

NOVEMBER 1962

TAC ATTACK

TAC attack November 1962 Two eyes in vision



TWO EYES IN VISION

TAC ATTACK



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COVER PHOTO

An F-105 from the 4th Tactical Fighter Wing
flying high over North Carolina.

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USAF Recurring Publication 62-12

"By adhering to known elementary rules for safety a pilot can insure against most accidents"



Miss Cochran, well-known and accomplished aviatrix, was the first woman to break the sound barrier. She is the only woman who, flying solo, has won the Bendix Transcontinental Trophy race. She has established well over 100 international speed, altitude and distance records for both jet and reciprocating aircraft. Her most recent record breaking flights were made in the Lockheed C-140 Jet-Star and the Northrup T-38 Talon.

Jacqueline Cochran on Safety

Jacqueline Cochran on safety

A blown tire, faltering engine or gust lock that has not been removed can be disastrous on take-off. Based on what I have seen happen to other pilots, I never enter a plane for flight without first making a thorough pre-flight. I particularly check the tires and look for unremoved gadgets, and never eliminate, through press for time or otherwise, the engine run-up or its equivalent with jets.

Official records show that most air accidents are caused from pilot error. Errors such as not checking the weather ahead for heavy icing conditions or next to impossible landing conditions, starting a flight with a radio or important instrument that is faulty and attempting to land with a blown tire or with the landing gear up, without first exhausting excess fuel. Using brakes excessively when a short stop on the runway is not necessary or holding excessive power settings will contribute to later mishaps.

Pilots should thoroughly know the fuel, hydraulic and electrical systems and their back-ups on their aircraft. I have seen many who have read the manuals but don't know the systems.

These are simple and somewhat elementary things, but a pilot's adherence to them may save his life.

I have taken many calculated risks in races and record flights but otherwise I am an exceedingly careful pilot. On several occasions I have calculated speed and fuel consumption for a record flight so there would be less than a minute's fuel left at touchdown. Altho necessary for this kind of flying, it is not a recommended procedure.

If your interests are toward the more spectacular, attempt to go through the USAF Test Pilot School or join the Thunderbirds. But keep in mind that to be an expert pilot you must train and then train some more, then stay within the safe capacities of your equipment and you will serve your country well.

Name of the Game



AFTER READING a summary of civil aviation accidents we noticed some familiar cause factors. For instance, a well experienced pilot flying a Cessna 310 flew into the ground trying to stay VFR in IFR conditions. Just

before the crash he reported VFR below the overcast in light snow and asked for destination weather. His destination was VFR so he decided to press on. Another pilot, driving a Chevy thru the area at about the time of the crash, said it was snowing hard enough to make driving difficult.

With variations, we've had one of these so far this year, and winter is just starting.

Then there was this pilot who spiked his WACO halfway down a snow covered runway and was out one gear when he ground looped to keep from clobbering obstructions off the far end. We'll add



drag chute failure, a botched prior engagement and subtract ground loop and give you a preview of what you can anticipate if you come in long and hot.

We'll warm up on the subject and tell about the Swift pilot who hauled his bird off a nautical mile high airstrip when he felt it was ready. You're right, the airspeed indicator was somewhat more reliable than the seat of his pants and he came back down at a tangent to the strip. Altho we in the military calculate takeoff roll and stress proper lift off speed... before this date next year, someone will refuse to believe the indications and will either lift off early and settle back in, or make a last ditch abort that sends the barrier chain clanking.

Back to weather. Here's another typical accident. A Beechcraft pilot augered off into weather conditions that would make an experienced military pilot think twice because, "I have to get back." He don't have to go anywhere these days... not where he's at.

