

TAC ATTACK



JANUARY 1967

TAC Attack January 1967

ABOUT BARRIERS
...pg 16

VOL. 7 NO. 1

TAC ATTACK

for efficient tactical air power

JANUARY 1967

TACTICAL AIR COMMAND

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THE COVER

Do you
understand barriers?

... pg16

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TACRP 127-1

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Angle of ATTACK

Recently an instructor deviated from his briefed mission to show his student some of the techniques he learned in combat. After 45 minutes of acrobatics on a transition ride, he took control of the airplane and demonstrated some dive bomb runs. Then he descended to fly along a canal. He pointed out the similarity of the terrain to what his student would find in Southeast Asia.

He flew into two power lines that were strung between 75-foot poles!

This time the pilot was fortunate. He was able to fly the aircraft home.

In this business of training pilots to go into combat, we certainly want to give them all the realism we can. We give them instructors who have been there... who know how it feels to be shot at. We expect the students to learn a lot about how their instructors think and act. We tell the students, "Follow this guy's lead. He'll show you how to become a combat pilot."

But when our instructors display a lack of integrity and lack of discipline that results in unnecessary damage and injury, how can we ask their students to do otherwise?

Each instructor must accept the responsibility for exemplary, professional conduct. He must be chosen for his ability to produce the most effective combat pilots in the world. And he must continue to demonstrate this ability day after day.

We won't produce an effective combat force by demonstrating how to violate rules and ignore discipline. Rather, we will produce a force of individuals, each going his own way, unable to work and fly as a team.

We cannot afford to allow each man, as the whim of the moment stirs him, to ignore the rules, procedures, or even lesson plans that we have established for good reason... and frequently through bitter experience.

Homer C. Boles

HOMER C. BOLES, Colonel, USAF
Chief of Safety



**FIRST
OF A
SERIES...**

Reprinted from Kaiser Aluminum News

COMMUNICATIONS

IN THE BEGINNING
WAS THE WORD...

"AND"

Perhaps all stories should begin with the word "and." Perhaps they should end with the word "and" too. It would remind us that no experience ever begins; there was always something that preceded it. What really began for us, was our awareness of something going on. At the end, the word "and..." would remind us that no story ever really ends...something more will happen after. Thus, it may be said that we live in the world of "etc." There is always more to start with than we can take into account. There is always more to say than we can possibly say. There is always more to end with than we can imagine. You are now invited to enter the world of etc.



"Man," it has been said, "is the only creature on earth who can talk himself into trouble."

After a couple of million years of practice, we've become pretty good at it.

Think back over the last few days...if you can bear to do so...and chances are that you will find that at least some of your tensions, anxieties and frustrations arose from situations in which you did not really understand what someone said...or they did not seem to understand what you really meant.

Perhaps:

- you complied with an order improperly.
- you addressed a letter or memo to the wrong place or person.
- you wasted a lot of time on the wrong assignment.
- you never did get anything

out of the conference you spent two hours in this morning.

And at home? Well, you're inclined to agree with the man who said, "There are only three races...men, women, and children. And none of them speak the same language."

What is upsetting about all this is that you may feel that you are a pretty good communicator...it's just that everyone else seems to do such a lousy job of it. After all, it should be perfectly easy for us to understand each other in our every day home and business life.

What can the matter be?

Is it not at least possible that we have taken our ability to communicate with each other for granted? Perhaps we have felt that it is a rather simple, natural process, and "once we learn the language," we should be able to

understand each other pretty well.

Would it perhaps be useful to examine the process by which we communicate and see if there are any clues that will help us understand each other a little better?

For the most part, the work of the world gets done because people do cooperate with one another. Each of us is almost wholly dependent on what other people do for us. The modern world is not a "jungle of competition" as some have described it; it is more like an ocean of cooperation.

The cooperation that makes human society possible is almost wholly dependent on the skill with which we communicate. If we do not understand each other's needs, we cannot fill them very well.

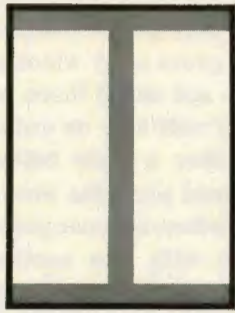
So, it seems eminently worthwhile to examine the process by which we communicate. Perhaps we will find that when communication fails, it is not we who are at fault, but that some part of the process has broken down.

And that is what we want to talk about...

Now the question rather reasonably arises: Why should a business like ours...discuss this at all?

And the best answer we can think of is that we feel all business ultimately comes down to a transaction between individual human beings. The success of that transaction depends almost entirely on how well they understand each other.

The following material is intended...not to answer questions...but to stimulate thinking about how we communicate and how we might try to improve the way we do it. If this, in turn, helps us to understand our needs better, then we can hope to fill them better. And our business will improve to that extent.



HOW IS IT WE KNOW SOMETHING TO COMMUNICATE



Here's looking at you...one way, at least. Instead of thinking of yourself as a "thing" in a world of "things" you might try to think of yourself as a whole lot of activities going on near some point in space and at this moment of time. At this "somewhere/somewhen" you are immersed in a great ocean of other happenings. The interactions between the "happenings" that are NOT you, are the raw, basic stuff we try to communicate about.

When you talk or write about something, what you are describing is those interactions that happened inside of you . . . not just what happened outside of you.



The world outside us is believed to be made up of at least three levels of "happenings." Of these, we are able to experience only one level with our unaided senses. Visually, the level we do see appears to be made up of radiant light, such as is emitted from the stars and our sun, and the reflection of this light from the edges and surfaces of "things," which usually appear to us as patches and patterns of colors. What we "see" is not the "thing" itself, but a happening...the emission of light or the reflection of it.

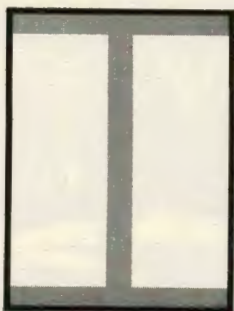
Beneath the edges and surfaces of "things," there is another layer of events that can be seen with special instruments, like microscopes and x-rays. What these instruments do is to bring this otherwise "invisible" world up to the visible world of colors, edges, and patterns that we can experience. This microscopic layer appears to be a world of structures which we might consider to be forces in equilibrium...and a motion...which we might describe as forces seeking equilibrium.

Beyond the microscopic layer is still another, which we believe to be made up of the interaction of electrical and magnetic forces in constant motion. We "see" this world, too, by bringing some of its effects up to the level of patterns of color and the edges of things...such as streaks on a photographic film, or the pointer on a dial. Thus, the world that we can experience directly is made up of patterns of color and edges of things, and it is the effect these have on us that we talk and write about.

We react to only a few of all the waves of energy that ceaselessly pour in upon us from all directions. The spectrum of visible light...our "window on the world"...is only a tiny band out of all the waves of energy our instruments tell us are out there. And out of all the sound waves...the "music of the spheres"...that beat in upon us, our ears can pick up and process only a very little bit. What we can talk or write about is only a very small part of all that is going on "out there"...

In a way, we "select" that part of the world that we want to experience at any one time. If we choose to stay indoors instead of going out, we have already selected one field to experience...and cut ourselves off from all the rest. And if we are in a room with four windows, we further narrow the field of our experience when we choose which window we want to look through. The particular place you are in, and the direction you choose to look, decide what experiences you are going to have. Since no two people can be in exactly the same spot at exactly the same time, all of our experiences are, to that extent, different.

Many of our problems in communication arise because we forget to remember that individual experiences are never identical.



How then, can we ever discover what is similar in our individual experiences of the same outside event? Well, one theory is that while any one experience is uniquely individual . . . the series of individual experiences is (or can be) nearly identical. If we walk around a helmet, its shape will constantly change as we change the angles at which we look at it. If someone else then walks around the helmet and looks at it in the same angles, he will have different individual experiences, but the series will be much the same for him as it was for us. Thus the succession of individual experiences enables us to agree upon what we have experienced, even though the individ-

ual experiences are somewhat different. If this were not true, effective communication would be almost impossible. When we talk to someone, we establish communication best by discovering what is common in the succession of our experiences, while keeping in mind that we may differ in our interpretation of any individual experience.

Although we experience the world in bits and pieces, the sequence in which we experience them flows together and we feel the world around us as a continuous panorama. When we try to communicate about it, we have to break it down into bits and pieces. Perhaps a large part of our trouble starts there.



To a certain extent, we are "taught" what to see. The event which has not been experienced before does not "make sense." Successive experiences enable us finally to recognize the sameness of the sequences of

experiences, even though individually they are different.

Somewhat the same thing applies to sounds. We have to be taught to "see" what we see and to "hear" what we hear. Since we are each taught differently, the very basis of our understanding of what we see and hear differs to some extent from what others see and hear. This is one reason why verbal communications often are less satisfactory than written ones, because the spoken language allows of so many different intonations, pitches and variations. Two or more people, hearing the same sounds, do not experience nor interpret them the same way. When we assume that everyone sees or hears "the same thing," then we base our personal communication on a false and misleading premise.

This series covers one of the biggest problems facing us today in the flying business . . . or anywhere:

- I. In the Beginning Was The Word . . . AND
How Is It We Know Something To Communicate?
- II. The Trouble With IS, is IS
The Parable of the Six Blind Men
- III. In search of the Meaning of Meaning
- IV. It's a Mad, Mad Maze
This Is The Beginning . . . Not the End

It will appear in four issues of TAC ATTACK through the generous permission and assistance of Don Fabun, who had the idea in the first place, did the research, wrote the material, and published it in the Kaiser Aluminum NEWS, which he edits.



CHOCK TALK

improper diet

The overseas engine troops were performing a runup on the trim pad after their F-100 had been thru phase inspection. They ran it at 85 percent for 20 minutes and then advanced power to 90 percent. The engine stopped ... very suddenly ... causing extensive damage to both engine and airframe.

Investigators found that an eight-inch adjustable wrench, which had been left in the intakes, had been ingested ... but not digested!

...and again

After the Phantom came out of maintenance, the crew chief performed an intake inspection and signed it off in the Form. He checked intake screens installed and proceeded to start engines for the runup. With the left engine at 80 percent, he felt unusual vibrations. Then the engine started to compressor stall. He quickly shut it down.

When the engine shop troops tore it down they found the engine had suffered considerable FOD. The compressor rotor had to be repaired at the depot. Damage to the stators, inlet guide vanes, and turbine could be repaired locally. It took 300 man-hours to repair all the damage ... from an Apex screwdriver which had been left in the intake.

kinked caribou

While the CV-2 was on base leg for landing, the flight mechanic discovered a fuel leak on the bottom of the right engine. He discussed it with the pilot. They shut down the engine.

