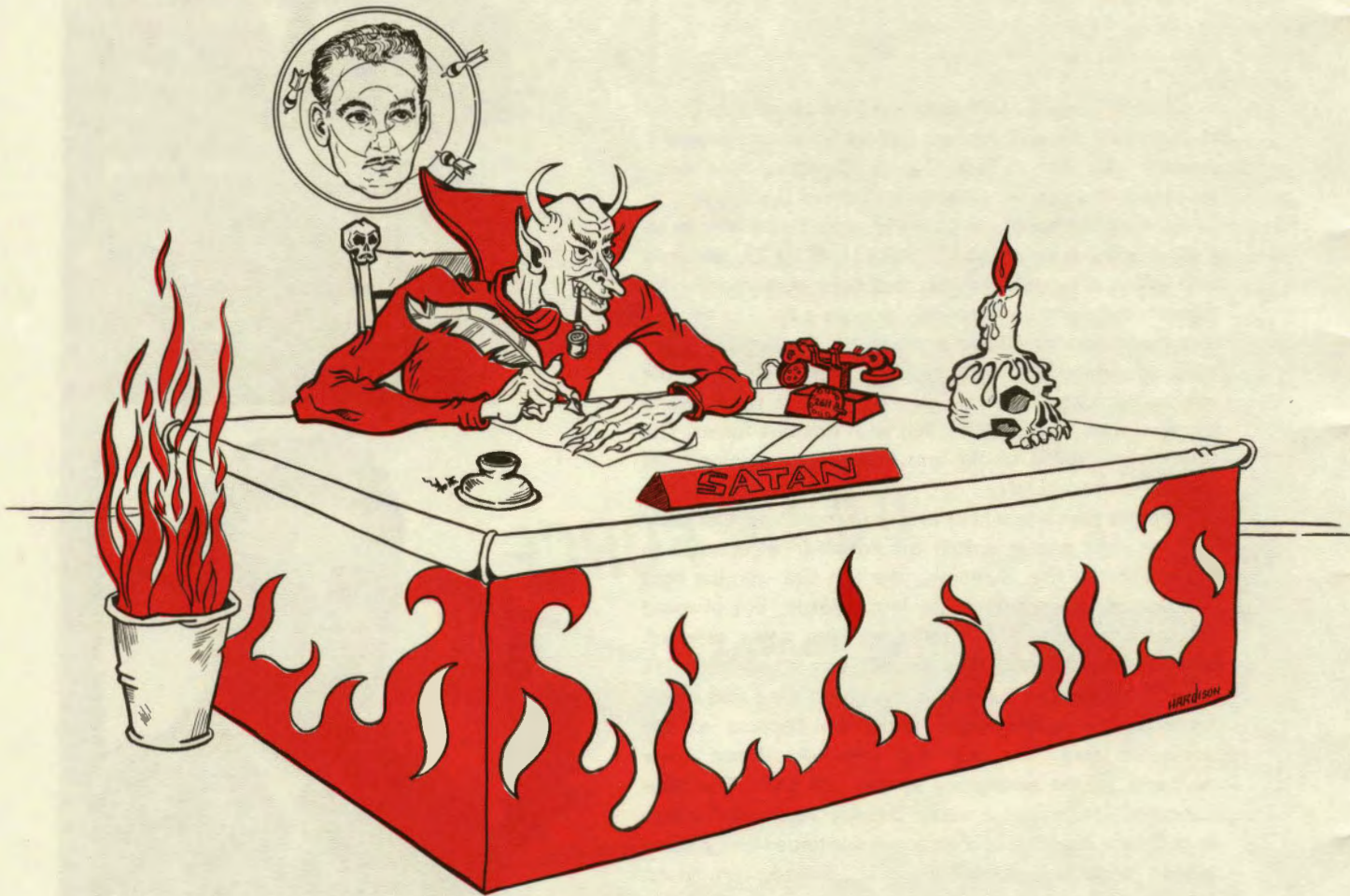
**Lt Roche**

Lt Roche



3

# Little Devils



at the Gates of Hell



By Chaplain (Maj) Clarence E. Drumheller  
834 Combat Support Group,  
Hurlburt Field, Florida

Chaplain Drumheller was born in Clifton Forge, Virginia, and graduated with a B. A. degree from Randolph-Macon College, Ashland, in 1946 after interrupting studies for a two-year enlisted tour in the U.S. Navy.

Ordained in 1952, he served pastorates in Montana and Massachusetts with the United Methodist Church, attended Iliff School of Theology in Denver, and graduated "cum laude" from the Boston University School of Theology in 1955 with an S.T.B. degree.

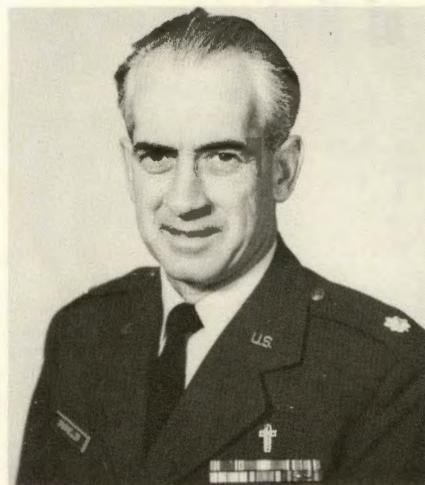
After graduation, Chaplain Drumheller entered the Air Force as a Chaplain, serving at several CONUS bases, in Korea, and in England. He resides with his wife and three children near Hurlburt Air Force Base, Florida, where he is assigned with TAC's 834th Combat Support Group, 1st Special Operations Wing.

Satan sat at his desk outside the Gates of Hell. After lighting his pipe, he leaned back in this chair and crossed his feet on top of his desk. He was in deep thought.

Although there were wars, riots, and disasters causing considerable mayhem among earth's humans, there was one area which caused him due concern — the U.S. Air Force's Ground Safety Program. The program, as laid out by the Air Force, was so effectively designed that Satan's forces were greatly discouraged. Satan knew he had to do something unusual to raise the morale and effectiveness of all his little devils.

Being no simpleton when it comes to creating mischief, Satan, after considerable thought, decided to sponsor an Air Force-wide Anti-Safety Contest. Accordingly, he devised an elaborate program of incentive awards which was bound to excite every little devil under his widespread command.

Satan offered his enticing awards in three categories. The lowest category consisted of several three-day passes which would be given to any little devil turning in a creditable piece of anti-safety mischief. This, he thought, would interest all of his clever minions without exception.



To this incentive, he added a second category, offering not only a three-day pass but also an all-expense paid vacation in Hell. Winners of second place could see and enjoy all human suffering and misery which their devilish anti-safety work brought about. What little devil could possibly turn his back on this delight!

Greatest of all awards would be the Grand First Prize — a two-week paid vacation in Hell, automatic promotion, and the coveted "Devil of the Month" award, giving the winner privileges never before offered to any little devil.

Satan decided that this contest was so vital in his efforts to bring down the Air Force ground safety record, that he himself would judge each entry.

Soon after word of the awards had gone out, three little devils appeared at Satan's headquarters outside the Gates of Hell. Each had done his damndest. Each sought the coveted Grand First Prize. Who would be the winner?

Satan leaned back in his chair and puffed his pipe. "Send the first contestant in," he said to his Executive Officer.

The first little red-suiter stood before Satan's flaming red desk, snapped to attention, and gave his fiendish



# 3 Little Devils at the Gates of Hell



report.

"I've done a magnificent job," he said. "In view of your inspiring contest, I have convinced hundreds of people that they don't need to fasten safety belts, especially when driving short distances. Since most fatal accidents happen a few miles from home, you can see, O Prince of Demons, the carnage that's going to result from my work."

Satan took the pipe from his mouth and exhaled a billow of smoke. "That's a pretty good piece of anti-safety business," he said. "The failure to use seat belts is bound to cause many bloody fatalities. You have earned a three-day pass. I'm afraid, however, that it doesn't entitle you to more because really safety-minded people will still fasten their belts, whether for long trips or short ones. We absolutely must come up with something better than that."

With tears of disappointment burning in his eyes the First Little Devil did his about-face and left the office. Satan called for the next contestant.

The Second Little Devil was smiling broadly. The failure of the first fiend to win the Grand First Prize bettered his own chances.

"I've outdone him by a mile of brimstone," said the Second Devil with a superior air, while motioning with his thumb to the door through which the first had passed. "I've really come up with something demonic."

"Spill it," said Satan, clutching his pipe and leaning forward eagerly in his chair. "Don't keep me in suspense all day."

"I've chalked up two atrocious accomplishments, either of which should make me a winner," he said. "First, as you know, alcohol, even in small amounts, impairs judgment, slows reactions, and makes drivers take unnecessary chances. Acting on these facts, I have easily convinced hundreds that drinking in moderation is a lot better than being called a blue-nosed Puritan. Already you can see the mangled bodies, and hear the cries of widows and children resulting from the highway accidents which my abominable scheme has caused."

"Excellent!" said Satan. "This is the kind of heinous thing I want. What else have you accomplished?"

"Secondly, I have spread the word that if one has been drinking, driving is safest late at night and in the wee hours of the morning. Most police forces reduce their strength during these hours, and there is less traffic on the highways. A really daring driver, I tell them, can open up and see how much his hot rod will do. Wow! You should see all the one-car crashes I've brought about with this satanic plan. So if you'll give me my Grand Prize, I'll rush down to hell and watch 'em burn."

