# TAC ATTACK

NOVEMBER 1967

for efficient tactical air power

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TACTICAL AIR COMMAND

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## current interest



## departments



*TACRP 127-1*

# Angle of ATTACK

## In Search of The Better Idea

Accident prevention takes many forms. It ranges from redesigning hardware or revising procedures to improving education. It may concern our machinery, or it may deal with work attitudes and training philosophies. But essentially, accident prevention is problem solving. The problem may not be new, but each solution must cope with a new set of circumstances.

We accept many solutions to past problems without much thought. They are such obvious solutions that we accept them as everyday routine. But each one started as an original idea. And at the start, many of them were complete innovations.

The people who came up with these new ideas had recognized a need. They were unhappy with the existing solution, if there was one, and took a new approach. They looked at all sides of the problem and departed from the routine or customary solution.

Spectrometric oil analysis, to check internal engine condition and predict engine life, was one of these better ideas. When the idea was first introduced, we didn't have the facilities to use it. Only after it had been tried and proven did we adopt it for general use.

The "last chance" maintenance inspection before an aircraft takes the runway is another example of an innovation that paid off. I don't know where it originated. It may have started in several organizations at the same time. But it was a fresh approach to a real problem. And we have saved several airplanes and crews since the procedure was accepted.

Even the drag chute and the ejection seat . . . which we accept as necessary on a modern fighter . . . were innovations when they first appeared.

So as part of a comprehensive accident prevention program, we are looking for the innovator. We are eager to listen to the man with a better idea. Every idea is worth listening to, many are worth trying, some will be accepted. After a while they will be routine.

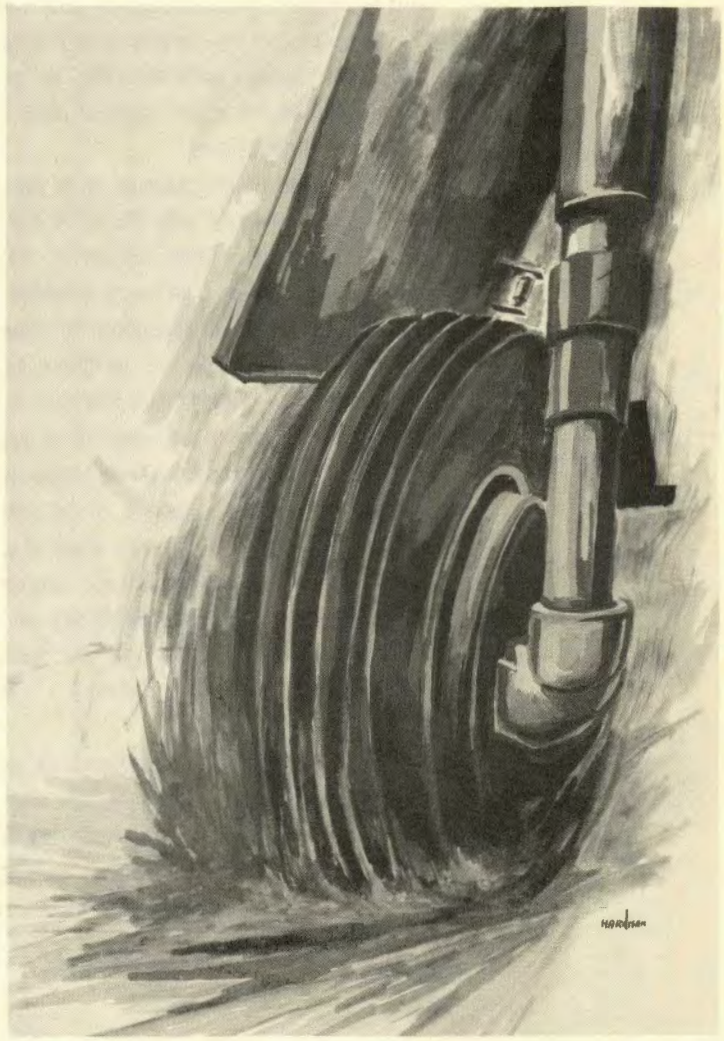
Then, someday, we'll look for a new approach to that routine.

Think about it!

N. K. Cranfill

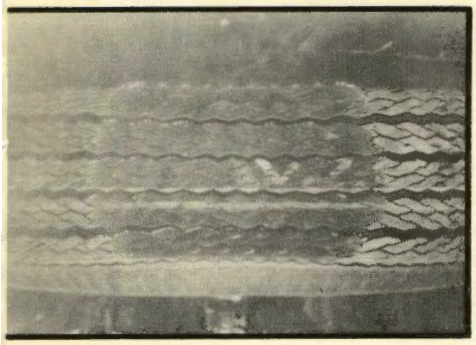
N. K. CRANFILL, Colonel, USAF
Chief of Safety

# WHEN YOUR TIRES BECOME SKIS

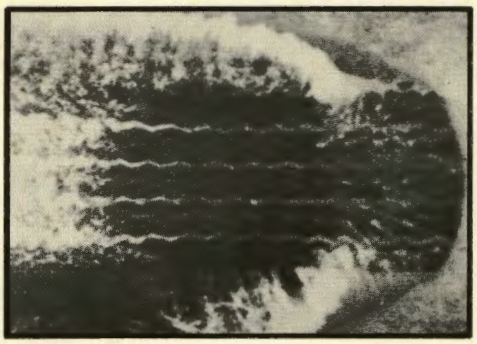


## . . .OR how to avoid the perimeter fence

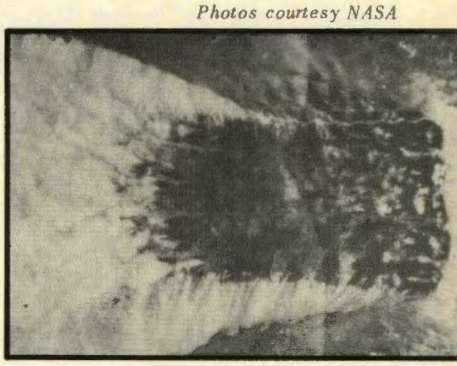
*Photos courtesy NASA*



Footprint of tire at rest.



Control diminishes when water starts to lift tire in partial hydroplaning.



Water completely separates tire from runway surface in total hydroplaning.

Hydroplaning is a condition frequently encountered when you land on water, snow, slush, or ice, any one of which may be mixed with dust or oil. Once hydroplaning develops you are headed for disaster because you can't stop it or control it with wheel brakes or nosewheel steering. So far this year TAC has had 3 major accidents caused by wet runway skidding... hydroplaning.

Most of us became pleasantly familiar with hydroplaning when we started water skiing. The surface of the skis hydroplaned across the water's surface and supported our weight. Now as professional pilots we must take steps to avoid this phenomenon because at high takeoff and landing speeds the water gets between the footprint of our aircraft tires and supports the weight of the airplane, causing it to be uncontrollable... as if on glaze ice.

Hydroplaning usually occurs when the runway is flooded or heavily puddled with water or slush. Sometimes you can actually see it. When total hydroplaning is occurring you will see no water spraying ahead of the tires.

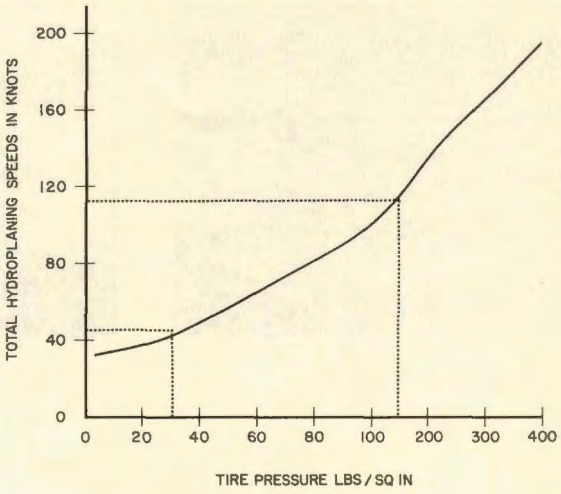
Hydroplaning, to some degree, is probably always present on a wet surface. Wet runway tests were conducted with the F-4C in 1965. They disclosed that the Dash One figures (using an RCR of 17 and decelerating from 140 kts) were 70 percent optimistic with a drag chute and 29 percent optimistic without a chute.

RCR (runway condition reading) really doesn't tell you much. Most Dash Ones say lacking a wet runway RCR reading, you should consider the runway to be 12 wet and 5 on ice (23 is a dry runway). But RCR is calculated from an automobile tire. It doesn't figure in the many variables that combine to set you up for a "hydroplaning" barrier engagement or worse... an accident. Automobile tires and airplane tires are quite different in tread design, rubber and cord composition, inflation pressure, footprint area and footprint pressure. Therefore, there's a world of difference between the ability of an automobile tire and an aircraft tire to generate braking friction.

Basically you can expect this uncontrollable skidding anytime the water depth on the runway exceeds your tire tread depth. It usually begins at touchdown and continues until you're down to a

by Major John M. Lowery
Hq TAC (OSF)

# TIRES BECOME SKIS




Remember, you can lose control during partial hydroplaning... at speeds well below the total hydroplaning speed.

speed that equals nine times the square root of your tire pressure. (The British use 7.2x.)

To illustrate, if your tire pressure is 25 pounds (A FAC or an aero club bird, for example) you can expect to hydroplane at a slow 45 knots. If your tire pressure is in the 150 - to 200 - pound range then it'll occur at 118 to 120 knots.

If you use a mile-per-hour indicator, as some light planes and all automobiles do, (autos hydroplane too, you know) then the formula is 10.3 times the square root of your tire pressure. With 25 pound tire pressure you'll skid (hydroplane) at an otherwise safe 50 miles per hour... well within most speed limits.