On the ground after an uneventful single-engine landing, they found a fuel line from the firewall to the engine driven fuel pump had been twisted and kinked when it was installed. The hose had ruptured at the kink, under normal operating pressures.

close call

The RF-4C pilot lined up on the runway for take-off on a routine FCF. After checking power at 80 percent, he noticed all instruments reading correctly and released brakes. Shortly after they started rolling the pilot in the rear seat informed his aircraft commander that his airspeed was reading zero. Front seat airspeed went to 100 knots and stopped there.

The aircraft commander quickly brought both throttles to idle and deployed the drag chute. But when he saw that he might not stop on the runway, he lowered the hook ... well before the barrier. Engagement was as advertised, and all hands turned to locating the trouble with the airspeed meters.

When they opened the radome, the cause was apparent. The last person to work in the area had pinched the pitot line when he closed the radome. The unit involved now requires its instrument men to perform a pitot-static system check each time the radome is closed.

down and murph'd

When the B-66 pilot lowered his gear on GCA, he found the right main indicating unsafe. He went around and had another airplane check it for him. Both mobile control and the other pilot said the gear looked down and locked, so he went ahead and landed. As soon as he came to a stop on the runway, the pilot had gear pins inserted and taxied to his parking place.

Maintenance investigators found gear position indicating wires from the left gear broken. Scratching their heads, they checked further and learned that cannon plugs on the indicators had been murphed ... crossed! No one had any idea how long this bird had been flying around with the left indicator showing that the right main was down and locked ... and vice versa.

like late

After the F-100 landed with complete utility failure, hydraulic shop people found a leaking pressure line. The number four line to the boost pump filter was cracked at the flare. They manufactured a new line, checked the pump for proper operation, and the entire system for contamination. Everything checked okay and the bird flew two successful missions.

Then, four days after the first trouble, the same bird returned with the same trouble...complete utility hydraulic failure. And the same investigators found the same line on the same system leaking in the same manner. The number four line to the boost pump filter was cracked at the flare.

This time they determined that the flare on the pressure line had been formed improperly. They set about briefing the folks in the sheet metal shop on correct use of the flaring tool.

tall tail winds

Severe thunderstorm winds tore and twisted the locked control surfaces of a chocked C-118. The bird didn't move but the elevators did. Gusts up to 60 knots broke both outer bellcranks, tore elevator surfaces at hinge attaching points, caused trim tab binding by shearing elevator trim tab control bolts, bent the elevator down stop, and sheared two bolts in the elevator control.

Adding insult to injury, the wayward wind busted the co-pilot's vertical velocity indicator...the hard way. Wind force on the elevator surface was transmitted thru the flight control linkage and pushed the control column forward into the co-pilot's instrument panel. The wind chalked up 55 direct man-hours before moving on to other airplanes.

Thunderstorm winds continue taking their toll of the unwary, unwarned...and unprepared.

screwloose

The pilot's writeup read: "Right gear would not come down and locked. Cycled three times. Third time came down and locked at 165 knots. This is a repeat write-up."

During the retraction test the malfunction recurred on the third attempt. Investigators found the uplock mechanism was shifting. They also found eight mounting screws and one attach bolt on the uplock extremely loose, the right uplock flow regulator defective, and excessive air in the utility hydraulic system.

Why did it take repeat write-ups?

tired tires

On three separate occasions recently, munitions trailer tires have blown out or gone flat while explosives were being transported. One incident involved two MF-1 modified bomb trailers in tandem, one loaded with four M117 bombs, the other empty. The bombs were secured by thick web straps. The unit was moving at about eight miles per hour when the right rear tire went flat.

In another incident with two trailers in tandem, this time with bombs strapped down on both, the right rear tire blew out at about ten miles per hour. In neither of these two incidents were the bombs damaged.

In the third incident, one trailer loaded with five bombs was traveling at nominal speed when the left rear tire blew out. One bomb dropped nose-first to the taxiway, damaging a fin.

Careful visual inspection of the tires and rims probably would have prevented these mishaps. However, an equally important lesson here is that a properly secured load doesn't get damaged even if the tires do fail.

from 840AD Safety Bulletin



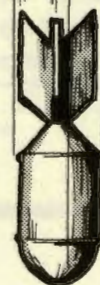
down and locked

The overseas F-105 pilot was going through his normal preflight and prestart checks. When he checked the gear downlock override switch he heard it click. All seemed normal. After engine start, he jiggled the gear handle without moving the override switch. The gear handle moved to about the three-quarters up position, and the nose gear smartly retracted!

Investigators found that a teleflex cable had been improperly adjusted. The landing gear downlock solenoid plunger was not aligned with the seating hole in the gear selector lever. The plunger failed to enter the seating hole... the gear handle was down but not locked!

LET'S GO DROP SOME

BOMBS



Hot Rod 31	Hello Slipshod Range. This is Hot Rod 31 at the IP.
Flash 24	Flash 24 Final ...
Slipshod	Standby 31 ...
Flash 21	31 ... Slipshod said standby ...
Hot Rod 31	Roger 21. Your range period is over ...
Slipshod	Clear, 24 ...
Slipshod Scorer	22 ... your last bomb run was unscorable at 6 ...
Hot Rod 31	Hello Slipshod. This is Hot Rod 31. Are you ready for my line up and events?
Flash 21	Final ...
Hot Rod 31	Slipshod, Hot Rod is departing the IP ...
Flash 22	31 ... 21 said for you to stand by. We aren't finished ...
Slipshod	21 ... you're cleared ...
Hot Rod 31	Slipshod, were you calling for Hot Rod 31's line up? ...

by Capt. Earl J. Bird, Jr.
306TFS
Homestead AFB, Fla.

And so it goes ...
Would you believe that the pilots who made those radio transmissions are supposed to be the best trained, best qualified, and most highly professional pilots in the world? Sometimes you wonder. Whose fault is it? Do we blame the range officer? The pilots? ... Supervisors?

Who do we blame?

Our flight leaders are supposedly the best leaders in the squadron. And this is usually true. Of course, supervisors are always

right, so this leaves the range officer.

Now, since we all pull range officer, I guess the hot potato falls in our own laps.

Sure, I know you're thinking right now that the last time you were range officer you ran a tight ship ... but did you? How many presses were actually fouls? How many dangerously low pullouts should you have evicted from the range? (Well, he was just trying to see where he was strafing.)

There are certain parameters

that must be followed and enforced by every range officer. As the old cliché goes "give a man enough rope and he will hang himself." In our case it's "let a pilot get away with a foul and he'll hang you at the accident board." Just think how easy your tour on the range could be. When you're flying on the range, do you do all those irritating things that perturb the range officer? I don't know ... maybe our range regulations are too lax.

What happens to the pilot who

fouls? How many have been called in on the carpet for it? How often, as range officer, did you not kick someone off the range because he's your buddy ... or in your squadron?

As it stands right now the range officer has all the authority he needs. Maybe he needs a little political immunity* to go along with the authority so he doesn't have to face the firing squad when he returns to the outfit. How often have you heard a pilot, when he returns from the range, say, "Who is that range officer? The guy is fouling everybody!"

I don't think any range officer

* would you believe ...
understanding? - Ed.

has ever fouled a pilot maliciously. It is usually the other way around ... they bend over backwards to give you a break.

A bombing range is supposed to be a restricted area for the purpose of making practice ordnance deliveries by the "Worlds Finest." How can we make it that way? Here are some "don'ts" that may help:

Don't make unnecessary radio calls.

Don't fly events that were not briefed.

Don't lose positive control of your flight at any time.

Don't argue with the range officer.

Don't foul in an attempt to better your score.

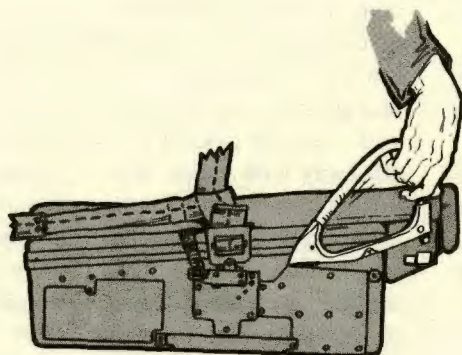
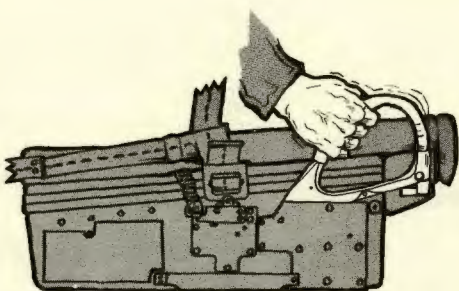
Don't release ordnance in any unusual attitude.

Don't tell the range officer where your bombs are hitting ... he knows how bad you are.

Don't do acrobatics on the range to impress the scorers (they're only impressed by your score).

DON'T MAKE LOW PULL-OUTS.

I believe if we all took 10 minutes off to think about how we could help, it would greatly improve our range discipline. Maybe it would save a few lives.



ATTENTION PHLYERS...

Fifty percent of the Phantom phlyers trying to get out of the cockpit in a hurry during a ground emergency were unable to get rid of their survival kits. Forty percent of the phlyers who ejected could not get their survival kits to release after ejection.

When eighteen pilots were tested in a suspended harness to check the survival kit release, only three were able to activate the release handle without trouble ... and excessive delay.

No question about it, there's something wrong with the handle. And it will be improved. In the meantime ... we must live with the gear we have.

The survival kit release handle is made of rubber. It gives when you grab it and pull. Your pull translates into a rearward force ... and that won't release the kit.

In the excitement of an emergency exit, you try three or four pulls. When the kit doesn't break away, you forget it and go to other important business. One fix that's been suggested ... to grab the handle backhand ... is unnatural and awkward. Hardly the thing for an emergency.

The best fix we know is to get familiar with the rig by actually trying it ... on the ground. When you're not rushed. When you can study it.

The kit will release with very little effort if you grasp the front of the handle and pull UP! You can do it with two fingers.

Have your survival equipment guys set up a kit in the PE shop.

Go sit on it and try it a couple of times.

Get the feel of it.

A few minutes now may save you a lot of hurt and anxiety later!!

A

2ND LOOK



It was officially labeled a Major Aircraft Non-Flight Accident. This made it something less terrible than one of the big spectacular ones that leaves a smoking hole in the ground. It was a taxi accident. A collapsed nose wheel. And bent props... and sudden stoppage...

It cost over \$38,000!

And it all developed from a simple sequence of events that you can probably find every day in any aircraft maintenance activity going. Somebody left the torque links on the nose gear disconnected. Altho he had disabled the airplane, he failed to make a note of it in the aircraft forms. Then somebody else tried to taxi the bird for a vibration check... and got more than he expected!