"Mmmmmmmmmmm," said Satan, refilling his pipe. "That's a dandy piece of devilment, I must admit. It certainly entitles you to second place, an all-expense paid



vacation in hell where you can watch the people you have sent there writhe and scream. However, I wanted something with a wider influence for the Grand First Prize."

After admitting the Second Devil through the Gates of Hell for his three-day paid vacation in the land of fire and brimstone, Satan called for the third contestant.

Third Little Devil, with creases sharp as razors in his red flannel underwear, squared his shoulders, clicked his heels, threw a smart salute, and reported:

"Sir, how does this strike you? I've taken complete advantage of that natural homo sapiens characteristic to be lazy, crafty, irresponsible, and resentful of authority. I tell them that safety is only the business of the Commander and the Safety Officer — not theirs. I tell them that safety regulations are just an attempt to regiment them and limit their freedom, and that really smart cookies will ignore them, so long as they don't get caught. Then I teach them to stick together in their safety rebellion, and to cover up for one another in their unsafe practices.

"It's really my work that makes airmen leave their seat belts unfastened. Because of me they throw cigarette butts into waste baskets, and smoke in bed because no one reports them. They are indifferent to safety rules and regulations of all sorts and encourage one another to sneer at them. They fail to report known safety hazards saying it's not their business. I've even taught those with a modicum of interest in their own safety to show a selfish lack of concern for the safety of others."

"My monstrous work, Sir, will spread unsafe practices like wild fire. It will tie up Commanders everywhere trying to explain the lack of safety on their bases. And to think, it's all because of me. I know how to take advantage of human weakness, selfishness, and irresponsibility. My evil work is bound to have far reaching results."

Before the Third Little Devil could finish his report Satan's red phone rang so loud that it literally danced on his desk. Satan placed the receiver to his ear. A wild and devilish expression crossed his face. His excited hand emptied the pipe into the trash causing another delightful fire.

Shortly, Satan dropped the receiver on its cradle, walked over to the Third Little Devil, and warmly pumped his hot little hand.

"Congratulations," he said. "That was the operator. He tells me the switchboard is jammed with calls reporting accidents of every description. For this imaginative and effective piece of devilment, you have won the Grand First Prize. You will get your two-weeks paid vacation in hell, where you can watch all the human misery your

unsafe practices have caused."

"Convincing Air Force personnel that safety is somebody else's business has won for you the highest approbation ever achieved by any little devil. I hereby proclaim that you are not only Devil-of-the-Month but 'Devil Forever,' and I am promoting you to the position of Hell's Anti-Safety Officer for life. Now have you anything to say?"

"Yes, Sir," replied Little Devil Forever. "If anybody wises up and discovers that Safety is Everybody's Business, we're through. Therefore, I request permission to forego my pleasant vacation in Hell and return to duty."

"Permission granted," said Satan, "And may carelessness and indifference to safety reign forever."

With a click of his heels and a snappy salute, little Devil Forever turned and skipped gleefully back to Any Air Base, where he is hard at work right now. ➤





# TAC TIPS

...interest items, mishaps

## A-1 TAIL HOOK ABORTS

Aborted takeoffs of two high gross weight A-1s, only days apart, ended successfully for one, and fatally for the other. Mechanical failure forced both aborts, and both experienced wheel brake difficulties on slow-down, an inherent problem with the A-1.

On the first, after applying brakes the aircraft began a gradual right turn which apparently could not be controlled by the pilot. After the plane left the runway, the pilot retracted the gear and released all four Koch fittings to the Yankee escape harness. But an explosion rocked the bird before the canopy could be opened.

On the second abort, fire flashed from the wheels even though the pilot used careful brake applications. He dropped the tail hook and successfully engaged the BAK-12.

The fatal ending of the first abort seemed more tragic when it became apparent that the bird crossed over the BAK-12, tail hook still stowed, before leaving the runway.

The accident board suggested that all A-1 aircrews be made aware "that because of the insidious effects of wheel brake fading, aborting aircrews should use brakes primarily to provide directional control for barrier engagement."

## HOT HERKY!

The Herky instructor pilot demonstrated the bird's performance and handling to his new student. With power at 900 degrees tail inlet temperature they heard and felt the explosion. Number two complained about turbine overheat, nacelle overheat, and came up with a steady fire warning light. The scanner reported flames aft of Two's nacelle; the engineer followed with decoupling of engine and prop. Throttle back, the pilot discharged No. 1 extinguisher . . . the flames died momentarily, but the fire warning and nacelle overheat lights burned brightly. He isolated the left wing bleed air system and discharged No. 2 extinguisher when warning lights failed to go out. The

still visible flames slowed, flared momentarily, then died.

Fire out, the pilot prepared for landing at an alternate. While attempting to lower flaps, the utility hydraulic pressure dropped to zero and flap movement stopped at 20 percent. Utility system off, they cranked the gear down and landed okay.

Maintenance troops pinpointed a failed spacer between the first and second turbine stages as the "fire starter." Spacer pieces penetrated the "horse collar," cut the main bleed air duct, severed a hydraulic line, and damaged assorted fixtures. Turbine seizure caused the engine decouple. The IP's prompt and correct emergency procedure actions, including left wing bleed air isolation, limited fire and heat damage.

His knowing the good book cooled off a hot Herky in time.

## BUY THEM BOOKS....

You've all experienced the feeling. It's a combination of disappointment, disbelief, discouragement, and disillusionment . . . plus a few other negative attitudes. It goes beyond Ex \_\_\_\_\_ headache number umpteen.

The sinking sensation is triggered in different ways in different people. In parents, it can be brought on by a son's announcement after three-and-one-half years of college capers that he's quitting school. Students experience it when an all-star end, who normally catches any football within reach, drops the game-winning pass in the end zone on the last play.

And when do safety types suffer this mightily? It happens when an incident report like the following is transmitted Air Force-wide.

The Boxcar pilot launched on a nighttime troop-drop support mission. After reducing takeoff power to METO, number one prop increased to 4000 rpm. The aircraft was about 100 feet above the ground at 140 knots. Attempting to climb, the pilot applied full power, but airspeed dropped to 115 knots. He tried to reduce rpm on One by reducing throttle without succeeding in lowering



## with morals, for the TAC aircrewman

rpm below 4000. Unable to gain altitude he turned back to the field and landed downwind "uneventfully."

And the valuable lesson learned as the result of this exceptional pilot's close brush with a major accident? The materiel failure information passed on to all other C-119 users in the Air Force to avoid repeat confrontations with runaway props on takeoff? We quote: "Appropriate maintenance checks being performed." That's it, all of it. End of report.

If it will help you non-safety types appreciate the depths of despair this incident report generated, add to the earlier clumsy examples: (1) the son joined the hippie movement; (2) the all-star dropped the ball intentionally in a fix.

We buy them books, send them to school . . .

### **THE NOSE KNEW !**

It was nighttime and they wanted to cruise at 12,000 feet. So the Globemaster crew dutifully donned oxygen masks in their unpressurized aluminum overcast. Sniffing carefully, the aircraft commander didn't like the peculiar odor his regulator delivered along with its oxygen. He decided to do without the smelly stuff and directed his crewmembers to do the same.

After they returned to their home station, they sent oxygen samples to the lab. Technicians discovered hydrocarbons and mildew in the bird's system. They're asking the organization that last serviced the C-124 with O<sub>2</sub> to check their carts for contamination.

Besides being jolted by the fact that some outfits may service contaminated oxygen to visitors, we're wondering what would have happened if a cold (some people fly with them!) had dulled the AC's outstanding odorous-O<sub>2</sub> — oriented olfactory organ?

### **YAW'LL HELP**

The Dollar-nineteen was on a navigation training mission and number one torquemeter started

bouncing . . . then the needle pegged at zero. The rest of the engine instruments were on their good behavior and no power loss was evident. So, the pilot feathered it.

Surprised? Well, so were we. So, we dug out the Dash One; it's been a while and thought its guidance might've changed.

There it was in Section III under Detection of Inoperative Engine: "If engine failure should occur, the inoperative engine can be determined by:

1. Noting the change in directional trim. When an engine fails, the effect of asymmetric power is such that it causes the aircraft to yaw in the direction of the engine which has failed."

Nothing has changed. Yaw is still the primary indication of power failure on a twin-engine recip. If you can't quite decide on the amount of power delivery from a torquemeter-less engine, try pulling back the throttle until you do or don't get added yaw. It'll help you make up your mind on shutting down an engine that's still working for you.

### **RF-4 FLAPS**

Climbing through 10,000 feet, both the master caution and check hydraulic gauges lights illuminated. PC-1 and PC-2 were both at 3000 PSI, however, utility pressure had decreased to 2000 pounds. Wingman confirmed that hydraulic fluid was streaming from the mid-point and right side of the fuselage. The gear and flaps were lowered using the emergency systems.

During flap operation, the right flap went to one-half down before the left flap began its travel. The pilot had difficulty countering the rolling moment caused by the asymmetrical flap condition until the left flap began to move.

There's a moral here. Get those flaps down with lots of air below you if possible. If you can't — at least be prepared to be your aircraft's passenger for a short time. And where should your wingman be?