Increasing the aircraft weight on the wheels, and thereby the footprint pressure, has no appreciable effect on stopping distance. One possible explanation for this is that the water film causes a partial hydroplaning effect. When you increase the aircraft weight you also increase the footprint area. This, in effect, causes the ratio of weight to area to remain constant. Therefore, you have not gained braking capability by adding more weight on the tires.

There are three major forms of the hydroplaning phenomenon: (1) dynamic hydroplaning (This is the water skiing tires we've been discussing); (2) thin film lubrication skids (viscous hydroplaning); and (3) reverted rubber skids.

Thin film lubrication skids occur only on smooth pavements and particularly when the tires are smooth or badly worn. This is because less fluid is required to skid on a smooth surface than on rough pavement. It can occur at speeds 35 percent slower than hydroplaning. A film of slush or light snow, a coating of frost, even a heavy dew on the smooth runway surface can bring it about. You may recall the "Remarks" section of some well known airdromes which state "Runway slippery when wet," or the highway sign "Road slippery when wet." Ever skid on the wet cobblestones in Europe? That's what we're talking about... thin film lube skids.

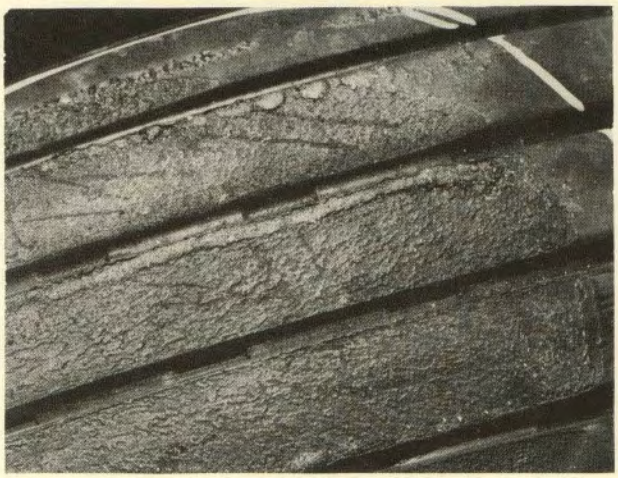
Most modern runways are built with a rough textured surface. Some are called brushed concrete finish. This, along with improved tread design... ribbed and radial treaded tires... plus increased attention to tread wear in wet climates, is making the thin film skid a (hopefully) rare occurrence.

A reverted rubber skid usually results from hydroplaning or a thin film skid. What happens is that the friction heat generated on the wet pavement causes the water to turn into steam. This steam is trapped and carried along in the tire footprint... actually sealed in by molten rubber. A look at the tire will show a scalded area, but not necessarily any tread wear. The scalded patch of rubber will be soft and tacky and give the appearance of having reverted back to an uncured state.

A reverted rubber skid can leave you skidding till you're almost stopped. You'll notice white skid marks, sometimes called steam-clean marks, left on the runway surface instead of the black streaks common to dry pavement skidding.

It is interesting to note that reverted rubber skids have been confined, thus far, to airplanes, where tire pressures are relatively high. (Therefore, this should not be a concern to the motorist.)

To avoid these slick runway hazards you as a pilot can do several things. First, hope for a good drag chute and use maximum aerodynamic braking. Above all, use your anti-skid so that if you should hydroplane, you won't hit a relatively dry spot with



Reverted rubber skidding leaves distinctive marking on tire surface.

the brakes locked and blow a tire.

When total hydroplaning occurs you can have zero wheel RPM with or without anti-skid (no frictional force). In the F-105, with locked wheel protection, this is no problem. However, with the F-4 and some of our other birds you can lock a wheel quite easily unless you allow the wheel to come up to speed before you apply brakes.

If you know you'll be landing in rain or on a wet runway, insist on good tires. Tests at NASA showed that with less than 1/16 inch of tread remaining the tires behave the same as bald tires. For a brief period, AF Tech Order 4T-1-3 (Tires) was revised to require 1/32 of an inch minimum tread (4T-1-3S-2, 13 Mar 67). This was later rescinded due to the impact on supply. We're working on this one.

The state of New York and several European countries are presently enforcing a law requiring at least 1/16 of an inch of tread on automobiles. This is especially important with the new and popular low profile automobile tires. True, they do provide better cornering, and better braking on dry surfaces, and offer lower rolling resistance and less heat buildup than the narrower tires. But their wide, flat shape makes them very susceptible to hydroplaning, especially when the tread is worn down below 1/16 of an inch.

Tire pressure is another area the pilot should be aware of. The lower the tire pressure, the lower the hydroplaning speed. If they look a little low on preflight, get 'em checked and properly inflated.

Try to land as slow as possible ... as if you were making a short field landing. Touchdown firmly. A smooth, grease-job landing is a sure way to encourage the onset of hydroplaning. Above all, don't land fast. It's a human tendency, during an instrument approach, to let the airspeed ride on the high side. But every knot you're fast is a card stacked against you.

Several preventive measures are being studied in an effort to reduce these wet weather hazards. The most successful to date is runway grooving. The British first used this more than 10 years ago. (Recent SEA returnees may remember the grooves at Udorn and Ubon.) These transverse grooves provide a channel of escape for the water trapped beneath the wheel. In addition, the sharp edges of the grooves tend to puncture the water film and allow the tire to touch the runway. Most important of all, the weight of the aircraft deflects the tire into the grooves and causes a mechanical interlock between tire and runway.

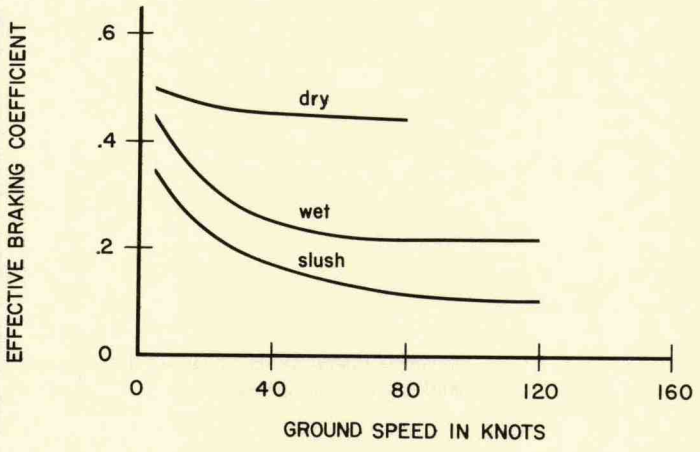
The groves have proven to give a wet runway almost the same braking coefficient (RCR, if you prefer) as dry pavement. Today, after all these years, the original British runway is still in operation.

At the present time, we figure Dash One stopping distances for wet runways from dry runway performance with a wet runway factor (RCR) figured in. This provides an inaccurate guesstimate of the wet runway stopping distance ... as evidenced by the fact that most landing accidents (overshoots) occur in wet weather on apparently adequate runways.

We know now, as a result of NASA and Air Force tests, that RCR means very little. More important is runway surface condition, tire tread design, tire condition (or amount of tire wear) and the amount or depth of moisture present.

One of the reasons we figure "Kentucky windage" (RCR) into wet runway stopping distances is the lack of a standard (reference) wet runway. This problem could

# TIRES BECOME SKIS




be eliminated and all Dash Ones could provide accurate stopping data if all runways were grooved.

NASA tests have shown that grooving minimizes variations in friction of different pavements when wet. The grooves even prevent loss of surface friction from rubber deposits on the landing end of heavily used runways.

It's not uncommon to see 2,000 to 3,000 feet of pavement on each end of the runway completely blackened by molten rubber deposits caused by wheel spinup at touchdown. In time these black sections provide less than normal breaking coefficient when they're dry. You add moisture and they are like ice. With grooving, these landing areas retain a dry runway friction coefficient even when wet!

Several states are successfully using grooved highways to drastically reduce skidding-induced accidents. California, for example, began grooving certain mountain-pass roads. In one year they reduced their skidding accidents at certain test areas by 91 percent.

They even went one step further and experimented with longitudinal grooves. Results showed the longitudinal grooves produced a guiding action. This caused a sliding car to follow the grooves around a curve. It appears this finding can be used to advantage on high speed runway turnoffs, runway centerlines and edges, as well as street intersections.

Another promising cure for wet weather skidding in airplanes and autos is the recently introduced radial-ply tire... already widely used on automobiles in Europe. They wear longer and pointedly demonstrate that tread design in itself can greatly reduce the incidence of hydroplaning on wet runways or highways.

Sipes, or small air chambers (slits), built into the tire tread, have also proven beneficial. They help dissipate the surface water or steam and assist the tire in getting to the runway surface.

One word of warning... if you have a crosswind and begin to hydroplane you're going to drift off the side. This is true on takeoff or landing. Formation takeoffs and landings thus become especially hazardous.

With the good maintenance we have in TAC, you won't have to worry much about drag chute failures. However, they do happen. This winter we'll see a lot of water and slush on our runways, so be forewarned.

Of course, don't be foolish enough to believe you can get any traction out of ice or snow. NASA found that even the wire-impregnated snow tires offered very little increase in friction, due primarily to the rubber flexing.

So, land at the proper airspeed, use your aerodynamic braking techniques, always fly with good, properly inflated tires, and above all avoid water-covered runways with a crosswind. That way you won't have to stand beside your shattered bird and wonder how you'll enjoy being a Flight Commander in the Food Service Squadron.