The mechanic's cure for the nose wheel vibration write-up was to service the shimmy dampener. To do this he had to disconnect the torque links. The Tech Order didn't say to do it this way, but the procedures in the book wouldn't work, so the mechanic used a homemade procedure. Of course, he had no check list for this procedure. When he finished filling the dampener with fluid, he replaced the cap. Then he saw the night shift chief walking toward him. He came out from under the airplane and briefed his relief. The bird would need to be washed and taxi-checked. Then he went home.

The accident investigator decided to find out why the night crew didn't know the airplane had not been put back together. Why did the mechanic fail to put a red X in the forms when he left the torque links disconnected?

Strangely, no one was very surprised. They disconnected these torque links every day when they towed the airplanes. And no one ever thought about entering a red X in the forms every time. Well yes, they supposed, it was a safety of flight hazard. No one should try to fly the airplane that way. But...

Next the investigator questioned the night shift supervisor who made the taxi check. Did he make a walk-around inspection before he climbed in the bird? Did he use a pilot's check list as he was supposed to? And didn't it say to inspect the nose wheel area?

In his report the investigator said the primary cause was the taxi-checker's failure to insure the nose wheel was properly secured. But a second look at this one takes you back to the guy who disconnected the hardware. He didn't think to alert the people who would come behind him to the unsafe condition of his airplane.

It also makes you wonder about the atmosphere... the frame of mind... that allowed this situation to develop. It makes you wonder about the supervisors, the

maintenance managers. They must have known that their people were misusing...even ignoring...the system of red symbols. They didn't use the symbols to alert each other to the condition of an aircraft.

Finally, it makes you wonder if...at another place and another time...a big, spectacular, smoking hole

happened because someone didn't enter a red X in the form. You wonder how many routine operations go on each day without the formality of a notation in the record when there should be one. You wonder how often we rely on the fact that everyone is supposed to know an airplane isn't safe to fly...or even taxi!



The incident report said it was a narrow taxiway. And while the pilot was attempting to straighten out a cocked nose wheel, his T-bird up and left the pavement. The nose wheel collapsed when it passed over an area of soft ground.

The report went on to call Cause Factor: "None."

And for corrective action to prevent a recurrence, the unit decided to brief all local and transient pilots on the necessity of remaining on taxiways at all times! They also asked the base ops folks to notify fighter operations when an area adjacent to a paved surface has been softened in any way by maintenance.

After the first wave of disbelief, a second look at this very real and recent lip service to mishap prevention brands it as a classic. The safety officer reporting this one stumbled over three of the most common pitfalls.

First, in a burst of misplaced compassion for a fellow airplane operator, he de-humanized his thinking about the whole incident. "The aircraft left the taxiway..." Why not call a spade a pilot and say something like...the pilot allowed the aircraft to leave the taxiway? He did, you know! Similarly, with the nose gear...they don't actually collapse themselves. And because so very many of us have been able to maneuver successfully around crowded ramps

and narrow pavement all these years, perhaps this guy needs a little personal identification. Maybe it will stir him to do a bit of soul searching on his own. We don't have to brow-beat him because he relaxed and made a mistake. Just identify him. He'll brow-beat himself...unless we allow him to think he was not at fault.

Second, the reporting official's refusal to pin down a cause factor. This may relate to the misplaced compassion, but it also indicates he was accepting accidental loss...win a few, lose a few. If there was no cause, then we don't have any great glaring errors or omissions to correct in our operation.

The combination of the first and second pitfalls inevitably led to the third. Weak, ineffective corrective action that will hardly prevent a recurrence of the very same thing tomorrow. But the pilot didn't taxi that bird onto the grass...it just went there. So how can we say that we're going to have a long talk with all the T-bird guys about forgetting pride and calling for help when you need a cocked-nose-wheel-uncocker? And finally...the request to be notified whenever soft areas appear beside the taxiways. Does this mean we're going to let the pilots do horizontal eights in the infield at will, as long as they don't sink in and bend the gear?



The flight of two was scrambled from alert on a combat strike. They hit their target as directed and climbed out toward home base. After leveling at a comfortable altitude, Lead signaled Wingman to go into trail. When Wingman had established his position four to five ship lengths back, Lead did a roll. He came out of the roll in a shallow dive. After allowing airspeed to build, he began to pull up into a loop.

As they reached the top of the loop, Lead and

Wingman were fast running out of airspeed and ideas together. They both started vertical recoveries. They didn't complete them.

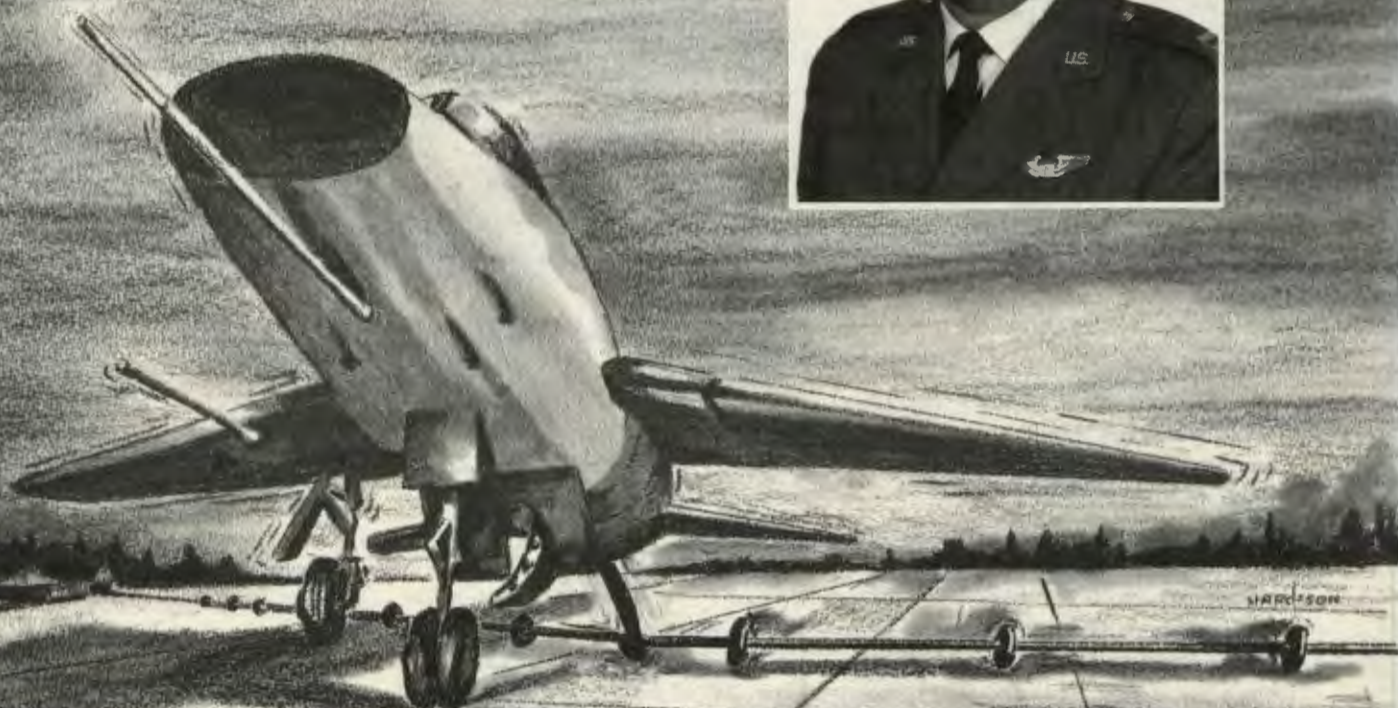
Wingman's fuselage struck Lead's wing. Both birds became uncontrollable. After ejection they were rescued from the sea by helicopters.

Unbriefed, unauthorized, and after a second look...unsmart!



TACTICAL AIR COMMAND

PILOT OF DISTINCTION




Captain Richard P. McNerney, 188 Tactical Fighter Squadron, New Mexico Air National Guard, has been selected as a Tactical Air Command Pilot of Distinction.

Captain McNerney was number three in a flight of four F-100 aircraft on a cross-country deployment flight. Upon arrival at destination, Captain McNerney's aircraft yawed appreciably to the right when he lowered his landing gear. He saw that the right main gear and nose gear indicated down and locked, but his left main gear light did not illuminate. His wingman confirmed that the left main was up and the door closed. After several attempts using emergency procedures failed to lower the left main gear,

Captain McNerney decided to attempt an approach end barrier engagement. He advised the Control Tower to prepare the barrier. With 700 pounds of fuel remaining, Captain McNerney made a long final approach and landed 300 feet short of the arresting cable at 170 knots. Engagement was almost immediate. The left wing dropped smoothly to the runway and the aircraft came to a stop in 800 feet. Damage to the aircraft was slight.

Captain McNerney's calmness and skill in handling an uncommon and dangerous situation prevented possible destruction of a valuable combat aircraft and readily qualify him as a Tactical Air Command Pilot of Distinction.



about barriers

In the beginning it was simple. An aircraft arresting barrier meant one thing: That rabbit-catcher thing on the end of the runway attached to great lengths of old, unwanted anchor chain.

But it seemed for a while that our aircraft grew more rapidly than our barrier capability. We fast outgrew the MA-1 barrier and its anchor chain. When we took the tail hook idea from the Navy, and installed tail hook pendants on our runways, our aircraft soon exceeded the capacity of the early system...the BAK-6.

Now we find ourselves with several different systems...and several combinations of those several systems installed on our bases. Of course, each combination has different capabilities and limitations.

And that's where the rub comes. Although our preparations in the cockpit are about the same for any arresting system, we can best take advantage of the equipment when we understand what we're dealing with. The guidance available to us about barriers is

scattered, piecemeal, and sometimes misleading. It's even difficult to find out exactly what barrier system, or combination, is installed on the runway you're getting ready to use.

So let's take a look at the barriers we're most likely to encounter...and then discuss some of the basics.

The MA-1A was designed in the days of 15,000 to 20,000 pound fighters for engagement speeds below 150 knots. And today many barrier installations are still this primitive variety...a nylon webbing which raises a cable to catch your bird around the main gear. The cable pulls out links of heavy anchor chain...until their combined weight brings you to a stop. If you were within the weight and speed limitations when you engaged it, you will stop in 1000 feet.