Here's one where there seems to have been a little difference of opinion in the cockpit of a twin engine Beechcraft. The pilot had over a thousand hours in the bird and was part owner of it. He made a touch and go to inspect a 2000 foot dirt strip, then landed. On the landing roll he said his copilot, who owned the other half of the bird, told him to go around even tho there was ample stopping distance. The pilot initiated the go-around, but over the field boundary the right engine lost power. He feathered the prop and was continuing satisfactorily until, according to him, the copilot retracted the flaps and the bird stalled in, right wing low, gear up. The copilot said the pilot de-

cided to make the go-around and that he retracted gear after the bird started to settle and tried to retract flaps just before impact. He also reported that the pilot said the right engine failed and was trying to feather it when they hit.

A witness said the pilot made a bounced landing and started his go-around when it was evident the bird could not be stopped on the remaining runway. You can be glad you don't have to investigate this one. Anyway, we thought the lack of crew coordination would inspire you to brief on who's to do what should things go wrong on a take-off or waveoff.

Here's one that would leave an accident investigating board completely speechless. A Beechcraft pilot with over 1100 hours, reported that he made a wheels-up landing because he simply forgot the landing gear. Compare this with the Stearman pilot who veered off the runway into a ditch because a crosswind gust, estimated at about 30 knots, hit the machine at a critical time during landing. An instructor pilot who landed another bird immediately behind him reported the gust to be about 15 miles per hour. He said it looked like the gust was more than the other pilot could cope with.

Two sail plane pilots were working the same thermal when they ended up on a converging flight path that terminated in - you guessed it - a mid air!

Both were able to land safely. They saw each other some moments before the smash, but each thought the other was going to take the evasive action. Frankly, there have been other pilots in similar situations who did take action only to decide on the same escape route... this isn't good, but is better than trying to out wait each other.

Now that we've reviewed these

boners from birdmen who generally do not consider the air their profession, let's look at this year's less professional efforts from some of the pilots of this command.

First we have the fighter pilot who discovered that his external fuel tanks were not feeding shortly after he reached altitude. Altho several good government airpatures were within a hundred miles, and all of 'em were enjoying good weather, had good turn around facilities and plenty of runway, he elected to proceed to an airfield that was about 200 miles away even tho he knew he would arrive with minimum fuel. He didn't make it.

Another was briefed to make a simulated napalm run on a manned Army tank. He was specifically instructed to stay above 200 feet... but violated his instructions and struck the tank. A few short weeks later he was followed to oblivion by another pilot who pressed his simulated strike into a trailer being towed by a 2-1/2 ton truck filled with troops.

A young wingman made the report when he landed short at a west coast airfield even tho he had been warned that there were obstructions on final.

Next we feature the Gooney bird pilot who tried a max performance takeoff after making a passenger stop at a small civil field. His attempt was downwind and good for about 150 feet of altitude. At this point the bird was observed to stall... and fall.

We'll conclude our discourse in destruction by telling about the F-100 pilot who was informed that his gear doors were down right after he started the engine and the crew chief pulled the nose gear pin. He cycled the gear handle!



IT'S THAT TIME of year again and this Old Tiger is just mellow enough (we had to syphon out the wine) to reflect on the many things we have to be thankful for...while keeping one eyeball caged on the turkey to make certain no one gets a head start on us before we get thru saying grace.

Yes sir, primarily we're thankful we weren't born a turkey. We're also thankful that we managed to keep all the errors we made during the year spread out enough to keep from bending up any of Uncle Sugar's big aluminum birds.

We're honest enough to admit that we make errors. Anyone who does anything is bound to make some. The important thing, according to our way of thinking, is what we do about 'em.

First, and most important, is to recognize that we've goofed. Like the time we copied down the wrong distance for one leg of a cross country... three minutes after our ETA for station passage, we got suspicious, looked up the distance on the map, and caught our error. The reason we knew enough to look for a goof at this point was because we had been over this road before -- more about that later.

Next, of course, is doing something to correct the error...we had to recompute our ETA for the check point, advise the center of the correction, revise our time en route, re-figure our fuel and such. We had enough, and pressed on...but you get the point.