# Thunderbirds

## "THE RINGMASTER"

by Capt Thomas A. Gibbs  
Narrator

Capt Thomas A. Gibbs was awarded a regular commission from Air Force ROTC on graduation from Oklahoma University, where he received a BA degree in Finance. He completed pilot training in June 1965 winning flying training awards for T-37 and T-38 phases.

From Reese AFB he moved on to Nellis AFB and the F-105, earning the top-gun award for his class. Assigned to Korat RTAFB, Thailand, in January 1966, he flew 140 Thunderchief combat missions, with an even hundred of the sorties over the North, returning to the States in October of the same year. Captain Gibbs flew with the 94th Interceptor Squadron at Selfridge AFB until November 1968 when he was named narrator for the Thunderbirds.

Included in his decorations are the Silver Star, Distinguished Flying Cross, Air Medal with 15 Oak Leaf Clusters, Air Force Commendation Medal, and Vietnamese Service and Campaign Ribbons.



"What? Me, a Thunderbird!?" How many times have you heard this statement or one very similar? How many times have you said it? How often have you thought you would like to apply for the Thunderbirds, but just have never gotten around to it? The main requirement is desire.

The prerequisites for application are set forth in Chapter 45 of Air Force Manual 36-11. For a demonstration pilot or narrator, the criteria are:

- Less than 10 years active commissioned service as of 31 December of the selection year.
- FCS-1.
- One-thousand hours rated jet fighter or jet trainer time.

- A completed SEA tour.

Why has this set of criteria been established? Number one — we strive for a young team, but not too young. Also, members who can just as easily converse with a small child or the Chief of Staff; thus, the less than 10 years active commissioned service requirement. Point two is self-explanatory. The third criteria is for training. If a pilot has a fighter background, it is easier to train him in the two months of our training season, January and February. Last, but not least, the completed SEA tour is necessary so we do not deny anyone having the opportunity to serve in SEA.

After you submit a formal application through channels, with an information copy to the Commander,



USAF Air Demonstration Squadron, the Thunderbirds, you start the waiting and hoping period. As I stated earlier, many pilots could be a member of this team, and desire is the main requirement. If you have the desire — you will apply. The application closing date is 31 August, every year.

The team members sit down and review the applications much the same as a promotion board. From these applications, a group of semifinalists are selected. (There is no set number. For example, there were 15 semifinalists in 1968 and 19 in 1969.) These pilots then travel with the team. The purpose is twofold: One, it gives the semifinalist a chance to observe the activities of the team "on the road." Two, it gives the team a chance to observe the semifinalist in a public-relations environment.

After all semifinalists have traveled with the team, we again sit down and select a number of finalists. These persons are then invited to revisit the team, usually at Nellis Air Force Base. At this time, the finalists fly in the backseat with the solo pilot on the leader's wing for what we call a tryout sortie. This flight is to observe the finalist's basic stick-and-rudder abilities, adherence to checklist procedures, and flying maturity, all important factors in assuring team integrity and longevity. This also gives them an opportunity to view some of our maneuvers from the air.

When this is completed, the finalists must quietly sit back and wait for the final word. I remember the day that I was called and informed that I had been selected as a member of the Thunderbirds — the narrator. I calmly walked into the O-Club and ordered one martini — two-feet deep — three-feet in diameter.

Thus, the narrator begins a year of experience in a new and vastly different world. He spends one year as narrator and two years flying in a demo position. This provides a three-year tour versus a normal two-year tour for the other team members. As the narrator, you are the OIC of the Information Shop of the Thunderbirds; working directly for the narrator are an information officer, four NCOs, and a civilian secretary.

This shop is most interesting, very challenging, and above all, unique in its function. The office corresponds directly with many foreign and domestic dignitaries and high ranking officials. With a normal show season of more than 100 air shows, there are astronomical coordination efforts accomplished to assure that all operations, maintenance, and public relations aspects are properly planned and supported.

During the training season, the narrator not only practices the narration while the team practices their maneuvers at Indian Springs Air Force Auxiliary Field, but is responsible for updating all Thunderbird literature for the new members. When the team is at home between

deployments, the narrator must insure that the itinerary for the next trip is produced, and that the deployment report from the previous trip is precise and errorless.

On the road, the narrator's duties are many and very diversified. First of all, he travels to a show site in his own F-4 (No. 8) and arrives two hours in advance of the rest of the team. These two hours are spent coordinating maintenance support, aircraft security, billeting, transportation, public relations requirements, FOD control, all to assure a successful air show. He also concerns himself with flight safety; secures aerial photos of the demonstration area noting structural and natural terrain hazards to flight, as well as overflight in relation to densely populated areas and spectator viewing positions; and often serves as mobile control officer during team arrival and familiarization flights.

When all of these pre-show coordination activities are completed, the narrator goes to the control tower to monitor the arrival maneuvers.

At this point the narrator must prepare himself to give a one-plus narration for the one-plus air show that is about to begin. The context of the narration is subject to change between the different shows. The reason is timing. He must narrate during the periods the airplanes are not actually performing a maneuver. Although the maneuvers are self-descriptive, the narration helps to supplement the show with bits of information and techniques which the spectators do not usually think of, or have some misconception of. And some information about the F-4, team mission, and history.

The working relations with the various project people all over the world really brings to light the necessity to properly communicate and always portray a friendly, cooperative attitude.

The net result of our team demonstrations show to all who see us that the Air Force has successfully joined man with high performance flying machines. Each flight proves that properly trained and self-disciplined aircrews not only perform their mission, but can do it safely, for themselves and the public. ➤





the NEW LOOK in

# lap belts

Some of you may have seen the little jewel pictured on these pages — the rest of you will see it soon. It's the HBU-2A lap belt which will be replacing the MA-5 and MA-6 lap belts now in service. It's been in development for over two years, so it ought to be a swinger.

The photos will speak for themselves so we won't discuss the belt too much. The odds against the pictured "Murphy" occurring would be fantabulous — but don't forget, we somehow manage to Murph them all at one time or another. A passenger, for instance, who is allowed to hook up this way, and ejects, will find himself riding the seat in. The lap belt connector will not be freed when the initiator fires if it is in the gold key slot.

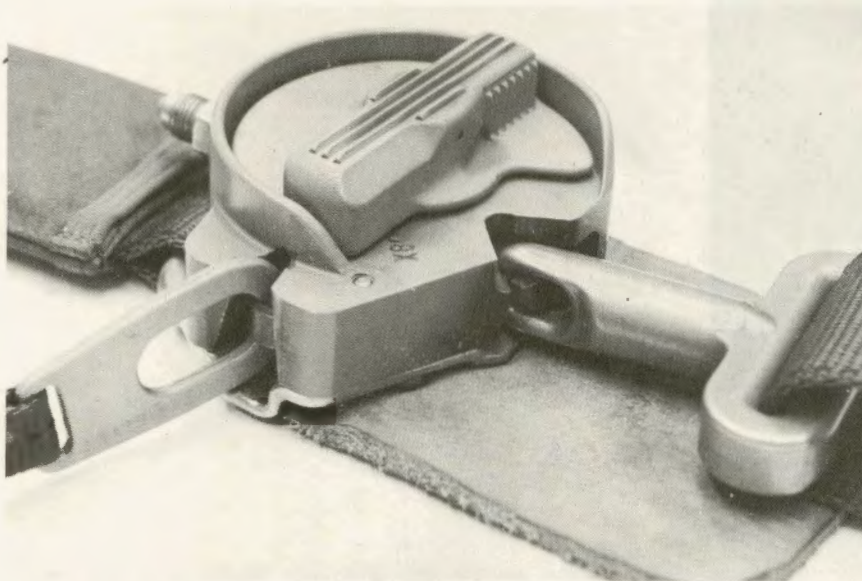
The lap belt is opened by turning the release counter-clockwise. Pressure on the serrations opens it easily. It can be operated without fingers, if need be the palm, wrist, or elbow will do the job. If the release is not masked by a survival vest, a pilot with severe hand injuries or burns can effect egress very rapidly. If it happens to be covered you'll have to fish for it and hope it doesn't take too long. ➤

lap belts

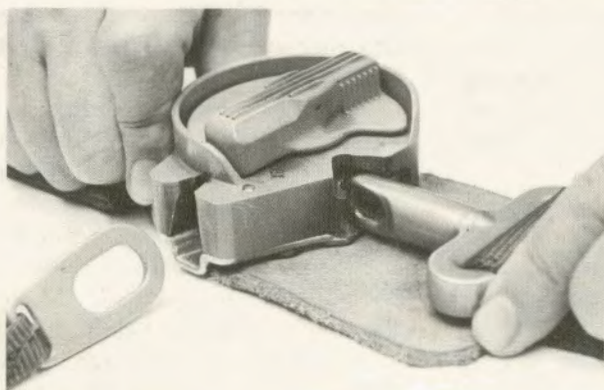


Here's the whole shebang, you're looking at it from top left. Many of you will be happy to see the new adjuster pictured. It's the HBU-5A and will be an integral part of the lap belt assembly.





A close-up of the vital connections from top right. Note that your gas hose will now run in from the left side.



Don't waste your time, the lap belt cannot be connected until the gold key is inserted.

This photo shows the only "Murphy" we could find. It is possible to insert the lap belt connector into the gold key slot. It will lock in properly, but the gold key cannot be inserted into the lap belt slot. A half of a "Murphy?"