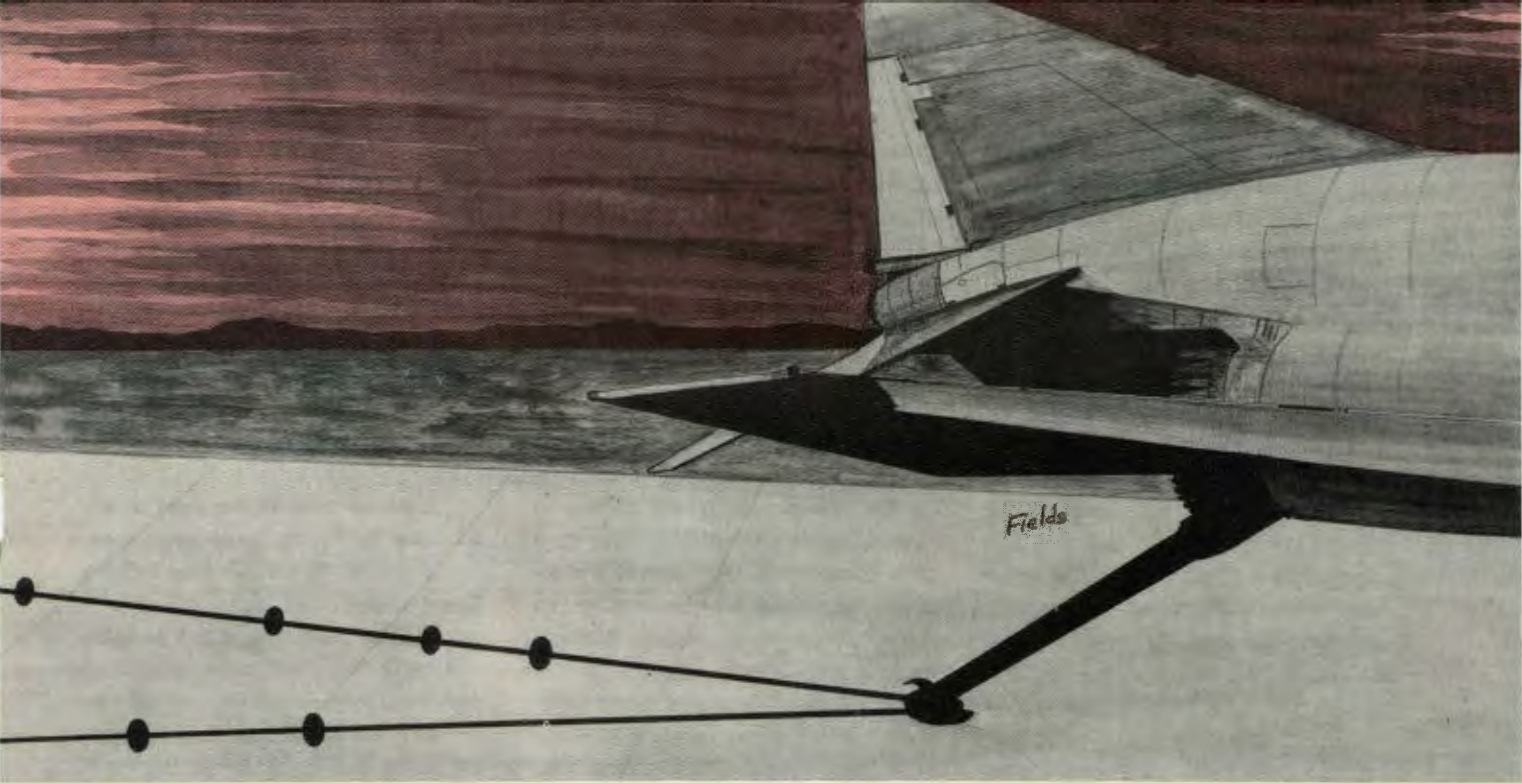
A modification to the MA-1A added a tailhook pendant 35 feet ahead of the webbing barrier. For birds with a hook, it reduces cable dents in fairing doors and the danger of single-gear or missed engagements when the

cable is deflected. The hook takes the load of the anchor chain.

The best and safest arrestments result when you engage any barrier squarely in the center. But off-center engagements of the MA-1A are not disastrous. Some swerve will result, of course, and the severity increases with your distance off-center. In a tailhook engagement, your bird will swerve toward the center of the runway. In a main gear engagement you swerve away from centerline.

But the MA-1A retains its basic limitations. Above 150 knots the mechanism is likely to fail. Below that, the MA-1A will exceed a 1000-foot runout at heavier weights. For instance, a 25,000 pound airplane at 100 knots, or a 14,000 pound bird at 140 knots, can stop on a standard 1000-foot overrun. Heavier engagements will result in longer runouts.

Finally, the MA-1A...even with the tailhook modification...is a one-way device. No need to elaborate on the consequences of picking up the weight of the entire



chain at one time on an approach-end engagement.

The BAK-6 was next to make the barrier scene. The water-squeezer principle appeared to have several advantages over the MA-1, but it is already fast disappearing. Installed on only one TAC base, it is scheduled for replacement in the next few months, as are those -6s remaining on Air Defense bases.

The BAK-6 is designed to stop hook-equipped aircraft, weighing from 13,000 to 55,000 pounds, in 1500 feet. Max engagement speed is 160 knots, but this decreases rapidly as weight exceeds 34,000 pounds. Off-center engagements seriously degrade this capability. Therefore, successful stops become less certain when brake failure or slippery runways make directional control questionable. And because the BAK-6 must be retrieved and reset manually, it ties up the runway for a considerable time after engagement.

Theoretically the BAK-6 is bi-directional. But the weight and speed limits rule out approach-

end catches for many aircraft and configurations.

The BAK-9 and -12 brought us bi-directional arresting gear that comes closer to handling the weight and speed of current fighters. They are both designed around a nominal 950-foot runout for a 40,000 pound aircraft, but the BAK-12 will take a higher-energy engagement. Max engaging speed for both is 190 knots.

On both systems the arresting cable is attached to a heavy nylon tape that is stored on reels at the side of the runway. They absorb the energy of a moving aircraft through a system of rotary disc brakes. Hydraulic pressure generated by the rotation of the tape storage reels activates the brakes when the tape is pulled out. The system meters brake pressure in relation to reel speed. It exerts higher braking forces for high energy engagements and less braking for lower energy engagements. Thus rate of deceleration (G) varies. But don't be fooled into thinking you're safe at light weight and high speed! With the exception

of the F-4 and F-100, you stand a chance of exceeding the design limits of the hook on your aircraft.

(The December '66 issue of Aerospace Safety contained an excellent article on this subject. We consider it required reading for anyone flying a hook-equipped bird.)

The BAK-9 normally has one arresting engine, but it can be rigged with one on each side of the runway to beef up its capability. The -12 comes with two engines. The significant differences between the two are that the BAK-12 is beefed up to absorb higher loads, and it is air-transportable for forward base operation. It can be installed and ready to use in eight clock hours. The BAK-12 can be reset and the runway cleared in about five minutes... with an experienced crew.

With the addition of an interconnect to the MA-1A webbing-and-cable device (without the anchor chain), the BAK-9 will stop non-hook aircraft. This makes it

compatible with most jet fighter and trainer aircraft. If the webbing barrier is down when your hook engages the BAK-9, shear bolts disconnect the MA-1A apparatus and you roll over it as if it wasn't there. If the webbing is up, the MA-1 cable will engage your main gear. The shear bolts will relieve the load, however, and the cable will shortly fall free.

Off-center engagements do not appear to seriously degrade the capabilities of either the BAK-9 or -12. Some swerve is noticeable, and you still want to steer for the center of the cable whenever you can.

The BAK-11 is the last arresting system we'll mention here. AFR 55-42, the barrier reg, mentions it several times. We know of only one. It requires 15 minutes prior notice. Our engineer friends tell us it incorporates some kind of air-operated gizmo that poops the cable up in front of your gear just before you get to it. At any

rate, unless you're landing at Bunker Hill...and have enough presence of mind to know you'll need the thing a quarter of an hour in advance...don't worry about it. (they have a plain old BAK-9 on each end there, too)

WHAT YOU SHOULD DO ABOUT BARRIERS

The most important factor in preparing to engage a barrier is to give yourself as much time as possible. In other words, recognize the situation early. Admit it. Barrier engagements, specially the tail-hook variety, are not the traumatic experience we once associated with a trip into the overrun. Ask the F-4 guys. They're doing it day after day...on purpose!

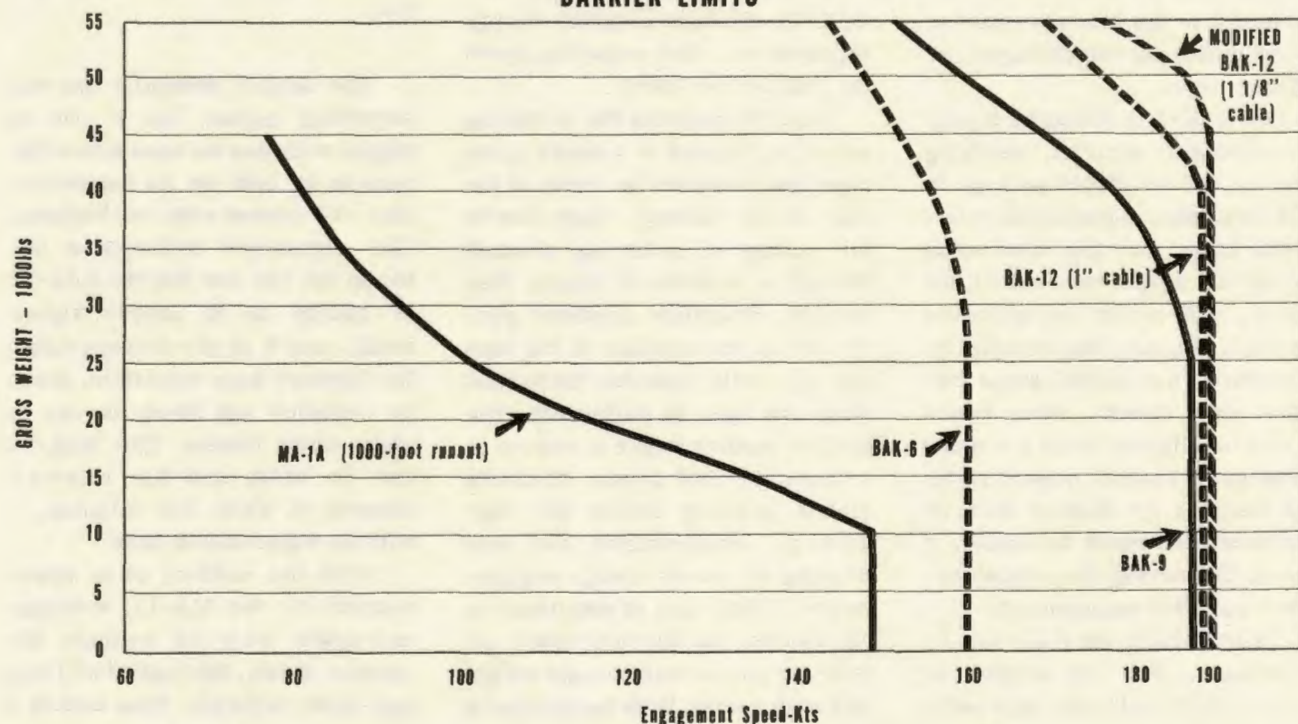
The next important step is to relax some brake pressure before you blow a tire or two. Instead of clutching, clamping, and blowing a tire, resign yourself to that gentle deceleration in the hands of Mr.