Last, is correcting the basic reason for making the goof in the first place. Since we've already admitted that this was at least the second time we've

made that same error, it would appear that we hadn't been too successful in this department. Yes and no. The first time we pulled this goof, we'd been handed a flight on short short notice and reasoned that the error was due to the rushed up flight plan. It was. We'd overlooked one of those distances on a leg split by point X. Know what we mean?

The second time, we started early enough to plan the mission, and gave it great care. In fact we gave so much attention to all the little details we didn't take enough pains with the more important items... we copied down a heading in the distance column on the form 21A!!

Cure? We've gone back to an old habit. We double check our total distance against the string on the map down in our flight planning room.

This brings up a little basic philosophy of ours. We used to know and use a few rules of thumb to fly by. We could plan a reasonably accurate flight with little more than a sharp pencil, a map, and these rules. Sloppy flying by today's professional standards...but in Korea with the F-86, we were able to glance at our position and fuel gage and know exactly when we had to break out of a fight and head for home... Later, back in the U.S., we could replan for those surprises that come up from time to time... tanks that fail to feed, a change in route due to unadvertised weather, bad winds, one of those horrendous climb-outs they used to amuse us with...our replanning took short minutes in the cockpit so's we could avoid other aircraft if VFR, or stay near course.

altitude if IFR.

But you have to practice those techniques if you want to stay proficient with 'em...and the best way to practice them is to make a rough rule-of-thumb flight plan before you haul out the charts and computer to plan it professionally. This way, you have a rough and dirty go-no-go decision before you've expended much effort. At the same time you provide yourself with a reasonable set of figures to double check your more professional effort.

BOTH AIRCRAFT in a flight of two F-100's lost airspeed indications during a weather penetration. Full defrost heat did not open the pitot system until the aircraft descended below the freezing level. All correct operating procedures were followed. Another flight of F-100's that penetrated immediately following this flight had similar problems.

Twenty-twenty hindsight indicates that engagement of the windshield anti-icing or defrosting system prior to penetration would have increased the temperature in the mixing chamber and probably would have given positive pitot system anti-icing. With the winter months comes lower freezing levels and the increased possibility of icing conditions. It is important that all F-100 pilots anticipate icing during penetrations and use the defrosting system a few minutes before starting down the slide.

ONCE AGAIN it's time to turn the page on our calendar and...yowwer! That thar color photo reminds us of how some troops dress for flying. No, they don't have all their skin showing...but they are no better dressed to brave the elements should they suddenly be booted out into the cold. Obviously no one in his right mind would kick a cute little chick dressed like that out of the room, much less the house...but us ugly old fly-boys are a mule of a different hue. Besides, these cotton pickin' flying machines are seldom in their right mind.

Your old TAT has been guilty of flying underdressed in the past; perhaps we are a distant cousin of that little gal on the calendar, or got used to dressing light during bitter weather while trying to hack a livin' out of that old Oklahoma red clay. Regardless, it ain't smart and is completely unnecessary in this day and age.

Let's discuss a few of the latest thoughts on the subject. To begin with you can scrounge up some of that thermal underwear from that character in supply who owes so dern much...or you can shake loose a

few quarters from your kids' school lunch money and pick some up from the BX. This will help keep you warm in moderate winter weather even tho you're not bundled to the ears, yet will not leave you steaming when you're trying to brief the mission. Can't say as much for long johns.

Wool socks are a must if you aren't using insulated boots...and will do no harm if you are. Personally, we'd wear 'em if flying over the northern part of the States this time of year. We'd also wear the insulated boot along with a winter flying suit and the thermal underwear.

According to the experts, this combination will hack it quite nicely when the thermometer gets well below zero...if a pair of good mittens are carried for yer front paws...and if you ain't particularly interested in sleeping.

It'd surprise you how cold this area can get when you're trying to saw off a few at night. TAT spent a night out up in Washington State last summer. We had a good wool blanket on a tarp...and spent the last half the night wrapped up in the whole mess wondering what else we could find to throw on top or crawl under...We lived a winter in Korea without even getting chilly, just to give you a comparison.