# CHOCK TALK

chock talk

...incidents and incidentals

## **CORRODED CANNON**

The cannon we're talking about isn't the shooting kind, but it can knock out your power plant with the greatest of ease . . . without firing a shot. All it has to do is quit doing its job.

The Provider crew cruised about 20 minutes before number two's oil temperature started a slow climb. They tried to open the oil cooler door, but it wouldn't budge. When engine oil temp hit 100 degrees they shut down the feverish fan and called it a wasted day.

Maintenance troops found a corroded cannon plug on the oil cooler actuator motor. The poor contact resulted in poor cooling. You ask, "What if the other oil cooler actuator suffered simultaneous cannon plug corrosion?" Poor Provider!

## **ALL PILOT ERROR ?**

The 0-2 pilot launched with the rear engine alternator inop on a night FAC mission because "troops were in contact." Eager to help his buddies, he figured the rated 60-amp front alternator would carry the electrical load. It did for takeoff, climbout, and 40 minutes of flight with 45-to-50 amps indicated on the ammeter. Then his mike switch went dead, cockpit lights dimmed, and radios quit. He checked his ammeter and read "zero" load. Then he tried an alternator restart, but no luck there. With all except his instrument lights off he groped his way home. Soon after his battery failed too. He landed blackout, no flaps, airspeed-by-flashlight in a crosswind.

Maintenance investigators discovered a shorted

connection on the rear alternator started with a loose lead. They replaced it. They also found the front alternator was low on output and cranked it up to where it should be.

And then came the puzzler. They concluded that the incident's primary cause factor was pilot error! He shouldn't have launched on one alternator. It seems that the electrical load was too much for one alternator, causing its malfunction and eventual battery depletion.

That may be the problem's best answer. But not one unkind word was said about the quality of maintenance that limited his available electrical power.

And if one alternator can't hack the program, what does a pilot have to look forward to when an engine fails in flight?

## **OIL SHORTAGE**

The Provider crew climbed out to 4500 feet and set cruise power. After about 10 minutes of level flight the engineer noticed oil oozing out of number one engine's breather lines. The pilot pulled power off to 20 inches MAP, but the oil continued to flow. He decided to shutdown the airborne oil well and air aborted.

Maintenance troops checked for obvious oil leaks, but couldn't find any. So they decided that the oil tank was overserviced because a dip stick reading was taken five hours after engine shutdown and called for 10 gallons. They figure the thirsty old recip swallowed oil through something called a "filter check valve" (wonder if it really was a sticky diverter-segregator valve?). Whatever the malfunction, they're dip sticking the oil tanks immediately after engine shutdown. And later they service



*with a maintenance slant.*

the 40-gallon-with-8-gallon-expansion-space tank to a total of 35 gallons.

They didn't explain, but somehow the short-oil-service procedure will correct the problem of engines swallowing oil after shutdown.

### **ADRIFT IN A CANOE**

The U-3 pilot touched down smoothly and his bird pulled to the right. He straightened out his blue canoe, but it promptly veered right again. In spite of max left braking and forward thrust on number two engine, the bird insisted on easing off the runway a foot or two.

The tiny twin wasn't hurt too badly, but maintenance investigators found the right main scissors pin disconnected and the canoe's right gear turned sideways. They also discovered why. Somebody forgot to install a retaining washer on the strut's scissors assembly.

When the canoe crew corners the complacent culprit they're going to set him adrift in a birch-bark canoe without a paddle... along with the job's indifferent inspector!

### **CAPPED THROTTLE**

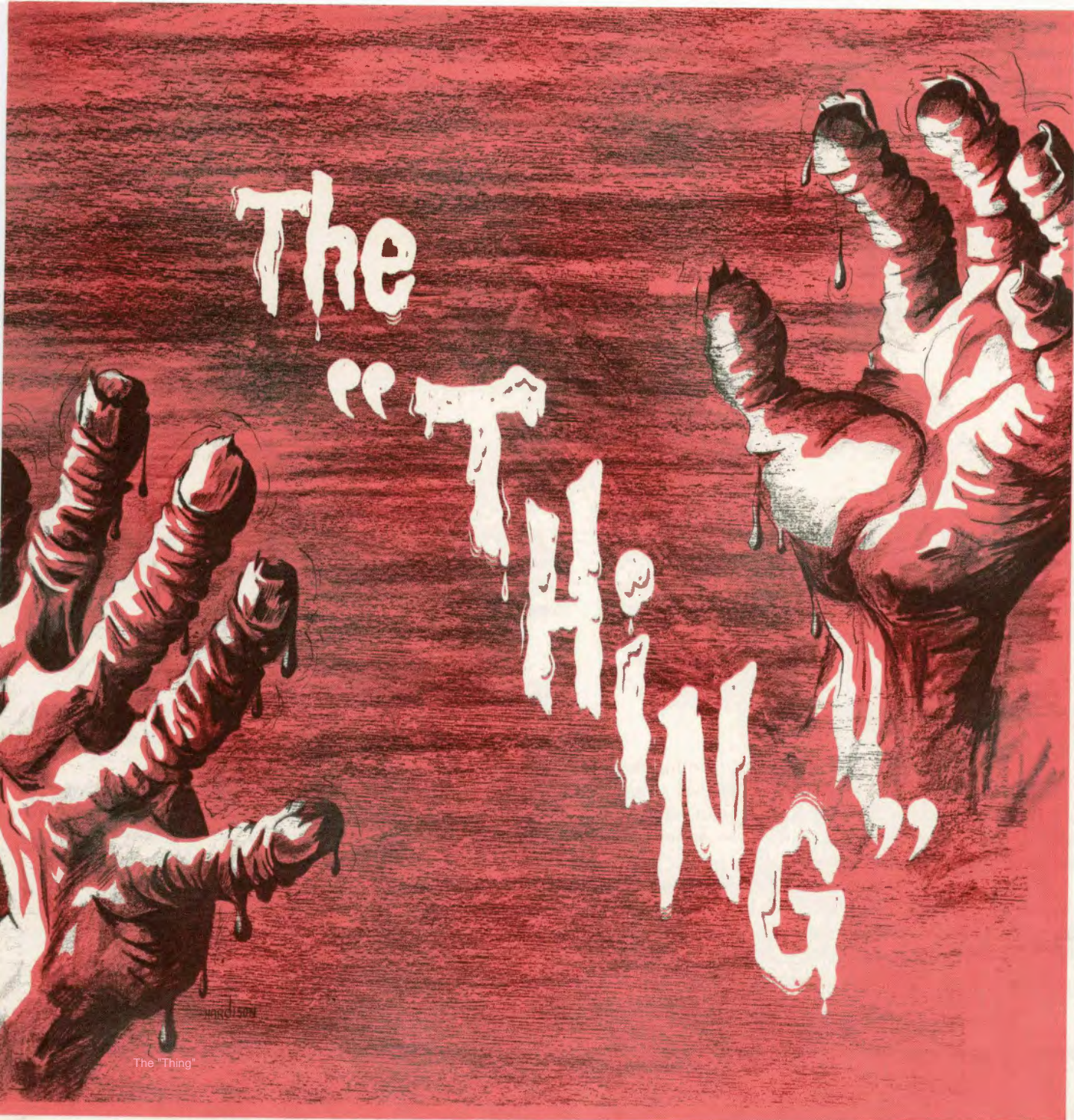
During a high speed dive recovery a pilot in another command attempted to retard the throttles to idle. His T-37 had other ideas, the left throttle jammed at 80 percent. The crew took it home and shut the left engine down on final. A cap was lodged in the left throttle quadrant, blocking movement below 80 percent. The type cap found is used to cover the adjustment screw on both the hydraulic pressure transmitter and the oil pressure transmitter — both located outside the cockpit area. How mal was coded as 301 WUC 11623. We could think of a dozen better ones. All very personal!

---

**Hey! pass it along... nine others are waiting.**







The "Thing"

by A. W. (Tony) LeVier  
Lockheed-California Company

As we come to the end of 1969 and look forward to a better year in '70, one of our mandatory tasks is to review our past year's experience in the accident and incident area. There will be more on that subject in later issues of the TAC ATTACK, but right now there is something that needs to be said about loss-of-control accidents — and said loudly. While casting around for a vehicle to present our thoughts, we recalled this article which originally appeared in the June 1968 TAC ATTACK. Our problem is the same now as it was then. And Tony LeVier covers it in an outstanding way.



**The** five little racers are lined up abreast for a race horse start, barely 20 feet between wing tips. It's the start of the Greve Trophy Race during the 1939 National Air Races in Cleveland, Ohio.

I'm flying the Schoenfeldt Firecracker, the world's fastest 550-cubic-inch racer, and I'm sitting at the enviable lift end (pole) position. Lee Williams, a novice, is on my right. Further on are Art Chester, Harry Crosby and George Bayrs, in that order. We are headed south on the grass turf of the municipal airport. The No. 1 scatter pylon is slightly to my right and No. 2 is well to the left.

The starters' flags both drop and five angry little "beasts" leap forward. Williams, on my right, charges ahead and then, suddenly, turns left, forcing me to veer left too. Keerist! What's the matter with the guy? He's going for the wrong pylon.