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*3. Hydroplaning, COMBAT CREW MAGAZINE (SAC)*

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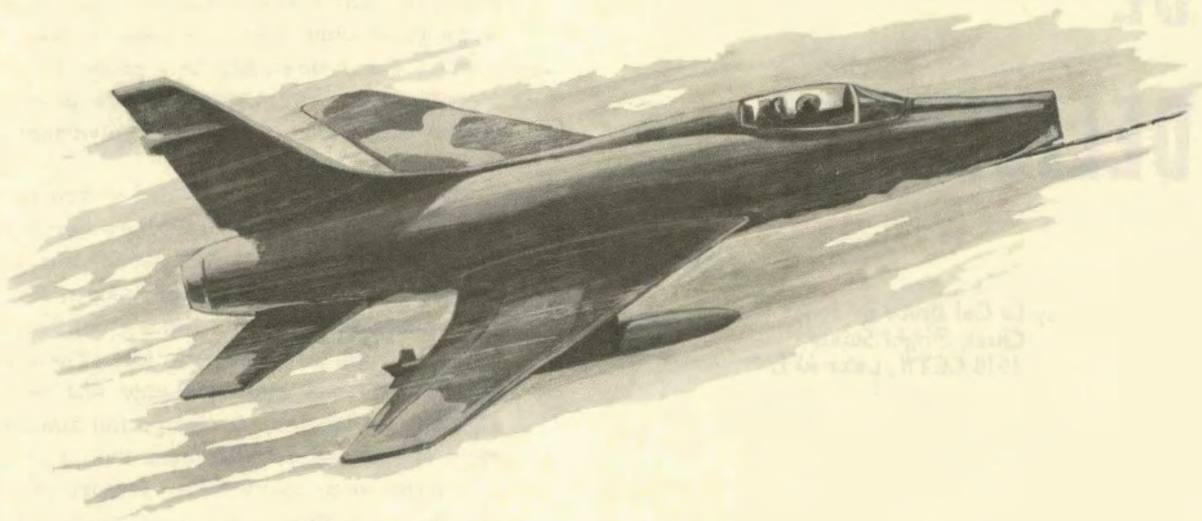
TACTICAL AIR COMMAND

# PILOT OF DISTINCTION

Captain James D. Marquis



Captain James D. Marquis of the 354th Tactical Fighter Wing, Myrtle Beach Air Force Base, South Carolina, has been selected as a Tactical Air Command Pilot of Distinction.

Captain Marquis was flying an air-to-ground gunnery mission in an F-100 aircraft. During pullout from a strafe pass he saw the fuel valve fail light flicker. He immediately turned toward Shaw AFB which was the closest field and informed the range officer of his intentions. The fuel fail light flickered twice before he turned base leg for landing. Captain Marquis set power at 87 percent, lowered the gear, and turned base as he lowered half flaps. The light came on halfway through the base turn and stayed on about 20 seconds. Engine RPM immediately dropped to 80 percent. He decided that he had sufficient altitude and continued the approach.

Captain Marquis lowered full flaps one mile out and landed in the first 1000 feet of runway. The fuel fail light was off during the landing roll. Captain Marquis taxied to the dearm area after having all pins and downlocks installed. The fuel valve fail light came on again and seconds later the engine flamed out.

Captain Marquis' prompt, calm, and professional reaction to this serious inflight emergency readily qualify him as a Tactical Air Command Pilot of Distinction.

Lt Col Jones is the Chief of Flight Safety in the 4510th Combat Crew Training Wing at Luke Air Force Base. In a recent safety meeting he discussed some of the factors that can build up to an emergency situation. His conclusion, and the advice he gave the student pilots and instructors there, boiled down to one thing...

# BE DELIBERATE

by Lt Col Bruce D. Jones
Chief, Flight Safety
4510 CCTW, Luke AFB

Two months ago at this meeting we heard about something called "overlearning." The speaker said that physiological learning is what we really teach here at Luke.

What we mean by physiological learning is that when we perceive something we transform it into some sort of motor action. So our awareness of a situation or condition leads us to some correct motor action. The best way to overlearn then, is through practice.

This overlearning process takes place when you change from one aircraft to another or when you first learn to fly a new aircraft. You develop automatic habits through repetition. And correct practice develops the correct habits.

Another point to consider is an item called stress. Our modern day aircraft flight simulators supposedly help you practice an emergency and develop the proper habit. But let's face it... you know you are not in the air and that you are safely on the ground. Therefore, the stress factor cannot be simulated. But even so, you can practice correct habits to assist you in the overlearning process. Overlearning and stress conditions are two elements which all pilots encounter in the flying business.

Today I will talk about a third element which ties into our two previous subjects. This concerns actuating cockpit controls or switches correctly under various conditions. Pilots have mistakenly activated controls many times in the past. This most frequently happens when they are under stress. The way to combat many mistakes that cause pilot-factor accidents is to overlearn through practice, combat stress conditions, and avoid inadvertent control actuation by being deliberate.

We recently lost one of our instructor pilots on a ferry mission. A serious engine emergency occurred immediately after takeoff. According to witnesses his right engine stalled. But information radioed to him indicated it was his left engine that was bad, so he pulled his left engine to idle. The aircraft could not fly with one stalled engine and one at idle. He ejected, but too late. Investigation disclosed that the right engine had actually been the culprit.

There were many other factors involved in this accident, but this was a case where the pilot had to be deliberate in analyzing his problem with all the resources available to him. The good left engine would have saved his life if he had not brought it back to idle.

This is an age-old problem in multi-engine airplanes. It has many precedents in the accident files. The Number One engine of a T-29 went to automatic feather and one of the two pilots mistakenly applied full carburetor heat to the Number Two engine. To you jet jockeys this may not seem to be too serious, but full carburetor heat on a recip results in quite a loss of power. It is impossible to fly with one engine feathered and a loss of that much power on the other. The T-29 crashed. Another pilot had moved the wrong control during an emergency. He was not deliberate in his actions.

Emergency situations are not the only times that

stress can be placed upon pilots. You must also be extremely deliberate when you're flying a GCA in low weather conditions. An unnecessary go-around or two can quickly bring you to a low fuel state that increases the stress factor. There have been cases where this is all it took to start the sequence of events leading up to an accident.

Air Force Manual 60-16 says that minimum fuel aircraft will not receive any priority over other traffic. Here at Luke, where the traffic pattern becomes pretty crowded at times, this can be very important. You must insure that you fly your first traffic pattern deliberately to put you over the runway at the correct touchdown point in these cases.

We all know that one go-around places a jet pilot very close to emergency fuel conditions. The stress factor rises as your fuel goes down, and it is very easy to miss the second time because you make the same mistake. Additional stress builds up when you're already in a touchy situation.

So far, we have discussed three situations where we must be deliberate.

- Inadvertent actuation of the wrong control as a result of other problems.
- Emergency conditions.
- Increasing stress.

We must be deliberate under normal conditions also, to avoid emergency situations which will increase the stress factor. Remember, you can have an emergency any time you move the controls in the cockpit improperly.

A new test pilot at Edwards AFB recently attempted to test the nozzle closure system on his aircraft. He should have moved a red horizontal handle. Instead, he pulled a yellow vertical handle located 12 inches away. That handle blew the canopy. When we make this mistake here at Luke we usually pull the ram air turbine handle.

An Air Force Cadet in an F-100 had been thoroughly briefed on how to pull the seat and canopy pins before an indoctrination flight. He demonstrated that he understood by pulling the safety pin on the alternate canopy jettison system. Then he pulled the handle and fired the canopy off the airplane!

This may sound unusual but it happens too often. It's true he didn't have much experience in the rear cockpit of an F-100, but the same thing has occurred here at our base... only in a slightly different manner. Pilots attempting to open the landing gear doors after shutdown with their right hand have actuated the same control on the right side of the cockpit and blown their canopies.

And the F-104 crew chiefs aren't surprised any more when they see the drag chute door pop open before engine start. They know the pilot was attempting to adjust his rudder pedals with a gray vertical handle on the left side of the cockpit. Unthinkingly... and by not being deliberate... he pulled the gray drag chute door release handle which is 20 inches away on the left-hand side of the cockpit. All this, while sitting quietly in the chocks!

The F-104 has a short gear handle. Unfortunately, the panic button in that airplane was placed immediately in front of the gear handle. Many times, when a pilot raised or lowered his gear, the tip tanks would depart the aircraft... probably due to some long thumbs. The corrective action has been to place a white paper cover over the panic button to prevent this inadvertent jettisoning.

Just yesterday, we received an incident report on the very same thing occurring in an F-100. The pilot had a minor emergency... the stress factor increased. When he lowered his landing gear, all his external stores departed the airplane. The corrective action by the wing involved in this one was to place cellophane over the panic button. The F-100 gear handle, incidentally, is approximately twice as long as the one in the '104. Maybe it takes a thumb twice as long to make this mistake, but it has occurred. And it can occur again unless we are deliberate.

This problem not only exists in our F-100 and F-104 aircraft. A similar problem exists in the F-105. A windshield defrosting switch is located very close to the main fuel selector and, if our reports are correct, some very surprised pilots have encountered a loud silence when they selected what they thought was windshield defrosting. This one has probably caused accidents in the past. A major modification will be made to the F-105 cockpit to prevent this from happening in the future.

In summary, overlearn. Make your normal habits automatic under certain conditions, but when you are under stress and must actuate controls or be accurate... Be Deliberate.

# CHOCK TALK

## un-false fire light

The engine mechanic in another command taxied his airplane to the trim pad. He was to check out a report that the fire warning light came on when left afterburner was initiated. Electricians had been unable to locate any wiring irregularities.

Coming out of burner the first time, the mechanic saw the left light come on briefly. He had a short talk with his outside observer to make sure the left engine was the offender. Then he pushed the left throttle up and banged in the burner again.