The main point of this little discussion is that you can easily wear adequate clothing to keep from freezing to death should "it happen to you" without being uncomfortable on the ground or in the bird. Why not?



THE OTHER DAY your Old TAT went down to the flying pasture for his weekly orbit around the flag pole. We checked the PIF for hot poop and found that there was a new Flight Safety Supplement out on the trusty T. We picked this jewel up and read it over... Holy howling alley cats! It listed a whole bunch of

ILS channels, then remarked that half of 'em wouldn't be available if the bird wasn't modified with T.O. 1T-33A-614.

Our first reaction was to wonder out loud how anyone expected anybody to memorize a bunch of frequencies like that. Then we looked closer and noticed that all ten frequencies on the critical list started with 108 or 111. Now we ask, why didn't they write the supplement to say that you wouldn't be able to work stations having frequencies that start with 108 or 111 unless your bird was modified? That way a dumb throttle bender like us could read and remember. Why remember? Well, we don't carry a dash one in our zoot suit pocket and have trouble finding one away from home. Also, we are too lazy to go out to our bird after one since we are generally parked 'way out in the Boondocks.

Off hand, we'd guess someone was more interested in getting this subject "covered" than they were in sending out useable information. We'd hate to pay for the man-hours wasted throughout the Air Force by bits like this, just because their authors wouldn't bother to take 15 minutes to put them in a simple form.

"BAGVILLE TOWER," the voice on the radio chirped, "Air Force Jet, 34454 requests permission to taxi."

"Roger 454, this is Bagville tower, you are cleared to runway 32, wind south, southeast at 10, altimeter 29.98."

"Thank you, sir!"



Right polite... but how bright? Listening to this one, TAT got the distinct impression that a fuzzy cheeked type had just been turned loose with one of Uncle's good aircraft... and that said lad assumed

the tower was manned by some superior being, like a major - or even a colonel.

Son, if you're listening... it ain't so. It's run by an airman... a highly skilled airman... who knows a heck of a lot about traffic control but doesn't know as much about your airplane as you do. When you call, ask the guy for instructions or clearance; don't ask for permission.

Carrying this one step further, we know of one troop who got himself tangled up in weather... his destination went kerput after he was in the GCA pattern. His alternate, a 10,000' concrete airpatch some 3 minutes away was enjoying good weather and he had about 10 minutes fuel. Instead of requesting a vector to his alternate he threw the decision onto the controller by asking him for a vector to the nearest field. The nearest field was about one and a half minutes away and had about 5,500 feet of wet concrete - so that's where the controller tried to send him.

Look at it this way, even if the controller is one of the few who are partially familiar with the overall requirements of your bird, he can never know exactly how much fuel you have on board and he certainly can't know your proficiency... don't delegate your decisions to him.

AT FLIGHT LEVEL 290 on a stan eval check, the check pilot from another Command went off interphone to light up a smoke while the pilot up front flew the problem. That's when the lid blew off their F-100F. The troop up front headed the bird downhill and tried to contact the check pilot on interphone. No answer. He looked back and saw that the check pilot's head was hanging over the edge. He wasted no time getting home, but the man was dead... strangled by his own scarf!

This is pretty rough punishment for breaking the rules... even if the guy was on the stan-board... We assume that he would have been able to untangle himself had he been on oxygen. Regardless, TAT chopped off the loose ends of his own scarf!

OVER OUR HEADSET as we taxied out to the launching pad... "Ground Control, this the T-bird that just took off, could you contact Ops and have them look up the procedure for getting tips to feed?"

TAT couldn't help but wonder if this crew checked 'em feeding before they started to roll... we also wondered how they knew for certain they were feeding "just after take-off."

Since all T-birds now have the Santa Anita cap d, this T-tiger has gotten in the habit of turning ops on just before we take the active (which is O.K. by the dash one) and checking fuselage fuel shortly afterward to see that they actually fill the tank. Then, if the light is out when we start to roll, but comes on shortly after lift off - we'd suspect the pressure switch and would make additional checks to confirm it after we discontinued gangloading.