BAK. There's more to this than just a directional control problem. More serious, you stand a good chance of cutting, or seriously damaging, the tail hook pendant with a bare wheel rim. After you have engaged the barrier...felt the deceleration...get back on the brakes. You can't hurt anything now, and you can help stop the bird.

Another reason you want plenty of time is to get your hook down early. Two thousand feet before the barrier, at least. Give it a chance to stabilize. This is particularly important with the spring steel variety hook on the F-100 and F-101, but any hook may bounce. There's not a thing wrong with dragging it half the length of the runway. As a matter of fact, it's a pretty smart play...even when you just may have to use it.

We're all pretty familiar with the effect of T-bird or F-100 speed brakes on the MA-1A barrier. (Let's include the F-5 and T-39

BARRIER LIMITS



here, too.) Sometimes less understood, practically any external store can deflect the MA-1A cable back to the runway. Then your wheels roll over it and the barrier doesn't catch you. The centerline tank on an F-4 or F-105 falls in this category.

Again, you want to make the decision early. If it's tanks full of fuel you're dropping on the runway, you want to have room to run away from them. It's no fun at all to have a couple of 450s, playing napalm can, roll up against you... just when you think the barrier has solved all your problems.

Another point here: You're planning to use your tail hook, so all that business about tanks, boards, or stores deflecting the MA-1A cable doesn't apply to you. Don't kid yourself! If there's a webbing barrier in front of you, be ready to use it. Tail hooks have been known to bounce at the wrong time... just as the cable pendant passes under them! It feels pretty silly to have that happen and then roll over the MA-thing without catching it either!

And remember...the MA-1A will catch even the newer, sophisticated birds. If you're heavy it may not stop you in the overrun, but it sure will slow you down!

Keep your lid on as you go into the barrier. The possibility of coming to a stop inverted or pinned in your cockpit is very slim. The canopy will protect you from stray cables during engagement, and from the flash fire that can result from ruptured fuel tanks...or those tanks that followed you into the barrier. The worst of the flash fire will be over in a very few seconds. After you have completely unstrapped and are ready to step smartly out, open the canopy. Whether you raise it electrically, blow it, or crank it up by hand will

depend on the situation. Remember...you don't want to ignite the fuel fumes if they're all around you!

If you're not on fire...and very few catches end that way...it's best to wait for fire equipment before you stopcock. All you need to start a grand fire is to pour some fuel around a red-hot hook when you shut down. Wait until the crash crew arrives.

HOW DO YOU LEARN ABOUT BARRIERS?

The 35E8 - series of tech orders contains the nuts-and-bolts information about each barrier. They contain a wealth of information about the barriers, but little of it is pilot-oriented. Beyond a very brief, and sometimes very technical discussion of barrier operation, the TOs are filled with retrieval and troubleshooting procedures, and illustrated parts breakdowns. If you want detailed, technical information, it's all there...but if you want information you can use in the cockpit, look somewhere else.

AFR 55-42, Aircraft Arresting Systems, contains the basic policies and responsibilities regarding barriers. It says that all jet aircraft with an arresting capability will take off and land toward a "compatible available arresting system during normal operations." Hook-equipped aircraft will take off and land toward a cross-runway cable, and others toward a BAK-11 or a raised nylon barrier. It gives specific procedures when the barrier is remotely controlled from the tower, and when it isn't.

Under responsibilities, the reg says the pilot must be thoroughly familiar with the capabilities and limitations of the various barrier

systems. It refers you to the 35E8 - series of TOs. In addition, the reg says a pilot will ask for the barrier to be placed in the position he wants before he takes the runway. He will request that the MA-1A barrier be lowered during gear up landings. It also says that you must know the effect of various aircraft configurations on the barrier's chances of stopping you.

The natural place to find barrier information that relates directly to your airplane, of course, is the Dash One. Unfortunately, there is no standardization. Some have detailed information, some have only a very short paragraph. Some have data that doesn't agree with the barrier tech orders. You don't know what to go by. In general, though, your Dash One will tell you what aircraft and external store configurations may jeopardize successful engagement. Most Dash Ones cover only the max engagement speed for each barrier type. (None of them have caught up with the BAK-12, they don't mention it.) Several make no mention of hook strength or the engagement limitations that arise from it.

(Again, we suggest you read that article in the December '66 Aerospace Safety)

The data most difficult to find concerns the barriers that are actually installed on our runways. AFR 55-42 requires Base Commanders to furnish barrier information to ACIC for the FLIP Publications. But the way it comes out in the Enroute Supplements...both IFR and VFR...it really doesn't tell you very much. And sometimes it's misleading!

For example, the Supplements list barriers in such a way that

every BAK-type barrier on the approach end of a runway is listed as "unuseable." Now, you know that the barriers on at least half a dozen TAC bases have made very successful approach-end engagements. But to the guy in trouble, approaching a base he's not familiar with, the book says these barriers are no good to him.

The Supplements also fail to tell you whether an MA-1A is modified with the tail-hook pendant, or whether a BAK-9 has been modified with the MA-1A webbing for non-hook birds. Frequently, it lists a BAK-9 and MA-1A at the same location, but you have no way of knowing whether they're tied together or not...unless you've been there to look for yourself. And then you have to be smart enough to know what the various combinations look like.

We feel that barrier information in our FLIP documents could be a lot better. It could be of some real use to the guy who wants to use one. Even if it takes a little more space in the book, we feel it

should tell exactly what type and breed of barrier you're going to meet on the end of a runway. This should include local or command policy on removing barriers from the approach end. Sometimes we remove the BAK cable. Other times we disconnect the MA-webbing but leave it across the overrun. The FLIP should also tell you how long it will take to reinstall the approach-end barrier when you want to use it. And it should tell you what weights and speeds each installation can take...in terms that are meaningful to the pilot at a glance.

Better understanding of the barrier he faced would have prevented one Phantom flyer's recent surprise and embarrassment when he tried a high speed, no flap, approach-end engagement into a BAK-6...and whistled merrily down the runway after the barrier failed.

WHAT'S IN THE FUTURE

Research into improved air-

craft arresting equipment continues as our aircraft grow. And people studying tactical operations have looked at routine arrested landings on short, forward strips.

Reset time, or the minimum acceptance interval for present barriers has presented a problem. Current thinking is in the area of twelve an hour...and reset times as low as three minutes. Talk of increased weight and speed runs to 70,000 pounds and max takeoff speeds. Energy absorbers, having gone from the dead weight of anchor chain to complex, self-generating hydraulic brakes, are turning back toward simplicity. A water-twister, or water-wheel device is being studied.

As new equipment with increased capability comes into use, it will become more important that each pilot understands the difference between various systems. He must be able to tell what is available to him on one runway or another. He must know what it will do for him...or to him! ➤

	MA-1A	MODIFIED MA-1A	BAK-6	BAK-9	BAK-9 MA-1A INTERCONNECT	BAK-12
NOMINAL RUNOUT	1000'	1000'	1500'	950'	950'	950'
NOMINAL WEIGHT	25,000lbs/100KTS	25,000lbs/100KTS	55,000lbs	40,000lbs	40,000lbs	40,000lbs
MAX ENGAGE SPEED	150 KTS	150KTS	160KTS	190KTS	190KTS	190KTS
ARRESTING DEVICE	ANCHOR CHAIN	ANCHOR CHAIN	WATER-SQUEEZER	ROTARY DISC BRAKES	ROTARY DISC BRAKES	ROTARY DISC BRAKES
ENGAGES	MAIN GEAR	HOOK OR MAIN GEAR	HOOK	HOOK	HOOK OR MAIN GEAR	HOOK
RESET	MANUAL	MANUAL	MANUAL	ELECTRIC	ELECTRIC	GASOLINE ENGINE
TAPE ULTIMATE STRENGTH	N/A	N/A	N/A	65,000lbs	65,000lbs	105,000lbs
ENERGY ABSORBING CAPACITY	12,000,000 ft lbs	12,000,000 ft lbs	-	55,000,000 ft lbs	55,000,000 ft lbs	65,000,000 ft lbs

TAC TIPS

INSIDIOUS SYMPTOMS

from NASC Summary

So you think hypoxia isn't a problem just because you don't fly up where they call altitudes Flight Levels? Don't kid yourself! On prolonged flights many of us experience symptoms of hypoxia as low as 7500 feet.

"You don't fly that high?" Wrong again! Cigarette smokers maintain a blood level of carbon monoxide of between five to ten per cent saturation, simulating a physiological altitude of between 7500 to 10,000 feet AT TAKEOFF. Add that to your true altitude on your next flight and think again before you light up the next one. Remember, it takes 20 minutes of 100 percent oxygen to wash the body clear of the carbon monoxide of one cigarette.

Now, about those early symptoms of hypoxia. They are insidious in onset ... beginning between 7500 to 10,000 feet. The earliest symptoms are usually a reduction of your night vision, impaired judgment, early fatigue and irritability. From 10,000 to 15,000 feet (physiological altitude) visual changes are more prominent ... headaches, poor discrimination, and slower reaction time set in. Again these symptoms are insidious, and you must be constantly alert for them. Any increase in activity will accelerate your symptoms of hypoxia.

WHO'S ON FIRST

After the student made several touch and go landings, his instructor took control and demonstrated one. At about 300 feet in the climbout the bird began to descend. Student let it go to about 200 feet, then took control and rotated to a climb, asking, "Do I have it?"

Instructor suddenly realized that he was supposed to have control. He had been writing comments about the student's performance on his knee pad. He said he became "confused" about who was flying the airplane.

TAC ATTACK

PRESSURE PROBLEM

The pilot, from another command, had experienced cabin pressure fluctuations while he was at altitude. But in the course of a weather penetration and landing, he forgot about the 1000-foot variations.

When he turned off the runway he unlocked his canopy. It dramatically rose from the rails and impacted on the aft fuselage. Just as it went he noticed that his cabin altimeter read 2000 feet below sea level!