This time the observer saw fire shoot from the left tailpipe. And the mechanic in the cockpit got a good look at the illuminated fire warning light. He shut down the engine and stepped smartly over the side.

Although the fire was out before the firemen arrived, damage to the aft section of the bird ran to 90 manhours and $450. A cracked fuel manifold had caused the trouble.

There's a lesson in here somewhere about performing an adequate inspection after a writeup of this nature ... and about believing a fire warning light the first time you see it!

## runaway rudders

Flaring out during a short field landing, the Herky pilot felt his rudder pedals move. Unexpectedly, both pedals jumped to the full forward position. He made do with the rudder reach available and brakes were no problem.

Inspectors found a failed rudder pedal adjusting guide rod. When they checked the rest of their C-130s they tagged several rods for analysis at the depot. Now the pilots are sitting closer to their work ... just in case.

## keep it clean

A recent message from the folks at the depot explains one reason why we've had trouble releasing stores from the F-100 at times in the past. During tests on the ejector racks, they found that only a drop or two of oil in the cartridge breech cross-over passage can keep one of the cartridges from firing.

Normally the signal for either jettison or normal release goes to only one cartridge. The second one is detonated by the pressure of expanding gases from the first cartridge. But any oil in the cross-over passage restricts the pressure enough that the second cartridge either fails to detonate, or there is a significant delay.

So proper tech order cleaning and oiling procedures are a must... remember, no oil or foreign matter should be present in the breech!

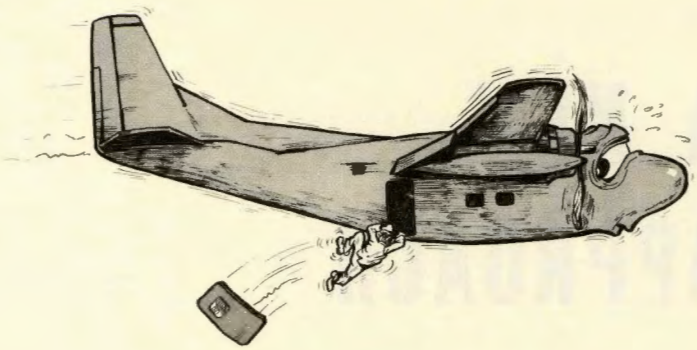
## spittin' spad

The student pilot was just getting ready to charge his guns before taking his A-1E across the range on a strafe pass. He had the Master Arm switch off and had just placed the inboard gun switch to the ready position. That was when both guns started firing. They didn't stop until they'd fired out... 198 rounds!

Of course, the guns aren't supposed to fire until the pilot turns on the Master Arm switch and then presses the trigger. Fortunately, the pilot was on downwind leg in the gunnery pattern, the stray strafing caused no damage.

Investigators on the ground found that someone had dropped a loose timmerman nut behind the instrument panel. It had somehow become distorted enough that it was almost two inches long. In that condition, it landed across the terminals of the gun fire switch and smartly shorted out the master arm and trigger circuits.

**and incidentals with a maintenance slant.**



## thanx, chief

The F-100 pilot had just completed arming and going through the maintenance check at the end of the runway. As he applied power and started to taxi toward the runway, his crew chief spotted oil leaking from the lower engine panel.

The crew chief quickly notified the maintenance mobile truck. And the NCO in the truck dashed out, flagged down the F-100.

The pilot taxied back and parked, and the maintenance people took a look at it. They found a hardened O-ring seal on the oil pump cover locking plate. Had no one stopped the pilot, oil starvation would have occurred about 15 minutes after takeoff.

## close call

The overseas F-100 pilot was turning final for landing when his bird yawed violently to the left and pitched down. He started an immediate go-around and called for a chase aircraft to look him over. He couldn't move the rudder with the pedals or trim.

Sure enough, when another bird pulled up and checked him, he learned that his rudder had gone full left. He continued his climb and checked controllability in landing configuration. Deciding he could make a safe approach, he set up a straight-in with about 1500 pounds of fuel remaining.

It took 20 degrees right bank at 180 knots to stay lined up with the runway, but he touched down safely on the right side of the runway. He immediately lowered the nose and kicked hard on the left rudder pedal to engage nose wheel steering. The rollout was uneventful from there.

Investigators found that a cotter key had not been installed in the bolt that connects the bell crank and linkage to the rudder actuator. The nut had worked off the bolt and the bolt fell out.

## read the book!

The C-123 was on a SEA training mission for both the pilots and flight mechanics. They had been airborne over water and were heading back toward land. The instructor mechanic told his student to remove the right troop door for practice.

The student eased the troop door open about two inches and then pulled the hinge pins. That was when the door caught in the slipstream and smartly left the airplane. Although they made a thorough air search, they were unable to find the door. It must have landed in the water, happily, and not injured anyone on the ground.

The Dash One for this airplane tells you in pretty clear language how to correctly open and remove the door. Under a Caution Note it tells you to open the troop doors all the way before you pull the hinge pins in flight.

There's more than just the loss of a door involved in this. You see, it's possible, when the door is sucked out into the breeze, that the startled mechanic may be pulled out with it.

## tired cherry picker

The MB-3 operator in another command set up his deicer truck behind the big bird's left wing. Then the crew chief crawled into the basket and maneuvered into position over the left aileron. Intent on his job, he failed to notice that the cherry picker was slowly sagging into the aileron. When he pulled up and away the basket carried fabric with it. The next mission had to be aborted while they changed the aileron.

In spite of the leaking seals in the upper boom cylinder, the airplane wouldn't have been damaged if the operator had maintained lateral clearance from the bird... as instructed.

# A NEW APPROACH ... to instrument landing minimums.

Have you stumbled across some strange-looking landing minimum information lately? At the bottom of a letdown plate ... or in the radar section under your favorite field in the aerodrome directory of the IFR Supplement?

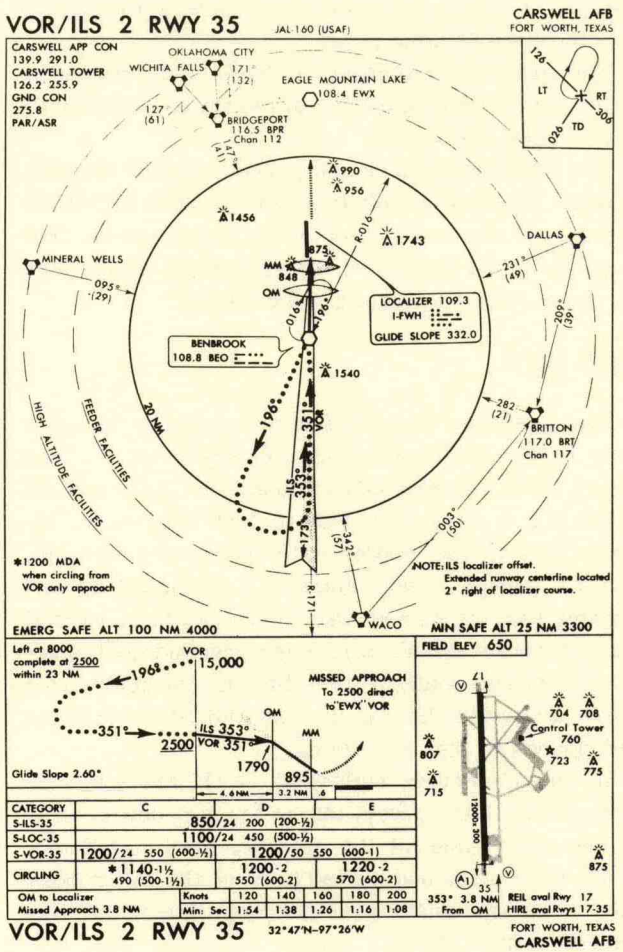
Well, if you haven't, you will before long. The criteria for instrument landing minimums, for both civil and military aircraft, are being changed. The United States Standard for Terminal Instrument Procedures is what it's all about. If you prefer an acronym, call it TERPS.

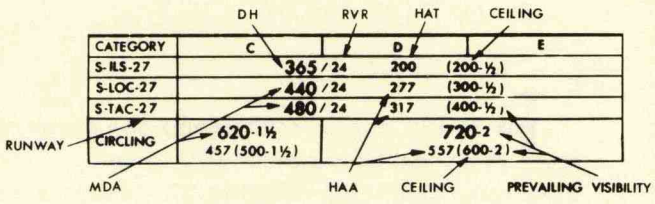
TERPS recognizes that the ability to maneuver in a landing approach differs from one aircraft to another. These differences affect the airspace and visibility required by each aircraft for an instrument approach. As a result, each type of aircraft is now assigned to one of five categories. The approach criteria and minimums are different for each category.

The aircraft are generally grouped by weight, approach speed, and maneuverability: small, light airplanes in Category A, up to the big, fast ones in Category D. Category E is comprised of all airplanes with approach speeds in excess of 165 knots at max landing weight.

Most TAC century-series fighters fall in Category E. The F-4, with a lower approach speed, falls in Category D with the F-84 and the F-111. Category C includes the C-130, T-39, A-26. And the A-1E and AC-47 fall in Category B.

How does all this effect you in the cockpit? You must know what category you're in, or you won't be able to tell which minimums to go by. You could find a different set of minimums for each category on any one letdown plate. In practice, however, this will rarely happen. With few exceptions, straight-in approaches will have the same minimums for all categories of aircraft. This includes radar and ILS approaches. It's when you get to non-precision and






circling approaches that the differences become apparent.