Incidentally, with two troops in the bird and a dash one in the front map case, we'd trouble shoot this sort of difficulty ourself... and save the more complex difficulties to get help on... for such chores, we'd use the published base ops frequency instead of tower ground control, so we wouldn't clutter up that hard worked channel.



A FLIGHT OF FOUR F-84F's started home from the range after reaching Bingo fuel at 2300 pounds. They couldn't contact GCI for a vector, so scrambled up to 23,000 and contacted approach control for a penetration off the local radio beacon. This penetration requires a letdown off one low frequency fix with a turn inbound to a second. Over the beacon number four was down to 1100 pounds. This was at 1350. Approach control gave them an expected approach time of 1400 but approved an immediate penetration when advised that fuel was low. Three and four penetrated first, but approach control failed to pass this info over to the terminal controller. Terminal control was expecting the lead element and the mix-up in call signs delayed contact.

Meanwhile, both number three and number four were unable to tune in the second fix. Things, to say the least, were beginning to get sticky. Fuel was now 0 pounds. Three advised terminal control that the flight was without radio aids and requested GCA

pickup. They gave him a frequency but he couldn't make contact and returned to terminal control for a better frequency. Again, no success. By now four was down to 300 pounds. Number three went to guard channel, put his IFF on emergency, declared an emergency, and requested a DF. The tower, bless 'em, said to stand-by for a GCA frequency.

Three advised they couldn't get GCA, and asked for a DF from any tower. His homeplate radar reported that they couldn't read the emergency squawk. Three minutes later radar picked up the squawk, gave a vector and asked 'em to squawk three low. When they switched to three low, radar lost contact. They had 'em go back to emergency then make a 180. Seems they overshot the home drome while going thru the mode change bit.

Right after making the turn, both pilots spotted the field and were able to recover without further sweat. As could be expected, visibility in the area was rather poor. Almost as bad as some of the support these troops got.

Almost every year we read a similar tale of terror. Usually they end with some bent aluminum. With that in mind, let's look back over this flight and see what we can learn.

The first thing that raised our eyebrows was the business of declaring an emergency at 300 pounds. Everything considered, this was 600 pounds or more late. When you're down to the fumes, courses of action are few indeed and there isn't much that others can do to change 'em. Sure, they can help you say your beads or wish you luck, but this ain't always enough.

By declaring an emergency early, you let your support people know that you have problems, need expert help and want priority over other people.

As a pilot, you are the one with a fanny in the fissure—not the guy who's supposed to be supporting you. For this reason, when things start turning to mud, it is to your advantage to take control of the situation. You don't do this by asking "any tower" for a DF. You do it by requesting specific assistance... such as GCA on guard after failing to make contact on the normal channel.

Incidentally, this near miss came about after the flight leader's original plan fell apart at the seams and his people didn't have sufficient fuel to gracefully carry off the alternate plan. A good leader avoids this kind of situation by planning for failures when conditions are below optimum. He makes his breaks instead of reacting to them.

— TAT —

a path to GOOD JUDGMENT

THERE WAS A TIME when the words pilot and dare-devil were synonyms. A man who flew was, in the public mind, something of an oddity, a reckless gambler. Some of this old swash-buckling attitude still remains, but only as gentle tradition, and only on the ground. The pilot of today is a professional man.

What has caused the public to think of the pilot as a professional instead of a dare-devil? The answer lies in the path of good judgment. By keeping on this path, the pilot has proven to the world that he is able to stand side by side with other professionals as one of them. He knows that the path is narrow with no edges to prevent him from wandering out. Although the path is straight he understands that the outline is not clearly defined, but is shadowy, hazy, and difficult to distinguish.

Specialized training and experience help to give a pilot the skill to make decisions required by each flight...they teach him how to gage his skill and stay within his limitations.

But many of the old stunt fliers had this skill; so there is something else required to stay on the path of good judgment and this is responsibility. Like a doctor, each pilot has the responsibility to safeguard the lives of others. He has the responsibility to conduct his flight so as not to endanger their safety.