My racer is heavy and accelerating slower than Williams'. The ground is rough and giving me plenty of trouble keeping the little bird under control. Sure enough, Williams is heading for the No. 2 scatter pylon. I decide to follow him. I'm all loused up and out of position to cut right.

I know my racer is tail heavy. We had just installed a 35-gallon fuel tank behind my cockpit and there is 20 gallons in it for this race. I could feel the weight, and the tail was dragging hard against the ground, even with full forward stick and the stabilizer adjusted for full nose down.

Williams is in the air. His takeoff looked hairy. With the nose dangerously high he catches it, then straightens out toward the No. 2 scatter pylon. I follow him into the air. Ye gads! Is she unstable. Every little bump makes her want to pitch-up or tuck under. I was expecting this to happen, knowing full well that the Center of Gravity (CG) was aft of the normal limit.

I started a wide left turn to follow Williams. He's just about to the pylon. Now he starts rolling into the turn. He's almost vertical and pulling back on the stick. Then it happens. The little racer, "Miss Los Angeles," also with a new rear fuel tank, pitches and snaps. Williams, the poor guy, in his haste and excitement, hadn't gotten the warning, or just didn't understand what a rear CG meant. The racer, tumbling crazily, falls to the ground. I am directly over him when he crashes. God! What a start for an air race.

I circle on around to the left, as the rest of the racers pass around both scatter pylons. I eventually catch up and pass the other fellows, only to have my engine go sour, forcing me out of the race.

Even though I was out of the money, I learned a

valuable lesson that day. All high-performance aircraft can, and do, perform maneuvers that result in out-of-control situations. The fighter pilots of today are faced with out-of-control maneuvers that can only be described as the "THING."

Now, really, there isn't much difference in the way some of those early-day racing aircraft acted and our present day fighters. Today, the words "pitch-up" "pitch-down," "tuck under," and "post-stall-gyrations" are spoken by jet fighter pilots. Is this a whole new terminology for aircraft behavior? Not at all. The basic behavior phenomena of aircraft hasn't changed at all throughout my years of flying.

Take these "new terms": super stall or deep stall. I used to call it CATASTROPHIC STABILITY in order to describe it. Anyway, I experienced it in 1933 during practice for an air show. I was going to do a series of dead stick loops. On my first attempt, the bird stalled inverted, and believe it or not, it wanted to stay inverted. I used every combination of control to get her off her back, but to no avail. The aircraft, an OX5 powered Travelaire biplane, was falling flat and absolutely so stable that it would have crashed inverted had I not hit turbulent air at about 1,000 feet. This upset the machine just enough for it to slide off on one wing. I was about to bail out at just that moment.

The only difference between those "early birds" and some of our very latest and hottest fighters is that they were lightweight and slow in speed. Generally speaking you could get away with making a lot of mistakes simply because you had a little more time to correct yourself. Even if a particular type of aircraft would snap at you for mishandling, you could recover by certain corrective action almost instantaneously.

Not so today. Our fighters, big and little, all have high wing loadings of over 100 pounds per square foot (PSF). And I think I'm correct in saying that none of them have a really clean bill of health when it comes to slow speed stability and control. That's what I would like to talk about now.

### SLOW SPEED STABILITY AND CONTROL

By and large, we pilots tend to get into more trouble with an aircraft by fooling around at low speed and too low an altitude while executing some special maneuver. Often this pet maneuver is "verboden" by either the manufacturer's Dash One or the SOP set forth by the particular command to which you are attached.

Also, and it's not exactly rare, some odd characteristics of new aircraft are not completely understood by



# the "THING"

everyone until such time as an accident or incident investigation reveals the flaw. Sometimes it takes a lot of pilot and aircraft losses to jar people loose to do something about it. In the meantime, "pilot error" is only too often the final conclusion of an accident investigation report. I'm talking, of course, of those accidents that usually happen during seemingly normal circumstances . . . the pilot landed short, the aircraft stalls on base leg, etc, with everything else working okay.

Surprisingly enough, our skill levels are not always what they should be at any given time. Therefore, in my opinion and this is strictly from my personal observation from working with all kinds of pilots, military and civilian for 40-odd years, there is a percentage in any group who will over extend themselves. From time to time, they deviate from the standard and laugh about it . . . only if they get away with it. The helluvit is, frequently there's no one left to laugh.

Several years ago, a young ex-military pilot joined our ranks as a production test pilot. He was a darn good pilot, had an aeronautical engineering degree, and wanted to be an experimental test pilot. We sent him to a military test pilot school where he distinguished himself as an outstanding graduate. Later on, he had his chance to join the engineering department as a full-fledged experimental test pilot. Again, he distinguished himself by performing important development testing on the world's first Mach 2 fighter.

He and I spent his last evening together, talking about his work. There were many things that bore on his mind. He once told me that he had never been frightened while flying an aircraft. Perhaps he hadn't, but it appeared to me that evening that test flying was getting to him. "Joe," I said, "there are times when we all have to back away from our work to assess ourselves and the tasks at hand. If your job is getting on your nerves, you may need a rest . . . need to get away from it for awhile."

There was work to be done and Joe was the last person to throw in the towel or to ask for time off. It was late afternoon the next day when he approached Runway 07 at Palmdale. Witnesses stated that the aircraft looked normal until about 15 feet off the ground. Suddenly the right wing dropped some 15 to 20 degrees. At that moment, the nose came up and the bank angle increased. Now the plane started to veer to the right and headed off the runway. Joe put in full power and afterburner to try and save the situation. The bank angle increased to about 70 degrees with the nose high. Then it struck the ground.

The right outboard tip tank fin cleaved the ground first. The angle was measured at 70 degrees.

Joe was really a wonderful guy. Unusual for our day. He didn't drink, smoke, swear, or raise hell like a lot of us do. His family life was very harmonious. But even with all these plus factors working for him, he still made one little mistake that day.

The particular aircraft he was flying did not yet have boundary layer air for the landing flaps. Therefore, all landings were to be made in takeoff flap position. For some unknown reason, Joe elected to use landing flaps. I had previously done the early investigation of the landing flap configuration and found that as you approached touch-down speed, the right wing drops — not abruptly, just gradually. It seemed to sneak up on you. This was basically caused by span-wise air flow over the ailerons which rendered them ineffective just at the time you needed them most.

The accident investigation board did their job. No one could ascertain what happened. I recounted my experience with the bird during earlier tests, but they refused to accept it. Findings: Cause Undetermined. They just weren't listening.

Now, let's talk about another so-called new terminology — post-stall-gyrations. As time goes by, more and more pilots in various fighter aircraft are encountering these out-of-control maneuvers. The Dash One issued by the manufacturer might mention them with a WARNING or CAUTION and touch on the subject briefly, but you might conclude it to be of little significance.

Later on, when the service pilots get the bird and really put it through its paces, invariably someone, perhaps less experienced and not too long out of flight school, gets into trouble. Things get to popping. So, what happens? Meetings are held and a Safety Supplement is issued.

I have had many hairy experiences during the early development of jet aircraft. Some of these birds had post-stall-gyrations like nothing you can imagine. Those of you who are relatively new to our jet-set and didn't fly the good old T-Bird (T-33) back in its early days might not know that it had a post-stall-gyration (PSG) that we called the "THING." I invite you to read an article by Sammy Mason and yours truly in the February 1968 issue of INTERCEPTOR. It tells about the history of the T-33 stall and spin program, and what we discovered caused the PSG. Even though you may never have the occasion to fly the T-Bird, it will give you an insight into the cause of PSG for most fighter types.



## FIGHTER DESIGN

In order to design a modern fighter aircraft with Mach 2 plus capabilities, the designer must consider many things in determining the configuration he believes best to meet the military requirements. Usually the customer specifies the desired gross weight, pay load, range, speed, operating altitude and related equipment to complete a weapon system. The manufacturer chosen as the prime contractor assembles his staff for the project. They, in turn, start the task of refining the design already proposed. What will it look like? Will it be a delta, swept, or short, thin straight wing? High or low tail plane? Take your pick, we have 'em all.

Wind tunnel tests are used to optimize the design. Invariably, some undesirable characteristics rear-up to bug the aerodynamicists. They make trade-offs here and there to try and improve the situation, only to find that they adversely affected some other good characteristic. It takes a smart and patient engineering group to finally find a solution that will produce an aircraft acceptable to the customer.

However, and you must remember this, the trade-offs that are made in the final design of a supersonic fighter, in the cases I know of, have resulted in marginal low speed stability and control at high angles of attack. And, they all have some sort of undesirable handling characteristics during and after accelerated stalls.

At traffic pattern speeds and altitude, an accelerated

stall most often will result in a PSG from which recovery will be extremely doubtful. When the modern fighter is man-handled into an abrupt pitch attitude of high angle of attack, several things happen almost simultaneously...and so fast that I defy any normal pilot to react quick enough to divert a wild ride.

Take a typical fighter, sweptwing, low horizontal tail, normal weight and CG. If the pilot, on the break for a landing, rolls and then racks it back to make an impressively tight turn, the air flow over the wings changes abruptly from chord-wise flow to span-wise flow on the underside and "burble" or flow separation on the top side. UNLESS CAREFUL WING DESIGN PREVAILS tip stall will occur which produces a forward shift in the aerodynamic center of pressure (CP). This in turn produces an extremely severe stalling moment (pitch-up). With a fast pitching rate, produced first by the pilot, plus the forward shift in CP, the angle of attack easily exceeds normal limits. The suddenness of the initial maneuver will usually mask or shadow any normal or artificial stall warning.