Normally the letdown plates in the low altitude books will show landing minimums for Categories A through D. The high altitude letdowns will show minimums for C through E. IF THE CATEGORY FOR THE TYPE AIRPLANE YOU'RE FLYING IS NOT LISTED, YOU MAY NOT USE THAT APPROACH! Or, if a particular approach (circling, for instance) is not authorized for your category of aircraft, it will say so in the appropriate column.

There's only one handy place to find what TERPS category your bird belongs in. That's the Special Notices at the end of Section II, FLIP Planning. You can determine your category from the speed and weight criteria listed toward the back of the IFR Supplement, but it's a lot more complex. After a few issues of these documents, the criteria and categories will be removed from the Special Notices sections and the whole thing will be placed in Section I, FLIP Planning.

If you've been glancing at the charts reproduced on these pages, you already know that there is some new language associated with all this. Some of it will be mighty important to you as the new system comes into use. A couple of the terms are strictly for civil aircraft at this time.

Decision Height (DH) and Minimum Descent Altitude (MDA) have replaced what we all used to call minimum altitude. Decision Height applies to precision approaches where you have glide slope information. And Minimum Descent Altitude applies to non-precision approaches where you have no glide slope information available. DH and MDA are shown in feet above mean sea level. They are the lowest altitude to which you are authorized to descend before you have the airport in sight.

Height Above Airport (HAA) and Height Above Touchdown (HAT) are for civil use only. They show height of the MDA above published airport elevation.

Ceilings, shown in parenthesis, are also feet above the published airport elevation. They will be at or above the associated DH or MDA.

Visibility is expressed as Runway Visual Range (RVR), Runway Visibility (RV), or prevailing visibility (PV). RVR will be shown in hundreds of feet, RV and PV in miles and fractions thereof. If you do not have Runway Visual Range information available to determine if the field is above minimums for your approach, use the Prevailing Visibility figures in parenthesis.

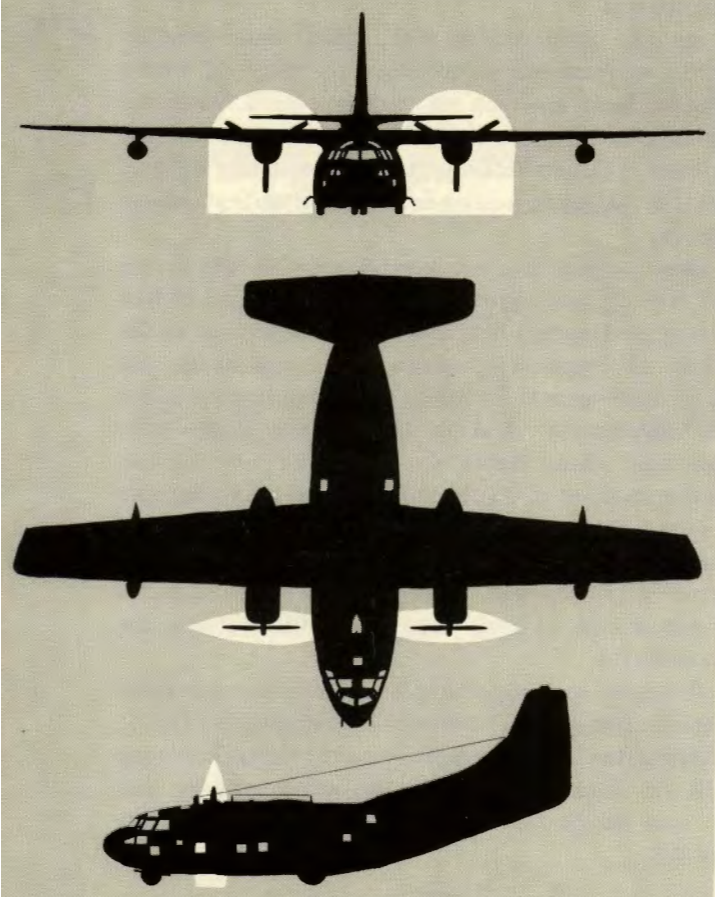
As the plan stands now, each base weather station will report prevailing visibility in miles until the base changes its letdown plates. When the base starts to use the TERPS approach minimums, the base weather folks will start reporting Runway Visibility (RVR) in hundreds of feet on their sequence reports.

Okay... you say you haven't seen TERPS in use yet? Not at your base? Well, it's coming. As of this writing (a gloomy, hot, and sticky afternoon in the middle of September) seven Air Force bases use the TERPS format for their radar minimums in the IFR Supplement. And in the letdown books only twice that many fields are using the new format. But the next set of FLIPs will probably show changes at some TAC bases. And every month we'll see more. The program is to be fully implemented by March of 1969. It will take that long. We must check out the people at each base who will establish the new criteria.

It may all look very complex... as new procedures often do. But once we become accustomed to TERPS, we'll realize it's an improvement. Maybe someday we'll all think of the old landing minimums the way we now do the Adcock Range...how'd we ever live with it?

# WALK AROUND 'EM

by L/Col Carl E. Pearson
Hq TAC (OSP)



The C-123 engine conditioning team completed their runup and taxied back to the ramp. Rain and the dark ramp didn't help visibility. The Provider's waiting crew chief guided them into a parking spot. Hurriedly, he chocked the left main wheels fore and aft. He heard the engine exhaust quit when they cut fuel mixtures. Swinging around, he headed for the nose of the bird. Number One prop, still coasting, struck him on the shoulder and head. He died instantly.

Maybe we've lost our respect for props.

Maybe we've emphasized jet intake and exhaust hazards at the expense of props.

The number of prop-driven airplanes has declined steadily over the years, but the danger attached to each bludgeoning blade hasn't diminished a bit.

If you've grown complacent in your operation around airplanes with fans it's time to dust off a proven prop procedure learned through the years ... the hard way.

Never walk through the arc of a prop! Treat every prop as if it's turning. Always give it a wide berth ... whether it's spinning or still. Avoid it like the plague!

The discipline and respect you develop for a prop when it's at rest will save your life when the prop's churning ... or just starting ... or coasting to a stop.

Winter weather operations aggravate the prop problem. The quick frost bite that goes with freezing prop blasts; serious restriction of an individual's sight, hearing, and mobility by cold weather gear and parka hoods; uncertain footing on snow, ice, water, or oil slicks; reduced visibility attached to longer nights and severe weather; all combine to multiply the danger to people around props. Movement of crew and maintenance personnel getting their job done has to be more deliberate and include a wider clearance margin.

Prop-condition yourself and your prop habits will carry you when you're hurried, fatigued, limited in visibility, hampered by winter weather, overloaded with problems ... or any combination thereof.

Complacency around props still kills people. Stay out of prop arcs all of the time.

Walk around 'em ... while you can!

# TAC TIPS

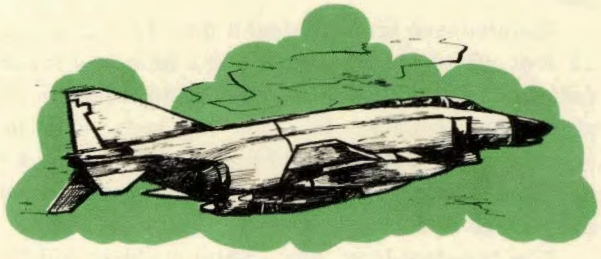
. . .interest items, mishaps with morals, for the TAC aircrewman

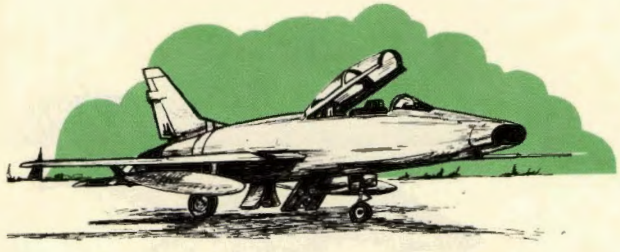
## OVERLOOKED

During a recent bailout from an F-4, the pilot found his survival kit floating about on his right side after the parachute opened. When he pulled the handle to deploy his survival kit, the whole thing fell away from him.

The equipment had functioned as designed... again.

On normal deployment, the left strap disconnects and the kit remains attached to you by the right-hand strap. This pilot had forgotten to connect his right survival kit retaining strap to his harness!





## OOPS!

The F-100F IP was giving a dollar ride to a man who had never been in an ejection seat bird before. He gave his passenger a thorough briefing on the seat and the rear cockpit of the airplane. Then they both strapped into their positions and proceeded to start the engine.

Ready to taxi, the IP told his passenger to remove his seat and canopy pins and show them to the crew chief. The next thing he knew, there was a loud explosion. Looking back over his shoulder, he found a great, gaping hole in the rear part of the canopy. And the canopy remover was lying in the surprised passenger's lap!

Somehow, the passenger had pulled the alternate canopy jettison handle.

In the future, the outfit involved in this one is going to insure that someone who knows the system assists passengers strap themselves in. Then this same person is going to pull the pins!

# TAC TIPS

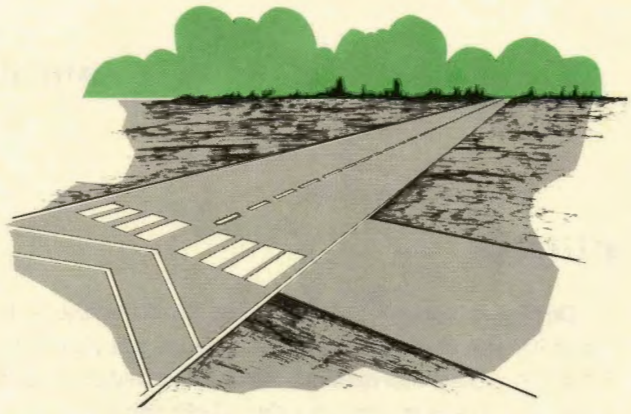
## RUNWAY CHECK?