Aside from this human responsibility he must think about the expensive aircraft entrusted to his use. An improper decision by a

young pilot could cost more than a million dollars. Responsibility, then, is a sobering element that tends to keep a pilot within the path of good judgment.

This element is not one that is suddenly thrown upon the shoulders of the young. When a student has earned his medical degree, it is not because he has, on some certain day, become an expert in the field of medicine. It is simply that, in effect, learned men have said to him: "We trust your good judgment now. As you continue to learn, you now have the responsibility of making your own decisions."

Similarly, a new pilot is not an old pro when he pins on his wings. Instead, he has reached a point where his decision can be trusted.

A professional cannot expect to remain on the path of good judgment by avoiding decisions. They must be made. An error of deliberate omission is not only cowardly, but easily can be as fatal as one of commission. A pilot must have courage. An error in judgment which may have been embarrassing in 1927 or 1947 can be fatal in 1961. But there are different definitions for courage. Flying under a bridge is not courage. It is foolishness. Nor is it courageous to attempt a forced landing with a damaged aircraft when the odds are stacked heavily against success. To succeed would

be no more than luck. True courage is based on faith in one's own abilities and convictions, and the confidence to act positively upon them — positively and quickly.

A professional can never relax from his conscience when he makes decisions. His conscience is his personal guide. Through conscience, his training and all the elements that tend to keep him on the path of good judgment are held at peak efficiency. The stimulus to go again when the right decision — as it seemed — failed, is backed by the man's own conscience. He must be able to say to himself that under the same conditions, with the same information available, the decision would still be the same.

Because the aircraft of the future will not be any slower or any less complicated, the professional pilot cannot afford to have a conscience that is satisfied with decisions which only require him to remain in the shadowy or hazy portion of the path. He must be clearly within its narrow boundaries. As a professional, he must continue to study and train. And he must realize that for him, the path of good judgment is not only narrow, but that it continues to narrow.

—APPROACH



of DISCIPLINE and PURPOSE



HAVING A REASONABLE sense of humor, I've managed to get a few chuckles out of this modern art jazz. For instance, not long ago I ran across a full page color reproduction of a modern water color. At first glance it appeared to be a jumbled mess of poorly executed lines and blotches. A closer look was even worse. Colors ran together, smeared and drooled, lines were crude and irregular. Obviously the "artist" had no plan, but merely drew lines and daubed on colors until most of the paper was covered. The caption hailed it as one of the more brilliant efforts of our time, so I decided to string along with the gag. Very carefully clipping it out I framed it and hung it over one of the plumbing fixtures in the bathroom.

Not long afterward one of my beer drinking friends

was over talking shop and helping keep my supply of brew from getting stale. To our credit we managed to stay on the subject even though our wives talked about other wives, my boys stayed glued to TV and my daughter studied her homework and listened to what currently passes for music on the AM radio.

After a bit my friend mumbled an excuse and left the room. When he got back he snorted, "For Pete's sake! Where did you dig up that horrible effort?"

I told him I was glad he appreciated my taste in art... that I was completely overcome by the particular water color and had hung it where I figured it would do the most good.

He laughed and said, "You did that all right. Incidentally, have you tried to analyze that picture?"

I told him it was beyond analysis since the end result was more by accident than intent.

"You're close," he replied. However, to sum up that painting in two words I'd say the artist had no discipline. In fact those clods making those noises on your daughter's radio have the same problem. No discipline. If they hit a wrong note they cover it up with a flourish or two and go on as if this was what they had intended to do in the first place. Unfortunately, a lot of our pilots suffer from the same delusion. The pipper will drift off the bull and they pickle anyway, figuring some other variable will cause the bomb to drift on target. Or, they'll start out flying instruments at 22,500 feet and after a bit will look around and find that they are at 22,100. 'Oh well,' they'll rationalize, 'I can hold 22,500 if I want to, I'll just drop down to 22.' Know what I mean?"