If incipient stall occurs, the aircraft may roll right or left. Roll application by the pilot may help trigger this condition, which can induce adverse yaw followed by AUTOROTATION. Under certain conditions one might expect a snap-roll ending up in a spin.

On the other hand, the long body (fuselage) and tail surfaces play an important part. When the wing stalls at the root it will affect the air flow along the aft fuselage, which also reduces the aircraft's directional stability. The vertical fin, now engulfed in a region of turbulence, can be partially stalled, reducing the directional stability still more.

Now, the forward body of the fuselage comes into play. It's there to carry the flight crew, some incidental equipment, and usually sticks way out in front. It makes most aircraft look real racy. Right now it would be better to have a short, forward body. The long, forward body wants to bend back. It may tend to pitch the nose still higher if the wings are level, or yaw the aircraft to excessive angles if the airplane has rolled a vertical bank attitude. The air flow produced by high angles of the fuselage body will tend to aggravate the flow of air across the aft fuselage and tail surfaces.

The sequence I have described takes place in about one and a half seconds at approach speeds. PSG is now in effect. You are going for one heck of a ride, like it or not. The speed of the aircraft drops so fast by virtue of the





# the "THING"

tremendous induced drag, that you will feel like you've been kicked in the face. There is, in my opinion, about a 50/50 chance for recovery under 10,000 feet above ground level in most supersonic fighter aircraft — and that's cutting it mighty close. These gyrations may even flameout the engine, which certainly compounds your problem. At traffic pattern altitude, you had better punch out pronto!

Let me tell you what happens with an F-104 in a high-speed pitch-up. The actions of the Starfighter can be compared to the maneuvers I went through when the turbine wheel let go on an early P-80 test flight and cut the whole damn tail off! You can imagine the resultant gyrations.

I was selected to be the project test pilot for the first flight of the XF-104 and subsequent Phase I development. The phenomenon of negative static longitudinal stability at high angles of attack had been detected in wind tunnel tests. It was given the name "pitch-up," but little was known of it at that time. The solution to this would only be resolved later during flight tests. I was informed of the characteristic, although no one was sure what the bird would end up doing. I, obviously, approached all stalls with great caution.

In the one G level stall tests, I encountered the point of neutral static longitudinal stability. As I cautiously continued to pull the stick back (about 145 knots) the bird would just sit there, nose high on the horizon, buffeting like crazy. Suddenly, lateral instability set in causing the bird to flop so fast that I couldn't keep up with it. I shoved the stick against the forward stops and the aircraft still wouldn't respond. I had found the neutral point and then exceeded it by a very small margin so that the aircraft was becoming divergently unstable. I was on the verge of pitching up. If a pilot were to make a rapid pull or jerk he could easily go through the neutral stability point and get into an uncontrollable pitch-up maneuver.

I didn't lose complete control during those one G tests — just almost. The thing I did notice, though, was that as I pulled back on the stick gradually to reduce speed and reached a fairly high angle of attack, the aircraft began buffeting quite severely. The stick force, of course, was high because of artificial feel force springs. This produced a false impression that shadows the somewhat sudden change in longitudinal static margin at the critical angle of attack. At the time, we did not have an automatic pitch control (APC) system.

Later on, we started doing what we called "V-G

test" . . . how many Gs the bird would produce at a given indicated airspeed ( $V_i$ )! This particular test called for 30,000 feet, Mach = 0.9; not to exceed 325 knots  $V_i$  (for safety considerations).

Test 1: Trim for one G flight, then pull a steady one and a half Gs in a turn to study stability and control, and buffet onset if any. There was no buffet.

Test 2: Pull two and a half Gs. This produced light buffet, no appreciable change in stability and control.

Test 3: Pull three and a half Gs. This produced very heavy buffeting and lateral oscillations that I could hardly keep up with. I was holding three and a half Gs steady for about one complete turn when all of a sudden the bird pitched and rotated so fast and so violently, I thought the tail had parted company.

This reminded me of the P-80 turbine failure incident which I mentioned before. I thought of four things, and acted on the fourth. The tail broke off . . . I've got to eject . . . I have the stick in my hand . . . I pushed it forward and the aircraft straightened out and flew off as though nothing had happened.

I was somewhat shook. My chase pilot failed to see the maneuver. I requested a visual inspection but he could find nothing wrong with my aircraft. Everything seemed normal in the cockpit. Even so, I discontinued any further testing. This may well have been the first pitch-up maneuver and successful recovery of a supersonic fighter.

I made my report. Both Lockheed and the Air Force thought only a "stick shaker" was necessary. Besides, they reasoned, the natural aerodynamic buffet and lateral oscillations were a very strong and effective warning system. Most people at the time didn't appreciate this new phenomenon until another fighter pitched up on takeoff and crashed. This brought everyone's attention to the phenomenon of pitch-up and post-stall-gyrations. As a result, an APC system was installed.

Now, the sad part of modern-day flying is this: pilots can't experience these strange happenings because they are forbidden. Read any Dash One and it WARNS you about slow speed flight, or to avoid a deep stall, and that spins are prohibited. Only by accident are you allowed to experience them. Some make it, some don't.

A couple of years ago a fighter pilot trainee made a weapons delivery pass on an Air Force range. On the pull-up he went into a crazy gyration and crashed. The pilot ejected only to smack the ground before his chute worked. The base commander and operations personnel tagged it as a flight control problem. Why would an



aircraft do such a wild maneuver unless the flight controls suddenly went ape? It was a natural thing for them to think.

I thought differently. The bird had a clean bill of health with the hydraulic flight control system. I suspected pitch-up. I visited the air base and talked to the accident investigation board. I found out that this unit was flying at low altitude with the APC inoperative because they had experienced several malfunctions. The system was giving them stick kicks during low level pull-outs. They hadn't lost an aircraft due to their APC malfunctions, but now they chose to expose every aircraft and pilot to possible pitch-up at low altitude during the pull-out on gunnery range training.

We showed them motion pictures of pitch-up. One of the range witnesses said, "That's it, that's what the bird did." There was still some doubt in their minds, but the final report came out . . . probable cause: pitch-up.

In summing up the situation as I see it . . . the loss of aircraft due to the "THING" can be reduced very drastically by two steps.

1. Every pilot flying supersonic fighters must be made aware of what post-stall-gyrations are, what causes them and how to avoid them, particularly at low altitude where recovery is unlikely. At normal traffic altitude, takeoffs, approaches and landings, you must learn to handle the birds with kid gloves. There is no requirement for aerobatics in the traffic pattern.

2. Any supersonic aircraft having undesirable low speed stability and control characteristics wherein at high angles of attack the static margins become neutral or negative about any of the three axes, I strongly recommend an APC system to preclude any possible chance of a pilot encountering an uncontrolled stall maneuver . . . the "THING."

I believe the young officers of our military air forces of today are as fine a group of young men as I have ever had the pleasure of meeting. There's really little difference, that I can see, from pilots of 25 to 30 years ago. But now we have extremely expensive, high-performance aircraft that cost 10 to 15 times more than in World War II. Mission requirements are more demanding than ever before, requiring far greater attention to every detail of flight operations. Today's pilots, as a whole, are better educated. The Air Force Training Command turns them out second to none, in my opinion. And combat crew training at the tactical flight schools is equally as good.

Where, then, do we fall down? I think the young

military pilot has to be hand fed and carefully watched for a much longer time than he is at present. With his formal training over, he joins a squadron and is expected to fit in and carry his weight in a very short time. I believe the system has cut this time period too short. This is, I am sure, the result of budgetary considerations. I have said it before and I say it now — a little more time, a little more training and I believe the so-called cost effectiveness and accident rate will improve.

Many years ago I recognized the need of pilot support for the world-wide F-104 program. I convinced our management to send out our best qualified pilots and engineers on company-funded trips to assist the units in all phases of their operations. We printed books that contained lectures explaining all the whys and wherefores of the warnings and cautions in the Dash One. We explained to all the pilots how we arrived at all the limitations on the Starfighter. This support program is still being funded, and I am convinced it's paid off in a big way for us and our customers.

For all you eager young pilots who are just beginning, I want to advise you to think ahead to the time when you'll have bags of experience in your fighter bird and be confident that you can lick anything in the skies. Until then, look at yourself; size yourself up. Don't kid yourself on how good you are — prove it by playing the game straight. Go by the rules or you go alone.

And watch out for the "THING"!