PFSV FREQUENCY CHANGE

Due to congestion on the Pilot-to-Forecaster channel, additional frequencies have been allotted to this important function. Target date for the conversion is 15 January '67 ... hoping that all hands receive their new radio crystals by that date. Watch the current FLIP for up to date info. The three new PFSV frequencies, and the bases that will be using them, are listed below:

342.5 mcs

Blytheville
Carswell
Castle
Dover
Duluth
Eglin
F. E. Warren
Kirtland
Lockbourne
Loring
McCoy
Minot
Mt Home
Offutt
Shaw

268.2 mcs

Dav-Monthan
England
Grand Forks
Langley
Malmstrom
McChord
McConnell
Norton
Peterson
Plattsburgh
Robbins
Scott
Webb
Wurtsmith

375.2 mcs

Barksdale
Beale
Bergstrom
Ellsworth
Fairchild
Hill
Homestead
Luke
Pease
Reese
Rich-Gebaur
Sewart
Sey-Johnson
Truax

All other stations will remain on 344.6 mcs.

THE PRUDENT MAN

by L/Col Carl E. Pearson
Chief, Safety Education
Hq TAC

“It’s strictly negative perspiration, Brown,” said Sergeant Guardhouse, the best GI lawyer in the 99th Troop Carrier Wing . . . he also loaded troops and equipment from the business end of a Herk when he wasn’t offering free legal opinions to the recruits in the outfit. “As I see it, it’s cut and dried. It’s all his fault. He ran into you when he turned left in front of you. You’ve got him dead-to-rights . . . and that Texas jury will give you a bundle!”

“Yeah, but I’m not a Texan, Sarge.” Brown offered, “And my lawyer keeps bugging me about things like prudent man, contributory negligence, and that kind of legal lingo.”

“Forget it! So what if you’re from Bean Town . . . and use broad A’s. These Texans love all us Wind Force types. I’ll bet you ten to one the jury is all ex-Air Corps . . . or have kids in it now. And what’s this negligence jazz when the guy turned in front of you? I could name you a dozen guys who collected big with the same set-up. I keep current on this stuff . . . haven’t missed a Perry Mason show in years. If you don’t win this one, my name isn’t Guardhouse.”

Sergeant Brown sat there reassuring himself by recalling old Guardhouse’s words of wisdom. He was waiting for the jury foreman to quit fiddling with his notes

and announce the verdict. The bash had cost him a pretty decent sports car and a fair assortment of CBs . . . cuts and bruises.

Sure miss that flight pay . . . I hope Doc puts me back on status next month, he mused.

The tall Texan finally sorted out his paperwork and got up slowly . . . too slowly. Brown sensed impending disaster. He’d felt it before in the Herk when the guy up front leveled off about one airplane too high on landing . . . and held it there.

“Well, Your Honor,” drawled the ten-foot Texan, “We would appreciate a chance to explain to our neighbor from Boston that we mean him no harm. And it hurts to be inhospitable to guests in our fine state . . . specially Air Corps boys. But we cain’t see it any other way. We had to find that it was his own negligence . . . not wearing his seat belt, that is . . . that contributed to the hardships he suffered. And to our way of reckoning, Your Honor, he could’ve cut his loss by 95 percent . . . just like that expert said . . . if he wore his seat belt. We decided he deserves only five percent of what he’s asking.

“Sorry, Sarge,” he concluded, “hope there’s no hard feelings. And you-all come back and visit us sometime, hear?”

Sergeant Brown sat there in

stunned disbelief. A lousy five percent! It wouldn’t cover the flight pay he lost . . . let alone all those other expenses.

Mr. Legal Eagle, his attorney, nudged him out of shocked silence to his feet for the court’s closing ceremony. Shot down in flames, he thought, where did I go wrong?

“Let me buy you a cup of coffee, Sergeant Brown,” interrupted Mr. Eagle. “It’ll give us a chance to talk this over a bit. I like to review the ones we lose with my clients. Maybe we can both end up a little wiser, even if we’re sadder . . . and poorer.

“I guess you’re right, Mr. Eagle. A busted mission needs a critique . . . that’s what we call ’em . . . maybe I can save my buddies some of the same lumps some day.

“Well, let’s see if we can sort out a few things. And I want to take a load off your mind quick. I’ve cut my fee by 95 percent too! So, let’s recap, and try to look into the future a skosh . . . yeah, I’ve been there too!

“First off, Texas is a leader among states . . . I know I’ll get plenty of arguments there . . . but it’s true. And the findings of this court will become a precedent in many future actions throughout the forty-nine states . . . you know we Texans still consider Alaska a



territory. But you pay attention to my words! Failure to wear seat belts or harnesses will become an important court defense. That defense attorney had no trouble convincing the jury that any prudent man in this day and age knows the value of seat belts.

"Did you see their eyes light up when defense questioned you about the seat belts in the airplane you drive? . . . what they're for? . . . when you use them? . . . how many lives they save? He really scored when he forced your testimony on Air Force Driver Training and safety education. All that, plus the fact you're a non-com . . . got into the Air Force in the first place . . . proves you've got the

brain power to understand the value of seat belts.

"And the straw that broke our back was the safety expert . . . that so-and-so from out of town. The controlled collision tests he described set the 95 percent standard. When you talk Cornell Aeronautical Laboratory and University of California to a jury, it puts the case on a scientific basis. There's no sweat on qualifying them as experts in the field. And that's what juries need . . . to give them the guidance they're looking for.

"From there on it was a cinch to convince them that an Air Force type with your training should have known better. Your negligence

contributed . . . and you could have reduced your loss by 95 percent . . . just by wearing your seat belt!

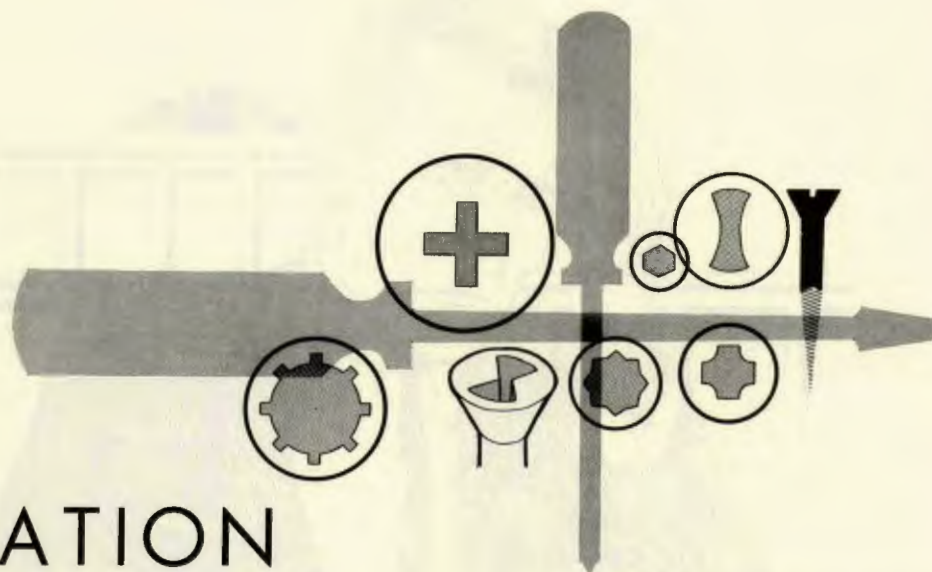
"So where do you go from here Sarge? I'm heading for the office and announcing a policy change on clients. I refuse to accept any more claim actions from non-seat belt wearers."

"I'm heading back to the airpatch, Mr. Eagle, and have two hot items in mind. First, I'm recalibrating my thinking on seat belts. I used to be lukewarm about 'em . . . but I'm a red-hot believer now.

"And second, I'm going to help change the name of an old GI lawyer by the name of Guardhouse!"

This fictional story is based on a recent Texas court decision. Although the state has no mandatory seat belt law, the defendant's failure to take action to protect himself (wear his belt) before the fact, reduced his claim for damages. In effect, the court said that the defendant has a duty to use reasonable care for his own safety. This is not only a precedent for similar cases in Texas alone . . . other states are beginning to think along the same lines.

THE RIGHT COMBINATION



by Major William Haygood
HQ TAC (OSMEN)

Airman Jones is crew chief of a weapon release system maintenance crew. His job today: Load four F-4Cs with 20 mm ammo, 2.75-inch rockets, and BDU-33s. His orders: Finish the job by 1400 hours.

Loading the first two F-4s went smoothly. He had a little trouble with the electrical connector on the LAU-3 rocket launcher, but he was able to force it closed...didn't have time to change it. Then there was a slight problem with the SUU-21 ejector tubes. He really should have sent the launcher back to the shop to be cleaned, but his watch told him that his time for the job was almost half gone. He loaded the BDU-33s.

The third aircraft presented Airman Jones a challenge. He found stray voltage on the left in-board station. Starting to troubleshoot the system, he found the first pylon inspection cover easy to remove. The only obstacle was in finding the correct tools. It seemed to him the engineers could have done better in designing this

panel. You needed four different screwdrivers to remove it.

On second thought, maybe it wasn't all caused by the engineer. He remembered that last week he had been issued size 14:12 Phillips screws when he had asked for Reed and Prince size 14:12.

Enough daydreaming . . . he had lost 40 minutes rounding up a number 4 Phillips, a number 3 Reed and Prince, a number 2 Torque Set, and a number 2 Reed and Prince. He could have used the Apex screwdrivers in his tool bag, but he wasn't sure just which screw heads they would fit. Now he had the screwdrivers he needed to remove the panel.

He removed the panel.

The shorted wire he thought he would find was not evident. He wiggled the wiring harness . . . the voltmeter swung to zero. He shook the harness . . . the voltmeter flickered to 28 volts and returned to zero.

The next thing to do was to remove the adjacent inspection panel. In dismay he looked at the 40

screw heads on the panel. They were so carelessly drilled out, that he couldn't recognize which type screws were installed. It was very obvious that someone had used a Phillips screwdriver to install the Torque Set screws. Or maybe it was an Apex tool which had destroyed Reed and Prince screws.

He looked at his watch. Then he looked at the other F-4 still to be loaded. He shook the wiring harness again. This time the voltmeter remained on zero.

He loaded the munitions.

That afternoon the squadron safety officer was preparing to submit a report of an inadvertent release. The explosives had impacted off range. The report would say that the primary cause was an intermittent short circuit in the pylon.

This story is fictional...the problem is real.

Can your squadron afford to spend 200 or more man-hours per aircraft, at every major phase inspection, in the seemingly non-

productive task of removing and replacing damaged screws?

Every maintenance function in TAC is sorely undermanned. Particularly in skill levels. Every hour spent in non-productive maintenance actions means an hour that can't be spent on proper maintenance of the aircraft. Incomplete maintenance is dangerous.