I do. I've done my share of rationalizing and know that this is no way to become a precision pilot. Instead, you have to decide in advance just what you intend to do, then force yourself to do it, EXACTLY.

TAC TIPS

WINTER WONDERLAND

After operating a few months with the temperature gradually headed toward the middle of the thermometer, it would be wise for us to take a look at a cold weather checklist before it drops too much lower:

- * While planning a flight, check weather and runway conditions at point of departure, destination and alternate. Don't forget the forecast surface winds for take-off and landing.

- * Make certain that all ice and snow have been removed from wings, fuselage and control surfaces. Check the trim tabs too, to insure they aren't frozen.

- * Check de-icing and anti-icing equipment.

- * Be sure that cockpit instruments are warm enough to give reliable readings.

- * Stay in the middle of taxiways and runways, taxi slowly and avoid sharp turns or sudden stops.

- * With snow or slush on the runway, plan for a slower acceleration and longer take-off roll.

- * Remember, your altimeter can register as much as 15% higher than true altitude in very cold air.

- * Maintain a listening watch on your radio to keep track of other traffic and weather changes along your route and at your destination.

- * Ask for up-to-the-minute runway conditions before starting an instrument approach. A cross wind landing on a slippery runway can be difficult and dangerous.

- * Do not begin an approach if weather is below minimums.

- * Ice on the aircraft will increase your stall speed. Carry extra airspeed on approach and landing to compensate for it...but don't overdo it and slide off the far end.

- * Finally, think and plan well ahead of your flight...be prepared to meet unexpected situations.

TIRE TOPIC

The maintenance folks are complaining because the flying folks want their aircraft tires changed when small cuts or wear expose the fabric reinforcing cord. In the old days this was okay, but it ain't so any longer. Tire kickers should know that tire construction and design have changed.

Manufacturers now must reinforce the tread with fabric cord. Previously, fabric cord was used only in the carcass of the tire, and when the tire was cut or worn to the cord, it was time to change. Military specs also require wear depth holes in the tread of the tire, the number and depth depending on the tire size. These wear depth holes indicate the amount of serviceable tread remaining. Under normal conditions, tires won't be changed until the tread is worn to the bottom of any one of the wear depth holes.

T.O. 4T-1-3 contains complete and detailed information on tire change criteria. Since tires are expensive items, we should use all their safe life before condemning them. (F-100 main gear tires, \$133; F-105 main gear tires, \$175.) If a pilot doubts the serviceability of a tire he should consult the experts—the maintenance officer, Quality Control folks, or T.O. 4T-1-3.

UHF VOLUME

Although everyone probably already understands this, let's give it another go. The volume control knob on the UHF control panel (all aircraft) controls the receiver volume only. The transmitter volume is set on the ground, and the pilot cannot control it in flight. If a ground station reports that your radio is weak, it won't help to turn the volume up and ask, "How do you read me now?" You haven't changed a thing but the reception of your head set!

HOLDING

Amidst the confusion still surrounding the new holding patterns, an old problem continues to crop up. That is the direction to hold when specific instructions are not issued. Pilots should know that if further clearance is not received before they have reached their clearance limit, they should hold inbound on the heading they were on when they approached the fix. Some pilots assume that this requirement does not apply when their chart or letdown plate indicates a published holding pattern, but this is not the case. The FAA says that published holding patterns are a guide in event the pilot is given normal holding instructions, and that if specific holding instructions are not received, pilots are expected to hold in a standard pattern on the inbound arrival heading.

More than one pilot has been violated because he thought he was to enter the pattern that's given on the let-down plate. In doing this, he could enter airspace reserved at the moment for the holding pattern of another facility.

Holding used to be such a simple thing. In the first place, you didn't hold often. How you got into the pattern and what you did there was sort of your own business as long as you stayed within the allotted space. Not so anymore. The increasingly crowded space has made it mandatory to use correct holding pattern procedures.