As they rolled across the barrier cable after landing, both pilots caught a glimpse of something white on the runway. It could be paper. They'd felt no bump, heard no thump.

After the bird had turned off the runway, onlookers saw fuel streaming from the lower fuselage. They relayed through the tower and the crew stopped, shut down, and evacuated the leaking bird... in a hurry! The crash crew washed away the JP-4 until draining quit.

Maintenance troops found a 6-by 12-inch puncture 12 feet aft of the nose gear and a hole in a fuselage fuel tank. The right nose wheel had flipped a stray main gear snubber into the fuselage. The fancy squeeze shot cost over 116 man hours... plus a fuel cell and tire replacement. It could have included a disastrous fire.

The two-foot-long, grey-white snubber had fallen



from another airplane four hours earlier during an emergency landing. It landed on the white runway centerline, effectively camouflaged from the crew who made the post-emergency runway check.

## COOL IT!

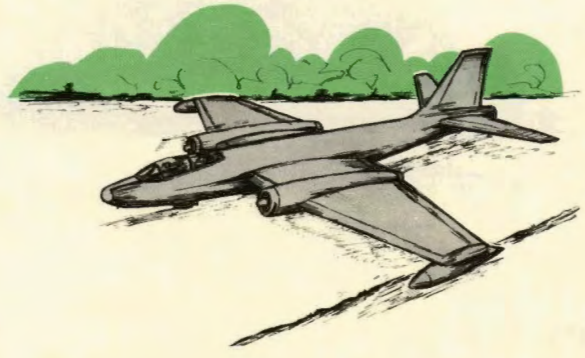
His line speed read ten knots low at the 3000 foot marker. The RB-57 pilot aborted his takeoff with minimum braking. The bird seemed okay on taxi back so he decided on another try.

No improvement.

Again, he read ten knots low at the 3000 foot marker. He aborted a second time. This time on taxi back the bird didn't satisfy him... specially when he saw smoke pouring from the left wheel area. He notified tower, shut down, and jumped clear.

The fire crew saved all of the bird except tires, wheels, and the lower left strut. Investigators suspected a dragging left brake.

If the pilot had been the suspicious type, he would've complied in advance with the new squadron directive: When you abort, shut down and find out why... and give your brakes a chance to cool!



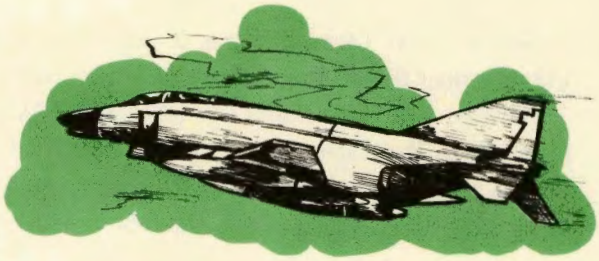
## OOPS! AGAIN

In the heat of an air combat tactics mission, an F-4 pilot pushed over from 33,000 feet and lit the burners to gain airspeed on a diving opponent. He started his pullout at about 18,000 feet. Noting that his Mach was up around 1.05, he came out of burner and started a 6G pull.

His wings were level and his nose was about 30 degrees below the horizon when he decelerated thru the Mach. That was when the bird dug in. Next thing he knew, he was in an almost vertical climb... and the G-meter had registered 9.5G!!

After he landed, inspectors found the left outer wing panel cracked, the left trailing edge flap upstop broken, a bolt on the right engine mount broken, and the right engine track rail cracked. It took 109 man-hours to repair the damage.

Decelerating from supersonic to subsonic speed while you're pulling pretty hard on the pole can be a



big surprise if you're not ready for it. As you go subsonic, the effectiveness of the Phantom's stabilator increases sharply. As a result you suddenly get a lot more G out of the turn than you were expecting.

It helps when you're expecting it ... and plan for it.

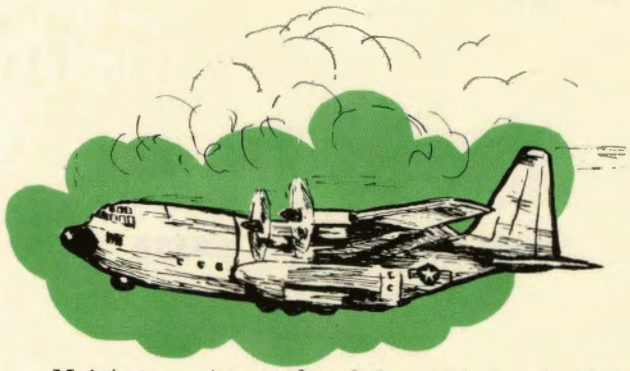
## TORN TAB

The C-130 pilot started his descent from Flight Level 240 holding 230 knots. Passing thru 14,000 feet, he felt his Herky start a sudden and almost uncontrollable buffeting. Leveling off, the pilot pulled throttles to flight idle and slowed to 150 knots.

It helped.

He tried 10 percent flaps, liked the response, and lowered them to 20 percent. Buffeting continued, but it was less violent.

Engine instruments checked normal. The crew scanned all they could see inside and out... even used the sextant. Still mystified, the pilot dropped the gear and checked the bird at approach speed. The buffeting continued during descent and approach. With the field made, he lowered 80 percent flaps. His elevator trim was inop so he held a slightly high approach speed. Landing and rollout were normal.

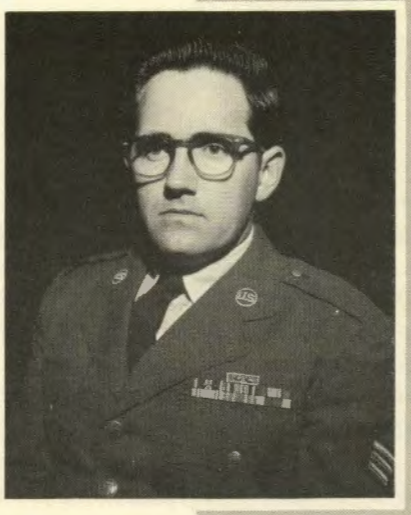


Maintenance troops found the right elevator trim tab damaged. The inboard one-third of it was missing. They URed the torn tab and inspected their remaining birds for evidence of potential failure. They found none.

The pilot's lost-life-raft procedure worked fine with a torn tab.

## MAINTENANCE MAN OF THE MONTH

Airman First Class Franklin D. Roush of the 64th Tactical Airlift Wing, Sewart Air Force Base, Tennessee, has been selected to receive the TAC Maintenance Man Safety Award. Airman Roush will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



A1C Franklin D. Roush

TSGT Ronald R. Lloyd

## CREW CHIEF OF THE MONTH

Technical Sergeant Ronald R. Lloyd of the 27th Tactical Fighter Wing, Cannon Air Force Base, New Mexico, has been selected to receive the TAC Crew Chief Safety Award. Sergeant Lloyd will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.

# YOU CAN FLY IT HOME

**Spin recovery in the '84F is easy. . .**

**if you remember two critical factors.**

During a recent two-year period, six F-84 pilots found themselves in spins they couldn't fly out of. Four of them ejected and survived. Two didn't.

You can look at these cold, hard facts in several ways: The cost in equipment alone is more than four and one half million dollars. The two lives lost are irreplaceable, you can't put a cost figure with them. But perhaps the most impressive fact is that almost 25 percent of the F-84 accidents during this period were spins.

So let's look at the problem and see what the trouble is. The old Super Hog has been around the fighter and recce business just about as long as any bird we're flying. It still does a mighty commendable job when we put it to work.

An awful lot of pilots have flown it. No one knows how many pilots have spun the F-84, most of them unintentionally...and a few intentionally, would you believe!

The bird has never been considered vicious. The spin is pretty straightforward. Lyle Monkton was Chief Production Test Pilot for Republic when he conducted the spin tests on the airplane some eleven or twelve years ago. In an article for the old Flying Safety magazine he said, "...after the first turn or two the nose does not come up as high and the aircraft settles into a more or less nice, sickly, normal spin."

Of course, it's that first turn or two that can throw you. You aren't expecting a spin in the first place. And then, until it settles down into that nice, sickly act, the nose oscillates. The nose comes above the horizon and plunges back down again pretty dramatically. This is more predominant during spins with pylon tanks installed.

In any configuration, the bird loses 1000 to 1200 feet per turn. And it does that every two seconds once it has settled down into its act...thirty turns per minute! That, my friend, is between 30,000 and 36,000 feet per minute down!

But for all that, Lyle Monkton came away from the spin series with the impression that anyone with the required number of arms, legs, and heads would be able to handle the '84F in a spin and fly the airplane home. He tried it in just about every configuration imaginable...with tanks, 230s and 450s; with forward and aft CG; with gear, flaps, and speed brakes out and in. He recovered most of the spins within 10,000 feet of his entry altitude.

His advice for recovery was then just about what you find in your Dash One today: Feed in opposite rudder and keep the stick full back and slightly with the spin until rotation stops. Don't expect immediate response to the rudder. Just bang it in and the airplane will do one or two more turns before the spin stops. Then neutralize the rudder. As the bird starts to recover, release your back pressure and fly her out.

You have only two important things to remember. First you'll

# YOU CAN FLY IT HOME

recover faster if you feed in about one-third aileron, with the rotation, during the spin and recovery. When this became apparent during the tests, Lyle tried opposite aileron just to see what it would do. The spin became faster, more erratic. The bird just refused to recover as long as he held even a small amount of aileron against the spin.

And it's almost a natural thing to attempt to counter the turn of a spin with aileron against. So beware. And be sure you have the stick on the correct side of the cockpit...in the direction you're turning.