One damaged screw probably won't cause an accident. But when 80 or 90 percent of the screws in a stressed access panel are damaged, the accident potential goes way up. You can be sure that a screw head that looks like it has been drilled out is not properly installed. You can also be sure that some time, some place, a rushed or overworked mechanic will fail to remove an inspection panel because he just doesn't have time to remove several damaged screws. So he will assume that everything inside is OK.

To date, TAC has not experi-

enced a serious accident that was caused by deformed or damaged screws. At least no accident investigation report places the blame on such a condition.

Must we wait until we do have such an accident? Can we recognize the developing trend and take corrective action?

This problem I'm talking about has its origin in the drafting rooms of the contractors who provide the equipment. The problem spreads to the Air Force bench stock supply system and to the hand tool procurement program. It finally involves the line mechanic.

No maintenance activity can afford to spend man-hours on non-productive maintenance. Sorties are scheduled and sorties must go. But we can afford some training time. There is a distinct need to train our people to use hand tools properly. Specifically, we must train them in the proper selection and use of screwdrivers.

We will continue to receive

equipment which is held together with various types and sizes of screws. Tool cribs are filled with nondescript screwdrivers. Bench stock bins are full of screws you must identify. Only by guesswork or trial and error do most men determine the correct type and size of screwdriver to use with them.

Once we recognize this problem and realize the impact it has on our maintenance capability, we can combat it. Until then maintenance men will continue to remove and replace countless screws, use up countless hours, and sometimes assume instead of inspecting.

Whether you are a squadron commander or an apprentice mechanic, there is something you can do to minimize this problem.

Make it a matter of professional pride...

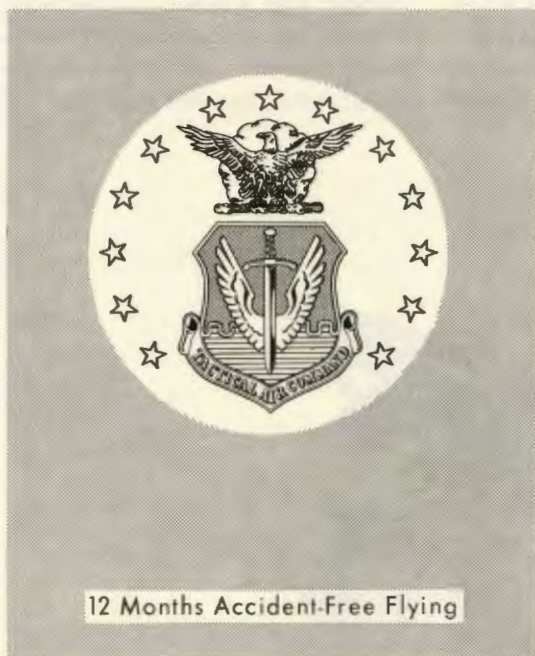
Learn to recognize and use the proper screwdriver!



TACTICAL AIR COMMAND UNIT ACHIEVEMENT AWARD

4442 Combat Crew Training Wg.,
Sewart AFB, Tenn.

174 Tactical Fighter Gp., Hancock
Field, Syracuse, New York



Surveys Of Places



One of our young airmen learned a valuable lesson about the use of check lists during a recent safety survey. It got him a lot of attention he didn't want, almost cost us an accident, and tied up a dozen or more people for an hour and a half unraveling the snarl he created.

The aircraft in question had been out for major maintenance. It was undergoing work on the line which required that it be defueled. Our young airman took out his defueling check list and connected the defueling hose to the single

point receptacle on his bird. What he forgot to check was circuit breakers. All the fuel system circuit breakers for one wing had been pulled.

His first clue that something was wrong came when the gear struts on one side suddenly popped, and...there he was! The wheels on that side barely touching the ground, the tires crushed down on the other side, and the aircraft leaning sharply toward the heavy wing. To complicate his problem, the aircraft was parked on a sloping ramp (wrong way of

course!), with a fifteen knot wind gusting against the high wing. At this point the base safety officer and part of our team arrived on the scene and hurriedly called for a fuel truck.

We put some airmen on the high wing to hold it down until finally, by refueling the empty tanks, the fuel was balanced.

The whole point is that once again, someone failed to fully comply with a check list and found himself in a serious situation. Once again, lack of a middle supervisor has highlighted how



vulnerable we are in our maintenance complexes throughout the command.

We arrived at another base just after a taxiway surfacing project had been completed. Unfortunately, the civil engineer had not outlined the area where taxiway ended and dust cover began. As a result, part of the project had to be rescheduled. This meant another session with contractors and taxiing aircraft...and more exposure!

This same base found that the contractors had a bad habit... driving in front of the dearm area while aircraft were dearming. A rebrief on this hazard helped a lot. However, we find that contractors often forget the safety items they have been briefed on. Or their workers just get careless! It takes continual checking to insure that loose equipment isn't left lying on the infield, that contract vehicle drivers are aware of jet blast areas, and that they keep their equipment away from all aircraft.

Speaking of contractors, we recently noted a crew replacing rain gutters on a tall building. They were working on a steep, rain-slick roof, leaning over the edge to loosen the gutters. They were using no safety ropes... or anything else but native cunning, prehensile toe grips, brute strength, and awkwardness. When the base ground safety officer talked to them about safety equipment, the contractor made a concession. Those fellows showed up on the roof next day wearing safety helmets. So help me!

See you next month...

LT COL PAUL L. SMITH
Chief, TAC Safety Survey
Team

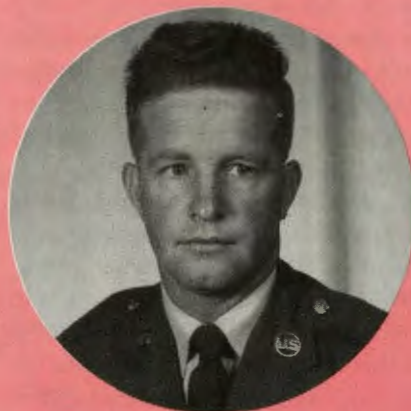
Recognition

CREW CHIEF OF THE MONTH

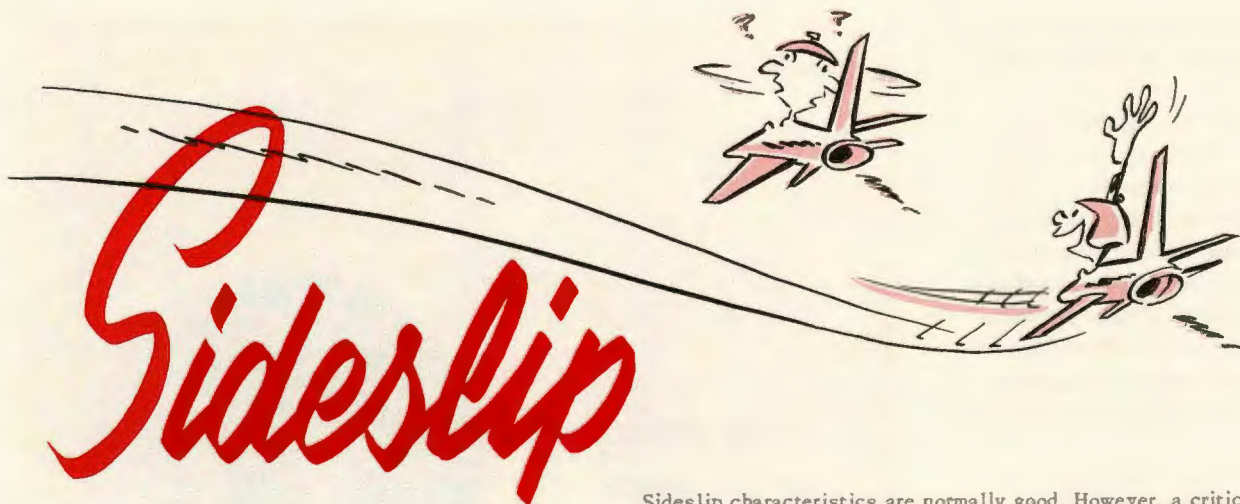


Airman First Class Robert A. Utterback of the 25 Tactical Fighter Squadron, Eglin Air Force Base, Florida, has been selected to receive the TAC Crew Chief Safety Award for the month of December 1966. Airman Utterback will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.

MAINTENANCE MAN OF THE MONTH



Technical Sergeant Lenard Adkins of the 404 Munitions Maintenance Squadron, Seymour Johnson Air Force Base, North Carolina, has been selected to receive the TAC Maintenance Man Safety Award for the month of December 1966. Sergeant Adkins will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.



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.

like mayday

Sideslip pickled, took a quick, last look at the sight picture, and pulled. When his nose came above the horizon, he relaxed some of the back pressure and his G-suit softened enough to let him breathe again. As he leaned into the climbing turn to downwind he heard the range officer call, "A bull, Sideslip ... nice!"

He thought he heard Ned's voice on the radio in a long, unhappy groan. You'd better groan, Nieuguye, Sideslip grinned into his mask. He had topped Ned's score three times out of three today ... and he knew his wingman couldn't top a bull's-eye! Ned wouldn't win any money today!

"This is Four ... dry," it was Ned's voice. "I ... uh, flying thru ... all the lights in the cockpit just lit up ... smoke ..."

"What's the trouble, Four? What lights?" Sideslip cranked

around in his cockpit and picked up Ned's bird as it leveled off across the range. He continued his turn to join on Ned.

"My fuel and inverter lights blinked on and off a couple of times ... and it looks like I've lost my generator. Loadmeter's only about point one."

"What about the smoke ... ?" Sideslip allowed his anxiety to show through his voice.

"I dunno ... cockpit filled with smoke real fast ... went to hundred percent. I guess it's clearing ... kinda burns the eyes. I've gone to ram air." Ned Nieuguye seemed to have things under control.

"Okay, Four," Lead was all business, "if you have a generator failure, head for Municipal Airport the way we briefed ... 230 for twelve miles. Three, are you joining on him?"

"Rog ... I'm in trail now,

Lead," Sideslip was closing from six.

"I guess it was the generator, Slipper," Ned was starting a turn toward town. "Both inverters are gone and half the circuit breakers in the cockpit were popped. I ... There! ... Nope! Thought the generator was going to reset that time, but no soap! I'm turning things off."

That's my boy, thought Sideslip ... right on the ball. He looked ahead through the haze for the airport, but it wasn't in sight yet.

"Slipper, I'm going to leave my radio on until I have the field in sight." Ned was thinking ahead of the problem. "Why don't you call and get a landing direction ... I'll hear their reply."