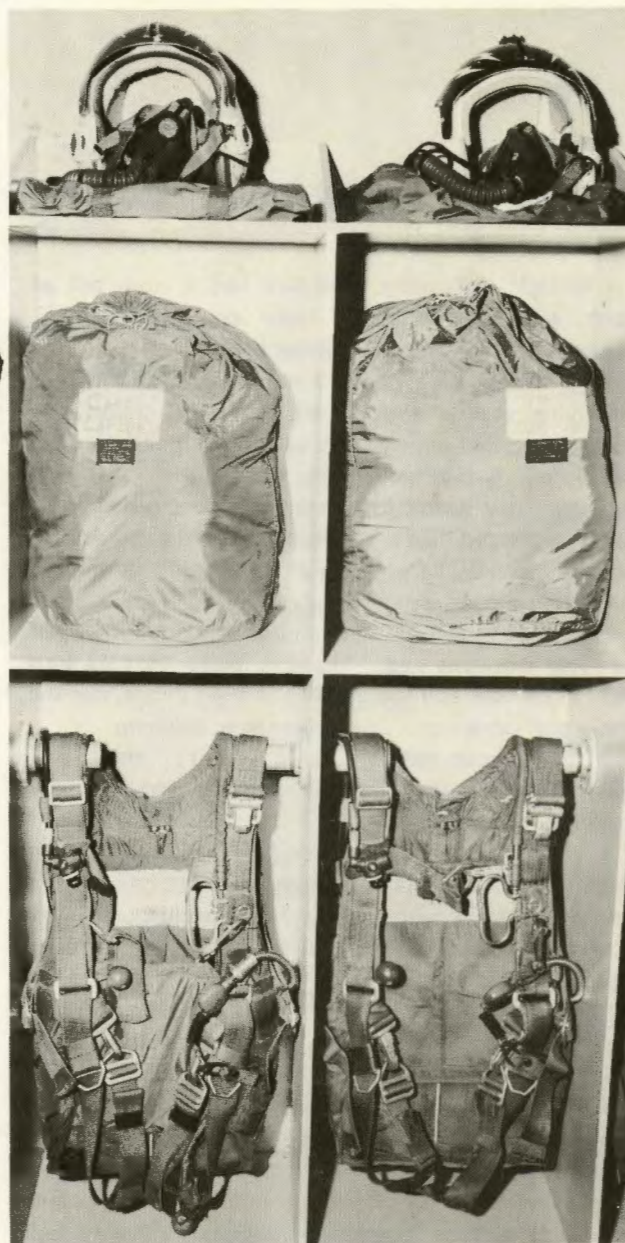


# IT'S THE little THINGS

Ever find yourself at mach-one-plus, with your zero lanyard connected? Ever discover your seat pins still nestled neglectfully in their initiators after shut-down, when you couldn't find them in the usual place? And how about this one: have you ever tried to get out of an aircraft after a flight only to find that one of your shoulder straps was routed UNDER your parachute chest strap?

We all know that these things only happen to the other guy — right? You betcha, sports fans. But if we could just get a card from every jock who's pulled a stunt like those described above, one for each and every time he's done it — the Office of Safety would have to shut down. This place would be closed by a paper blizzard. (Secret message in this paragraph.)

There are times in the flying business when doing these "little things," as we like to call them, are often relegated to complacent compliance, or subordinated to the big-one-time good-deal going on in a crunch. It could be a scramble for a combat mission, a big gunnery meet, or what have you. During the press of the moment, while you are concerned with getting to the range on time, or getting off ASAP, it's easy to forget "little things." And it's just as easy to forget them during a training mission when you are bored to death and "ho-hum" your way

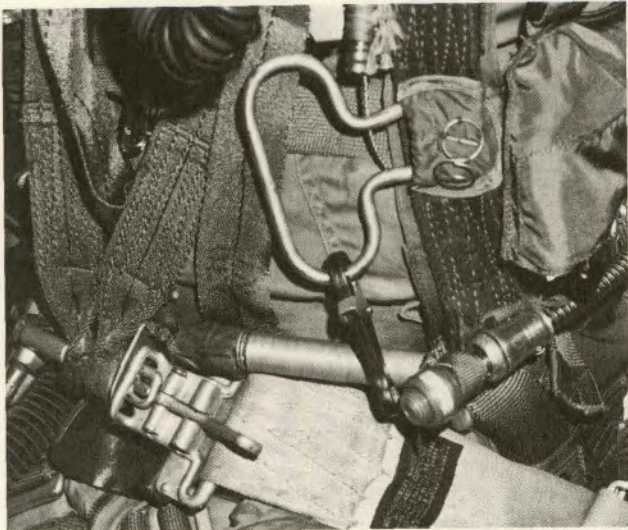


through a flight, thinking only of the cool one waiting for you on the ground.

The difference between these "little things" and the rest of your traumatic tasks during a mission, is that none of them will really cause the loss of an aircraft. As a matter of fact, if you are certain of a routine flight, you needn't pay attention to a single one. Our problem, then, boils down to one of "preparedness" — and perhaps that kind of approach may be of help to combat the omission of a tiny task your life may depend upon.

With the exception of our helmets, very little else about the environment in our fighter's cockpits is the same. (Wonder how that survived?) So it's mandatory that you know the tasks peculiar to your aircraft; the bits and





pieces that determine whether you live or die if the day ever comes when you step over the side.

We're talking about such things as:

- Gold key connected
- Zero lanyard connected or stowed
- Strapped in properly
- Helmet chin strap fastened and snug
- Emergency oxygen supply connected
- Visor down if required
- Seat and canopy pins removed

This isn't a full list of course, but these are items that have proved time and again, that we are human and apt to err. The checklist you use is only as infallible as you are. This was recognized many years ago. Remember when the "PINS," "CANOPY," and "LANYARD" signs went up? Well we have added quite a bit to the original three. Some taxiways now look like the highway leading into Vegas.

So how do you adopt this preparedness attitude? Believe it or not, many things have been tried by individual pilots — even to the string around a finger. One flying type went so far as to paste a piece of paper over his heading indicator. He'd remove it after rechecking his pins, canopy, lanyard, gold key, chin strap and seat pins, usually in the "quick check" area. That might seem like strong medicine to you. But he didn't think so. One day he found himself pumping adrenalin on takeoff with an engine surge. After getting things under control, he discovered his seat "pip pin" still in AND his zero lanyard stowed right where the life support troops left it.

We seldom consider the consequences of forgetting one of the "little things" because they become too routine in our daily flying and we've done it before and lived. A way to prime yourself not to forget would be to figure out your lowest ejection altitude without the zero lanyard connected. Then really get hairy in your thinking and try it without automatic operation — that is, without the gold key connected. That, incidentally, should be your personal minimum ejection altitude. Obviously if you did forget it and jumped out even lower, you'll be in deep trouble. Or imagine this: you lose your helmet because the chin strap wasn't fastened — might hurt you and it might not. Ever see the top of a tree up close? Use your imagination and you'll start remembering "little things."

We could belabor these points all day but the results would be the same. It's another one of your responsibilities — probably the most personal and important one you have. It's a case where a "little thing" may just turn out to be the biggest thing in your whole life. But you won't know if you've forgotten something until that awesome moment of truth. So start thinking little . . . it pays big flying dividends.

P. S. Have any of you F-4 troops forgotten to hook up your lap belt lately?



Tactical Air Command

# Unit Achievement Award

Our congratulations to the following units for completing 12 months of accident free flying:

10 Tactical Reconnaissance Squadron, Mountain Home Air Force Base, Idaho  
1 January 1968 through 31 December 1968

67 Combat Support Group, Mountain Home Air Force Base, Idaho  
1 January 1968 through 31 December 1968

180 Tactical Fighter Group, Toledo Express Airport, Ohio  
1 June 1968 through 31 May 1969

478 Tactical Fighter Squadron, Homestead Air Force Base, Florida  
23 June 1968 through 22 June 1969

417 Tactical Fighter Squadron, Mountain Home Air Force Base, Idaho  
1 July 1968 through 30 June 1969

36 Tactical Airlift Squadron, Langley Air Force Base, Virginia  
5 July 1968 through 4 July 1969

182 Tactical Air Support Group, Greater Peoria MAP, Illinois  
23 July 1968 through 22 July 1969

7 Tactical Reconnaissance Squadron, Mountain Home Air Force Base, Idaho  
1 August 1968 through 31 July 1969

22 Tactical Reconnaissance Squadron, Mountain Home Air Force Base, Idaho  
1 August 1968 through 31 July 1969

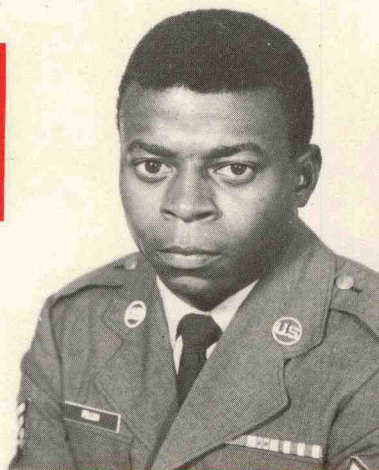
436 Tactical Fighter Squadron, Homestead Air Force Base, Florida  
4 October 1968 through 3 October 1969





## Tactical Air Command Crew Chief of the Month

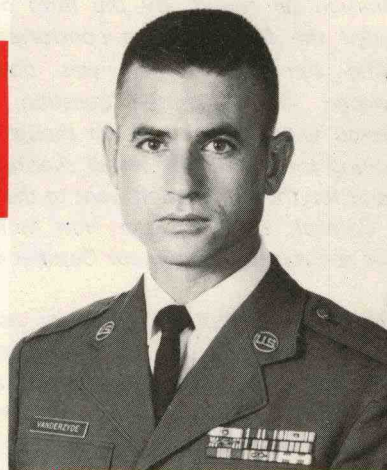
Sergeant Harry H. Pellum, Jr., 319 Special Operations Squadron, Hurlburt Field, Florida, has been selected to receive the TAC Crew Chief Safety Award. Sergeant Pellum will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