The other important thing is to get and keep the stick back in your gut. Keep it there throughout the spin and during the recovery until your bird starts to fly out. When rotation stops, you'll feel like you're in a somewhat vertical position. If the spin got a chance to wind up, the nose will be something like 65 degrees below the horizon.

When recovery starts, the bird will start to fly out even though you have the stick back. Naturally, you must ease the stick forward during the pullout to keep from stalling again. But if you're premature with the forward stick, your nose will drop through right smartly and you'll find yourself on your back... spinning again.

Lyle learned about this the hard way. As he told it, "In the early part of the program when I was fiddling around with the amount of aileron to use, I figured that if a little is good, then a lot is better. So, one bright, smoggy day, I gave her the full aileron treatment with the spin.

"Now, it's not easy to hold full aileron and at the same time keep back stick. Your leg is usually occupying that spot in the cockpit. As a result, I had to ease forward on the stick in order to get full aileron. What happened?...flipped onto my back, into an inverted spin."

"This was somewhat discouraging because I was supposed to be conducting an upright spin test at the time. But I learned something. It is all-important to keep that stick full back until you are into the pullout stage of recovery."

When he went on to the inverted portion of the tests, he found them as straightforward as you might expect any inverted spin to be. The bird recovered nicely. The negative G was very pronounced.

Determining the direction of the spin is the only real problem. About all you can do is figure it out as best you can and try to recover. Just hold opposite rudder and neutralize the stick. If it doesn't come out of the spin in a couple of turns, you misinterpreted the spin direction. Throw in the other rudder, and out she comes. Don't be ashamed to admit that you could have figured wrong in the excitement of your first inverted spin.

As a matter of fact, even in an upright spin, if you've given it a good chance to recover with one rudder, and it refuses to...just switch! You won't be the first one that got it wrong on the first try. But you don't have to ride it all the way to the ground with pro-spin controls!

The tests showed that it's best to get rid of outboard external stores if you get into a spin while you're carrying them. The book now says to kick off your inboard pylons, too. And it says to deploy your drag chute if the bird doesn't recover after your first attempt... like an emergency recovery procedure.

That's okay...if you can afford it. If you have enough altitude to try two recoveries before you get out. Remember, it takes an average of 10,000 feet for a test pilot to recover from a spin he planned to get into. So you can plan to start your last recovery at least that far above bailout altitude. That comes to 20,000 feet. Any spin you enter at that altitude or below is an emergency! Use your right hand to hold the stick where it's supposed to be, and use your left to punch tanks and grab that drag chute handle. The chute is an almost sure winner!

All in all, altitude is the most critical factor in determining whether you will fly out of a spin in the F-84F. If you have that, it's just a case of...

- Full back stick
- Aileron with the spin
- Abruptly apply full opposite rudder.

When rotation stops, neutralize rudder and ailerons. When the pullout is well under way, ease slowly forward on the stick.

# OHR department

**. . .HAZARD REPORTS WE CAN ALL LEARN FROM.**

"Aircraft at One O'Clock, 4 to 5 Miles; Fast Moving, ALTITUDE UNKNOWN"

A recent OHR submitted on a near miss reveals that there may be some misunderstanding concerning traffic advisories and vectors to avoid known traffic.

The OHR and the NEAR MISS reports read as follows:

"We had been cleared by Approach Control to descend to 2000 feet on an assigned vector of 120 degrees magnetic. While descending through approximately 4000 feet, we were advised of an aircraft in our one o'clock position, range 4 to 5 miles. I acknowledged the traffic but advised Approach Control that 'I was in the clouds and on the gages.' No further transmissions regarding the traffic was received. We broke out of the clouds at 2200 feet MSL and just as I was levelling off at 2000 feet, the pilot in the rear cockpit saw the other aircraft in our one o'clock position at about 300 to 400 feet. I was still on instruments at the time. The other pilot had no time to do anything other than physically overpower me and violently push the stick forward. He simultaneously yelled 'LOOK OUT!' I looked up just in time to see a white blur pass over our canopy. The miss distance could not have been much over 50 feet vertically."

A very important bit of information came to light during the investigation of the circumstances surrounding this report. Information which pilots should be aware of.

THE FACT THAT THE PILOT MAKING THE REPORT WAS IN THE CLOUDS HAS NO BEARING ON THE INCIDENT, SINCE AIR TRAFFIC CONTROL DOES NOT VECTOR... REPEAT! DOES NOT VECTOR AIRCRAFT AROUND UNIDENTIFIED TARGETS UNLESS REQUESTED TO DO SO SINCE THE ALTITUDE OF THE TARGET IS NOT KNOWN.

The solution, of course, is obvious. If you're in the clouds and receive a traffic advisory on another aircraft which may conflict with your flight path, request a vector around that traffic, especially at low altitudes and during approaches.


## TACTICAL AIR COMMAND UNIT ACHIEVEMENT AWARD

**16th Tactical Fighter Squadron, Eglin AFB, Florida**

**18th Tactical Airlift Squadron, Lockbourne AFB, Ohio**

**40th Tactical Fighter Squadron, Eglin AFB, Florida**

**43rd Tactical Fighter Squadron, MacDill AFB, Florida**

**152nd Tactical Reconnaissance Gp, Reno MAP, Nevada**

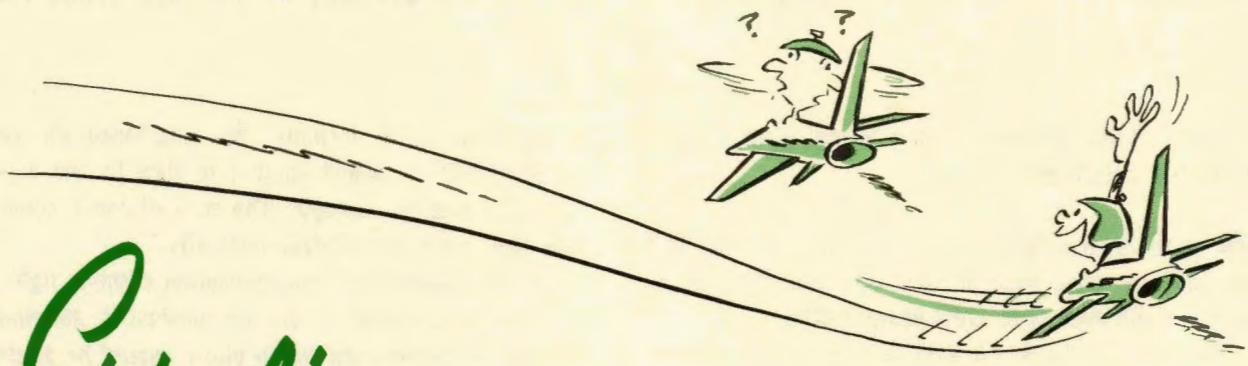
**182nd Tactical Reconnaissance Gp, Greater Peoria Apt, Ill.**

**186th Tactical Reconnaissance Gp, Key Field, Miss.**

**431st Tactical Fighter Squadron, George AFB, Calif.**

**939th Tactical Airlift Group, Portland IAP, Oregon**

**943rd Tactical Airlift Group, Mnpls-St. Paul IAP, Minn.**



Sideslip characteristics are normally good. However, a critical limit exists beyond which the maneuver may progress into uncontrolled flight. The out of control condition is severe.

# Sideslip

# CAN YOU HIT IT ?

When the Ops Officer stopped him at the coffee pot, Sideslip knew it was his turn for the informal report on his students. The Major had a way about him that made it all seem very natural. The first few times, Sideslip didn't realize that he'd given a training report on each of his students until it was all over.

But recently they had all been good reports. Well into his second class since he had returned from overseas, Sideslip was grateful that he'd picked up the students he had now. The first class had been kinda raggedy-andy, he had felt. He wasn't very settled in the job of teaching people to be fighter pilots. And the students were very new to the business. So many things that were second nature to Sideslip were new and alien to them.

But this class was better, at least his students, Sideslip had thought many times. The lieutenant was what Sideslip would expect... young, aggressive, and eager to learn all he could. Itching to get into combat.

When he heard that he was also getting a lieutenant colonel, Sideslip figured he had his work cut out for him. It wasn't until he met the guy that he realized how lucky he was.

Tom (he insisted that Sideslip call him that when they were away from the flight line and out of their flying suits) hadn't flown anything that looked like a fighter since 1953. When he came back from Korea he got into a string of headquarters and staff jobs. All he had flown since then was behind-the-lines airplanes.

But if the lieutenant was a tiger, the lieutenant colonel was the saber-tooth variety. He couldn't get enough. He was always asking questions... the kind that showed he had been doing some reading and thinking in his room. He wanted to know all about Sideslip's combat tour.

The first time they got in the airplane Sideslip knew it would be a pleasure to show this guy the ropes. There was no question in Sideslip's mind that Tom had handled a lot of airplanes. And he had dropped bombs and fired guns in his time. All he needed was to catch up. He had a great and obvious desire to be a fighter pilot. And that was what counted.

"So I really don't think that little incident yesterday is very important, Maj," Sideslip hoped he was getting his point across. "If anything, he was just trying too hard."

"Well, Slipper," the Ops Officer wasn't ready to drop it at

that. "I'm not sure in my own mind just where the breakdown occurred. Had he ever been on the Tactical Range before? I mean, did he know what it looked like? Did he have a pretty good idea where the road recce would end and when you guys would be on the range?"

"Well, sure," Sideslip didn't want to sound defensive, but it almost sounded that way. "I briefed him right out of the book. You know... discussed the route we'd recce, and how we'd get to the range... all that. Just like we always do. Since we only had two birds yesterday I told him to play element lead."