"Okay, Babe ... I'll get you clearance for a straight-in. Remember, you may not have flaps

or boards ... emergency gear down ... and no chute!" Sideslip knew Ned's battery wouldn't last very long. He'd better get as much across as he could before Ned's radio quit. "You've got time to get your check list out and go thru it ... let's go to Tower while you still have a battery ... 275.8 ... change now!"

Sideslip dialed the new channel, waited a few seconds, and then called, "Four, ... check in."

"Rog." Ned was really conserving his battery!

"Okay, Ned ... field in sight?"

"Neg."

"'Attaboy! Keep your cool!"

As he moved up on Ned's wing, Sideslip saw him lean forward, looking for the runway. Sideslip decided to call for landing:

"Municipal Tower ... Sideslip Flight."

"Cessna Three-Seven Tango, cleared to the west ramp."

"Municipal Tower ... Sideslip Flight."

"Learjet Five-Oh-Four, taxi Runway 33."

"Municipal Tower ... Sideslip Flight ... uh, do you read?"

"Sideslip Flight, Municipal Tower, go ahead."

"Rog, Tower ... this is Sideslip. I'm escorting an aircraft with an emergency to your field for landing. Say your landing direction, altimeter, and winds, please?"

"Municipal, Three-Seven Tango ... do we turn here?"

"Sideslip, call downwind Runway 33. Municipal altimeter 29.79, wind northwest seven. Three-Seven Tango, Roger ... left turn."

"Roger, Tower ... Sideslip Flight will call a wide base leg ... we're ... ahh ... we're approaching from the northeast."

"Learjet Five-Oh-Four,

cleared for takeoff, contact departure when airborne."

"Slipper, I'm not making that pattern very wide ... I'm afraid there's still something bur ... pffsst-szzshrr ... smoke ..." Ned's radio was beginning to fade.

"Okay, Four ... get it on the ground as soon as you can ... you have the runway over there?" Sideslip watched as Ned scanned again. In a minute Ned turned to Sideslip and nodded a big "Yes."

"Sideslip Flight, say your position and type aircraft ... are you experiencing some difficulty?"

"Roger, Tower ... we're two F-84 aircraft about to turn a long straight-in for Runway 33. The lead aircraft has an emergency ... generator failure."

"Understand, Sideslip ... ah ... generator failure ... Interstate Sixty-Three taxi Runway 33. Altimeter 29.79."

Sideslip wasn't sure they were getting all the attention he thought they should, but dismissed his worries as Ned started the turn to line up with the runway. Ned had given himself plenty of room to set up a good approach ... it

looked like five or six miles. Now, slow it down, Kid ... that's the way ... looks good!

"Municipal Tower, Interstate Sixty-Three ... request immediate takeoff when we reach the runway ... over"

Sideslip saw trouble coming.

"Municipal Tower ... Sideslip Flight. Are we cleared to land? Lead aircraft will land and Number Two will take it around."

"Sideslip ... what is your position? Radar reports no emergency squawk ... are you ready for immediate landing? I have other traffic!"

Sideslip frantically reached for the IFF and dialed in Emergency and Mode 3 Code 77, while he flew formation with his left hand.

"Okay, Tower ... ask your radar if they see me now ... I'm squawking all the emergencies. We're about four miles out on a long final."

"Comanche Two-Eight Echo cleared to land ... turn off at the center."

"Interstate Sixty-Three is approaching the runway."



Ned gave the signal for gear down and Sideslip moved out to give him a chance to fight with the emergency lowering procedure. In a moment he saw Ned's doors open and the gear fall out. Ned looked over at Sideslip.

"They look good, Four," Sideslip automatically keyed the mike and talked to his troubled wingman. He probably didn't have any down-and-locked lights. Then, realizing that Ned's radio was probably dead too, Sideslip nodded vigorously.

"Sideslip Flight, I have a 727 ready for takeoff ... can you make a 360 on final for spacing, over?"

"Look, Tower," Sideslip almost lost his temper. "I've got a guy with me that's lost most of his normal landing systems ... like flaps, speed brakes, drag chute ... I think he may be on fire, but his radio's gone so he can't tell me if he's still burning

or not. And because his radio's out and he's all set up to land ... No! We can't make a 360!"

"Cleared to land, Sideslip Flight, cleared to land! ... ah ... didn't understand the nature of your emergency. Ahh ... Have you declared Mayday? Do you request emergency equipment standing by?"

"Like Mayday, please, Tower ... if the crash crew's not already out there, ask them to hurry!" Sideslip scanned the field for anything painted red. All he saw was the airliner in position to move onto the runway. "Are you going to ask that nice Air Carrier guy to hold clear until we get on the ground, Tower?"

Sideslip saw Ned looking at him again. Then Ned pointed at the runway. With one eye still on the airliner, Sideslip nodded all the reassurance he could muster to his wingman.

"Sideslip, this is Sixty-Three ... we're holding clear, get your boy on the ground!"

"Crash equipment is on the way out now, Sideslip." The Tower sounded almost apologetic. "We had them on station standby ... but they're on their way now. Ah ... you say he may be on fire?"

"I don't know Tower ... he had bad smoke ... prepare for the worst."

Ned was holding his airspeed nicely. Over the end of the runway, Sideslip pushed up his power and went around. The last time he looked at Ned, he was on the runway and slowing nicely.

When Sideslip rolled out on downwind he saw Ned turning off at the end. He had his canopy open.

Sideslip decided not to collect for his scores on the range that day.

letters... to the editor

The following information is offered in comment on the article, "F-100 Approach-end Success," in TAC ATTACK, July 1966.

The article states in effect (on page 10) that the Flight Manual "had not caught up with the times." However, a review of the facts will not support this statement.

First, it was a specific decision of Air Force conferees at the October 1963 F-100 Series Flight Manual Command Review Conference that a procedure for approach-end engagements would be included in all F-100 Flight Manuals.

Second ... on guidance from TAC, the manuals involved were to include a

narrative presentation on approach-end engagements but that it should not be related to any specific emergency condition ... (the decision was made) that "local commanders may authorize this procedure for certain emergencies dependent on local requirements and conditions." As a result of the explicit instructions from the F-100 Flight Manual Manager's office, the F-100 Series Flight Manuals do reflect to this day no specific procedure for the emergency covered in the TAC ATTACK article.

In view of the preceding information, it is felt the reference to the F-100 Flight Manual having "not caught up with the times" is unfortunate and presents an unintentionally distorted picture of the quality of the manuals involved.

North American Aviation, Inc., would sincerely appreciate your publication's consideration of clarifying to your readers the real reason why the F-100 Series Flight Manuals do treat approach-end engagements as they do, not because "they are behind the times" but because the Air Force chose to leave the decision on

approach-end engagements up to the local commanders.

A. C. Snyder, Chief Publications
Technical Services
Los Angeles Division
North American Aviation, Inc.

We meant to point no fingers at our friends at NAA ... or anyone else. If you read that into the article, please take this as clarification. Our main concern in making the statement about catching up with the times stemmed from the procedure (on page 3-17 of the F-100D Dash One) for landing with one gear up. It makes no mention at all of the availability of a barrier on the approach end.

We've frantically leafed thru the book many times reacting to a call for, "Mobile, read the procedure to me ... my hands are full!" And inevitably, you turn to the one paragraph that best describes the problem at hand. Seldom is there time to research three pages in each direction to see if there is any-

thing else in the book that might apply.

It would not detract a whit from the commander's prerogative to issue local directives if we were to add a note saying that an approach-ender is one of your options. In those moments of stress, the emergency procedure should provide you with at least a trigger to suggest every possibility.

Perhaps at the time of the Handbook Conference in 1963, the approach end idea was just starting to gather steam. It has come a long way since then. We understand that approach end tests have been conducted with the F-100 (with all three down). Maybe it's time to take another look at the guidance we give the guys who herd the Hundreds.

Again, we weren't shooting at you, and are sorry you took it that way.

- Ed

Reference the Tac Tip entitled "Too Close for Comfort" on page 12 of the October issue. I am wondering why you did not comment on the fact that the pilot, once the gear were down and locked, did not leave well enough alone. If you implied that you disagreed with his action, I didn't get your message. At any rate, I think that the subject deserves more emphasis.

I have seen and read about similar circumstances in the past where the initial minor problem was compounded by recycling the gear, subsequently causing an incident or accident. I strongly disagree with the procedure of recycling the gear when anything out of the ordinary occurs during retraction, even though

the Flight Manual permits such action. I believe that the gear should be lowered and locked, the fuel load reduced, and the aircraft landed as soon as practicable. Let the maintenance men trouble-shoot the system in the hangar.

I can't think of any mission other than the EWP that is so important that the pilot must make an effort to retract a malfunctioning landing gear. The USAF accident rate is high enough now without taking chances like the one described in this article. This incident apparently came very close to being a major accident. Was this mission worth it?

If you agree with my point of view, I suggest that an appropriate change be made to the Flight Manual for each aircraft in the Air Force inventory.

Maj Robert Picht
4520CCTW, Nellis AFB, Nevada

Agree! Agree! With you all the way!! We didn't thump the table on that one because it seemed so glaringly obvious. As for the Flight Manual change... agree again, but suggest you go the Form 847 route.

- Ed

Noted the absence of "TAC Tally," The Analysis of TAC Accident Experience since the September issue. All that remains is the TAC Unit Achievement Award which covers only a twelve (12) month period of accident free flying. Understand, I'm not knocking success and a year is a long time, but I am certain that many of our TAC organizations and

personnel would like to see this graphic presentation continue.

I hope TAC is not doing so poorly in the "Fly Safe" business that long term results are becoming unprintable.

If this happens to be true, I still believe we are doing a disservice to the command and its personnel by removing the competitive challenge as well as the instinct to pull oneself up by one's bootstraps.

Major Walter J. Soboslay
Air Force Reserves

As we pointed out in October, when we moved our production schedule up to get the magazine to you earlier in the month, we passed the point where we could give you two-month-old statistics. By the time accident-rate info is three months old it's pretty cold. A lot can, and often does, happen in three months! We feel that a quarterly roundup of command rates and cause factors is more meaningful under the circumstances. (And when we did that in December, we got mixed up on the dates... see below.)

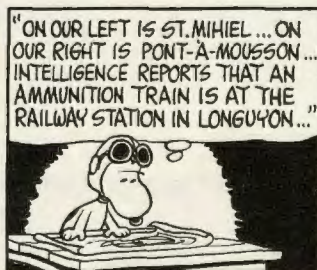
- Ed

WE GOOFED!!

The TAC TALLY on page 14 - 15 of the December issue was labeled "1 Jan - 31 Oct 1966." It was supposed to say something like: January thru September 1966...to reflect the accident picture in TAC and TAC-gained units for the first three quarters of the year.

Sorry!
We'll try harder...

PEANUTS



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