Sgt Pellum

## Tactical Air Command Maintenance Man of the Month

Technical Sergeant Adrianus W. Vanderzyde, 75 Tactical Reconnaissance Wing, Bergstrom Air Force Base, Texas, has been selected to receive the TAC Maintenance Man Safety Award. Sergeant Vanderzyde will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



TSgt Vanderzyde





FREDERICK C. BLESSE  
Colonel, USAF  
Commander, 474 TFW (TAC)  
Nellis Air Force Base, Nevada

*During a visit to Nellis last summer we were besieged by "SEJWAQ" at every turn. Those six letters were plastered all over the base, but nowhere could an explanation be found. By the third day our curiosity exceeded the fear of being considered stupid for not knowing something which was obviously common knowledge. We asked the question, and were very impressed with the answer. We thought that Nellis had something that would be worth sharing with the rest of you and for the explanation went to the originator of this idea, Colonel "Boots" Blesse. Here he is to answer your queries about page seven in our October magazine. —ED.*

The term "SEJWAQ" came into use under fire. As Wing Commander of the Air Force's only F-111 Wing, I was involved in a discussion concerning a ground accident that had occurred in our F-111 detachment at Cannon AFB, New Mexico. The personnel responsible were not mine but there was a lot of talk regarding the failure to use a check list to perform some required maintenance. I had hardly digested the details of this affair when one of my squadron commanders reported to me stating his people here on base at Nellis had just had a ground accident. As usual, it was an excellent worker trying to do too much in too big a hurry. He was supposed to be working with a buddy at night (his buddy was busy finishing up a job in the hangar) but decided he could do the job easily himself. He was performing an acceptance inspection on one of our new F-111s. He ignored the check list, plugged in an APU without checking the engine

doors and when the stabilator moved it tore up an engine door. Over \$500.00 worth of damage was done and we were again faced with "failure to use the check list."

I was really upset and discussed this with the squadron commander, finishing with the statement that somehow we had to make everyone start each job by asking himself if there was a check list for the job he had been given to do. "Start each job with a question," I said several times. "Is there a check list for the job I have been given to do?" Somehow we have to get that across to every man in our wing.

After the squadron commander had gone I thought the problem over and discovered the question could easily be remembered if the first letter of each word were used. "SEJWAQ" — S t a r t e a c h j o b w i t h a q u e s t i o n!

The rest was easy. Each unit joined the battle. Signs were painted, story for the base paper, unit cartoons and, in general, a massive program to let every man on the base know about "SEJWAQ" and how it could help us.

It is no cure-all. We were inspected by the USAF IG Team not long after we put the system into effect and were discovered to have our fair share of "workers on the line and in shops not using a check list."

We think the program is growing though and, like good wine, becoming more effective with age. In our recent week long inspection by 86 professional inspectors we did not have a single "check list" violation reported. That's encouraging and we are going to keep hammering away at "SEJWAQ" — the 474th TFW's answer to accidents caused by human error.





# TAC TALLY

## AIRCRAFT ACCIDENT RATES

\* Estimated

### MAJOR ACCIDENT RATE COMPARISON

	TAC		ANG		AFRes	
	1969	1968	1969	1968	1969	1968
JAN	6.8	5.6	28.9	0	0	0
FEB	6.2	7.3	12.8	0	0	0
MAR	6.8	7.1	12.6	0	0	0
APR	7.4	8.7	15.1	1.9	0	0
MAY	7.5	8.0	12.9	7.5	0	0
JUN	7.2	8.5	12.6	7.4	0	0
JUL	7.4	9.3	11.3	6.3	0	0
AUG	7.3	9.4	11.5	8.2	0	2.3
SEP	6.9	9.1	10.5	7.4	0	2.0
OCT*	7.1	9.3	9.9	6.7	0	1.8
NOV		8.6		6.9		1.7
DEC		8.8		7.8		3.2

### UNITS

THRU OCT	1969 *	1968	THRU OCT	1969 *	1968
9 AF	2.7	6.2	12 AF	9.9	9.8
4 TFW	4.5	9.4	23 TFW	17.5	27.5
15 TFW	2.4	9.5	27 TFW	3.8	8.3
33 TFW	14.0	7.9	49 TFW	6.0	0
4531 TFW	3.9	16.4	479 TFW	9.9	10.7
			474 TFW	15.8	35.7
363 TRW	6.9	5.9	67 TRW	4.3	9.9
			75 TRW	4.5	0
64 TAW	0	3.6	313 TAW	0	0
316 TAW	0	0	516 TAW	4.3	0
317 TAW	0	0			
464 TAW	0	0			
4442 CCTW	0	0	4453 CCTW	7.6	14.5
4554 CCTW	0	N/A	58 TFTW	14.1	5.5
TAC SPECIAL UNITS					
1 SOW	4.1	17.3	2 ADG	0	0
4409 SUP SQ	0	0	4500 ABW	4.6	0
4410 CCTW	9.7	6.3	57 FWW	19.9	30.9
4416 TSQ	0	46.1			

Our accident experience for October took a turn for the worst in both departments, total numbers and total fatalities. We chalked up six TAC accidents and one for the ANG. Our fatalities numbered eleven; that area can only be described as catastrophic! More on those later.

All of our accidents this month involved fighters, and of the seven total, three were caused by engine failures. We lost one each F-105, F-104, and F-100 in this area. The other four accidents were caused by assorted problems — none of them new! We had an F-4/F-105 midair, an RF-4 ran into a mountain, an F-4 went in on the range, and an F-105 ran off the runway on takeoff.

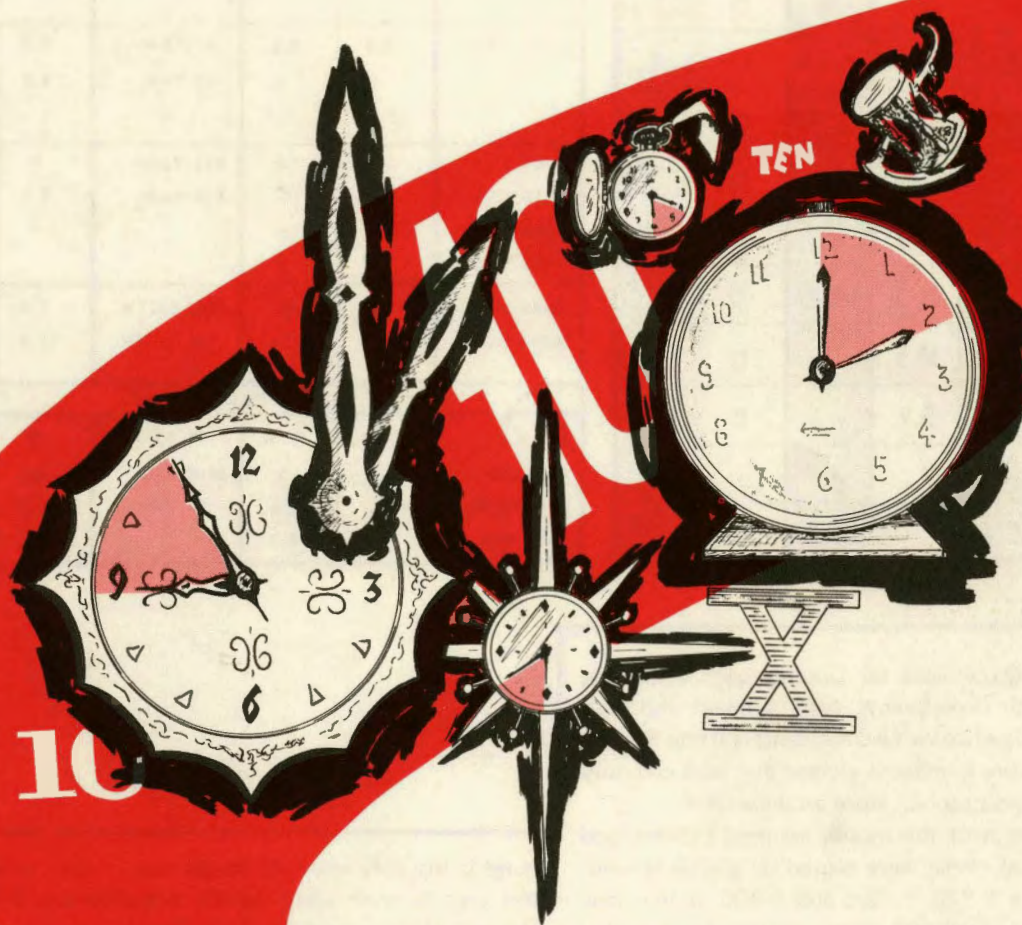
In trend identification, the F-4 that went in on the

range is the only one that stands out. It was the fifth F-4 this year to crash under similar circumstances. Although five out of sixty-eight accidents is not a large percentage, each was judged to be pilot factor. All involved an F-4 at low altitude in a high performance maneuver; there was only one survivor out of the five accidents.

Only one accident in October did not involve fatalities, the F-105 that ran off the runway. Three accidents accounted for eight fatalities in that no attempt was made to eject. The other three fatalities were unsuccessful ejections, all initiated inside their respective seat envelopes. Only two of five ejections were successful.



EVERY **10** MINUTES



a MOTORIST DIES....

**DRIVE DEFENSIVELY!**