"... We'll just pop right into Low Level Number Three as soon as we get the birds squared away after takeoff. This one here... have you had a chance to fly it yet?"

"No, Slipper," Tom was studying the map before him on the briefing table. "That's not the one I flew last week when you had that cold. But let me look at it... okay ... okay..."

It was this kind of thoroughness that Sideslip admired in Tom. Everything he did had the same I-can-do-it flavor. They spent a few minutes discussing the terrain features along the route before Sideslip went on to the rest of the briefing.

"Now, you play element lead ... I'll be leading the flight. While we recce this ranch road, you keep your element about two thousand feet above me and five thousand feet... a mile... behind me."

Sideslip's student, intent on the procedures, nodded his understanding.

"It can easily happen that I won't see a target until I've passed the position that I could strike it from." Sideslip went on. "When I call one to you, I hope you'll be able to pick it up and hit it before it's gone. If it's a truck or some troops out on a road, they'll be under the trees by the time you get back around for a second look... you'll never find them."

Tom grinned his understanding. He didn't expect to let any targets get away from him. That was what he usually did when you challenged him... just grinned. Sideslip knew he would try his best to be ready to hit every target called to him.

Sideslip went on to brief the rest of the mission. They were due to follow a flight of four on the Tactical Range. If his timing worked out right, they wouldn't have to hold. By the time they arrived at the point and checked in, the other flight would be finished. They could fly right into the range as if it was their target... realism.

They would make two low angle skip passes, followed by two 45-degree dive bomb passes. Then they'd come around for strafe passes until they were down to bingo fuel. When Sideslip went over the sight settings and minimum altitudes for each event, he had the feeling that Tom was 'way ahead of him. He could have briefed them just as well as Sideslip.

"So the rest of the briefing and all went about routine," the Ops Officer was listening carefully to Sideslip's narrative. "He knows the bird real well now... better than any of them in the last class did at this point. We got started and armed and ran through the maintenance trap before we took the runway."

When he saw that his wingman was settled firmly into position after they cleaned up the birds, Sideslip fishtailed his airplane. Tom moved out smoothly into the road recce position they had briefed.

As they let back down to the route altitude, Sideslip watched Tom assume his position. After he hacked the entry into the low level on his clock, Sideslip called a couple of corrections to Tom. And Tom moved right to the spot Sideslip called out each time.

Sideslip didn't call any targets on the first two legs. He wanted Tom to get a good feel for the position he was flying. Give him a chance to get comfortable and start looking around for himself.

Right after they turned onto the northwest leg, Sideslip dropped his left wing as if he was looking at something.

"There's three trucks in that road intersection down there... can you hit 'em?" His call was planned to be sudden and unexpected.

"I see the intersection..." Sideslip heard Tom's immediate reply.

"Can you get them from where you are?"

"Ahh... not from here, Slipper," his wingman didn't have a smile in his voice.

"Okay, Two..." Sideslip decided this was the time to drive a point home. "You really closed on me in that turn. Any time you come inside that five thousand feet, you're out of position to hit the juicy ones I call to you. Do you suppose they'll still be where you can see them if we double back at them?"

"Press on, Slipper," Tom was unhappy. "Find another one for me."

Sideslip checked his map. Not

much time left before they'd be entering the range. He wanted to give Tom a couple more targets. He felt sure Tom would get them. And the best way to learn is to come away from a mission feeling you've done something right.

But when he called the next target, Tom had to abort his pass at it. He had been too close again.

"That would have put me in a vertical dive, Slipper," he called ruefully. "Guess I was too close to you again."

He dropped back into a much better position after that. Sideslip watched him with one eye, the clock and his map with the other. He'd have to find another one quickly if Tom was to have a successful route recce out of this flight.

And then he saw it. A beautiful sharp bend in the road that he had forgotten about. Easy to identify. Now, to see if Tom could hit it from his position. He looked about right.

"Just to the left of that turn in the road there," Sideslip tried to put the excitement of discovery into his voice. "There's your target... can you hit it?"

"Rog, Slipper... got it!"

Sideslip cranked around in his seat to watch. It looked good! Right up to the point where Tom started his pull-up. Then Sideslip saw something separate from Tom's aircraft.

"Got it!"

"Wha... did you drop on it?"

"Didn't think I'd get my switches set up on time, Sideslip," Tom sounded jubilant. "But I think I got the spot you called dead center!"

Sideslip saw the smoke spot on the desert beside the bend in the road while Tom was talking. He didn't know what to say. Tom had dropped on the simulated target!

"Did you set up and really drop on it, Two...?"

"Didn't you want... uh... isn't that the range? I mean down there ... I..."

"So I called it to the range tower as an inadvertent drop, you see," Sideslip was trying to be convincing. And the Ops Officer just kept nodding as if he wanted to hear more. "I knew Tom...er, Colonel Tom... meant to drop that bomb. But it was inadvertent as far as I was concerned."

As the Major stared at him, Sideslip had the feeling he was just hanging himself more with each word he added to it. It hadn't seemed like much more than just an innocent mistake when it happened. But, somehow, there was a lot of high-level interest in the whole affair now.

"Slipper," the Major started slowly with what he knew he had to say. "Colonel Tom told me he thought he was inside the Tactical Range when you called that last target to him. As a matter of fact, he was a little unhappy that you didn't tell him he wasn't on the range yet."

"But..." Sideslip suddenly began to see the direction the conversation was taking.

"No,... don't worry, Sideslip." The Ops Officer went on. "You had briefed him on the route and the range. And, from what you said, you were playing that last target on the road recce about the same as you played the ones before it."

Sideslip wasn't prepared for this twist. There was sure to be more coming. He knew the Major was thinking about the possibility of this same situation happening again.

"I guess we need to establish a bomb line, Sideslip. One that anyone can recognize. We'll make it a part of every briefing... you just don't set up your switches until you've crossed the line."

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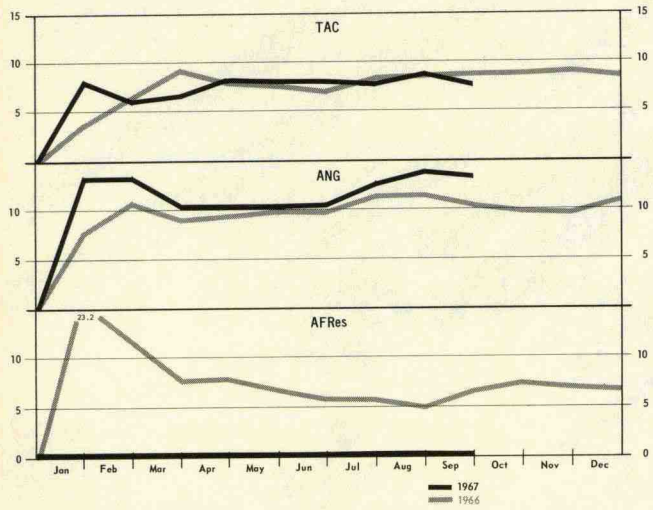
# PEANUTS



# TAC TALLY

## MAJOR AIRCRAFT ACCIDENT RATES AS OF 30 SEPTEMBER 1967

estimated per 100,000 hrs flying time




## UNITS

| | 1967 | 1966 | | 1967 | 1966 |
|---|---|---|---|---|---|
| 9 AF | 8.2 | 5.6 | 12 AF | 9.5 | 12.9 |
| 4 TFW | 7.0 | 9.5 | 23 TFW | 11.5 | 29.5 |
| 15 TFW | 25.7 | 4.3 | 27 TFW | 13.7 | 14.9 |
| 33 TFW | 9.7 | 10.7 | 479 TFW | 9.9 | 10.9 |
| 354 TFW | 36.0 | 23.0 | 67 TRW | 6.2 | 18.9 |
| 4531 TFW | 0 | – | 75 TRW | 17.5 | 0 |
| 363 TRW | 10.1 | 14.1 | 313 TAW | 0 | 5.9 |
| 64 TAW | 0 | 0 | 516 TAW | 0 | 5.2 |
| 316 TAW | 0 | 0 | 4453 CCTW | 3.9 | 8.4 |
| 317 TAW | 5.1 | 0 | 4510 CCTW | 8.9 | 14.9 |
| 464 TAW | 2.8 | 0 | 4520 CCTW | 11.5 | 15.8 |
| 4442 CCTW | 7.7 | 0 | 4525 FWW | 24.2 | 0 |
| **SPECIAL UNITS** | | | | | |
| 1 ACW | 6.6 | 16.0 | 4500 ABW | 0 | 0 |
| 4410 CCTW | 9.4 | 7.3 | 4440 ADG | 0 | 0 |

| AIRCRAFT | 1967 / 1966 | |
|---|---|---|
| TYPE | TAC | ANG |
| A-1 | 23.3 / 17.8 | |
| RB-66 | 0 / 0 | |
| F/RF-84 | | 15.9 / 11.7 |
| F-86 | — / 80.5 | 9.5 / 0 |
| F-100 | 15.8 / 15.9 | 22.6 / 15.6 |
| RF-101 | 36.3 / 36.1 | 20.2 / 47.2 |
| F-105 | / 23.3 | 0 / 0 |
| F/RF-4 | 15.5 / 7.2 | |
| C-47 | 5.4 / 0 | 0 / 0 |
| KC-97 | | 0 / 0 |
| C-119 | | 0 / 0 |
| C-123 | 0 / 0 | |
| C-130 | 0.6 / 1.2 | |
| T-29 | 0 / 0 | |
| T-33 | 5.5 / 0 | 0 / 7.9 |
| T-39 | 0 / 0 | |
| O-1 | 14.2 / 0 | |

# ADJUST YOUR DRIVING TO WEATHER CONDITIONS