SEEING IS BELIEVING

A helicopter pilot ran into some high tension lines and came to a halt in his quite-hot chopper just outside the traffic pattern of an air base. Unable to get out of his machine without getting electrocuted, the chopper pilot spent an anxious hour or two shooting flares at the local pilots.

He fired eight in all. At least one pilot saw the flares but thought it was a local Air Release drill. In all fairness to the others, they probably didn't see the signals because they were concentrating on their landing pattern.

Service personnel should know an emergency signal when they see it, and should never assume that any such signal is for practice - to do so could be a very costly assumption.

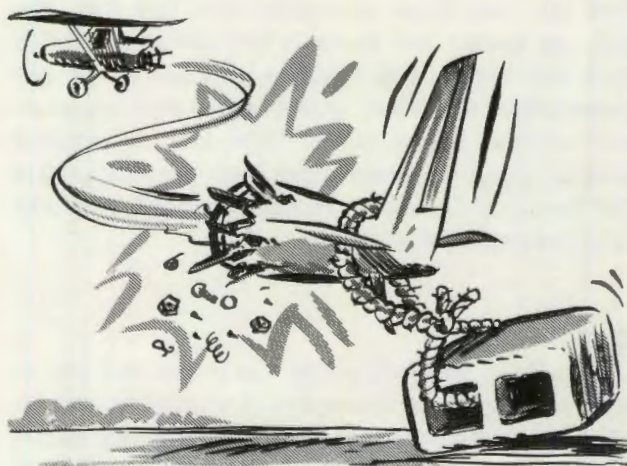
WHEEL OF FORTUNE

How many times have you made call after call to ground control facility without receiving an answer? This little story may illustrate one of the reasons.

TAC ATTACK

Pat and Mike worked in large machine shop. One day, Pat was oiling a huge fly wheel. It must have been twenty-five feet in diameter . . . tremendous. Someone called his name and Pat looked away. In that instant, his sleeve caught in the wheel and he was whipped off his feet. 'Round and 'round he whirled, while Mike stood by, speechless, frozen with horror. Suddenly he jumped into action and pulled the switch. The wheel slowly stopped. Mike rushed over to Pat and said, "Speak to me, Pat, speak to me!"

"Why should I?" groaned Pat. "I passed you a dozen times and you didn't speak to me!"



PREFUNCTORY PREFLIGHT

A light aircraft climbed to 25 feet after take-off, then crashed. A 200 pound concrete block was still attached to its tail. The block had been tied on the previous night because of high winds. The pilot was not injured, which is more than we can say for the aircraft . . . it was totally wrecked.

PROFESSIONALISM

The way a pilot handles the controls of his aircraft is only a small part of flying. To fly safely he must have a comprehensive knowledge of all factors of the mission. He must thoroughly understand the aircraft, regulations and operating procedures. He must recognize the need for well planned, well briefed missions. He must continually review emergency procedures and techniques, and he must know what tends to cause aircraft accidents. Supervisors should make certain that individuals under their jurisdiction are thoroughly familiar with these factors, and should make every effort to create a conscientious attitude toward aircraft accident prevention.



HAPPY HOUR

It is not only inadvisable but downright foolish for anyone to have more than two or three alcoholic drinks when he is scheduled to fly within eight hours after his last drink. Statistics bear this out. The body can handle two shots or two bottles of beer in about five hours. This handling time increases with consumption. Six drinks or beers will still influence your actions twelve hours after they're trickled down the hatch. Because alcohol can seriously affect your ability to fly safely, carefully consider the risk when you drink before flying.

BUDDY SYSTEM

Suppose a buddy of yours was telling you how to find your way to the apartment of a beautiful doll he had gotten you a date with and all he could remember was that she lived on a corner across from a grocery store. Do you think you could find the place? You'd probably give it a good try, and you might even find the place. By the same token, a maintenance man does much better if you furnish him detailed information when he goes out to correct the discrepancies you have written up on his aircraft. A simple statement like "Slave gyro won't work" may look pretty hot to you shortly after you write it down, but it won't do much to help the man sent out to fix it.

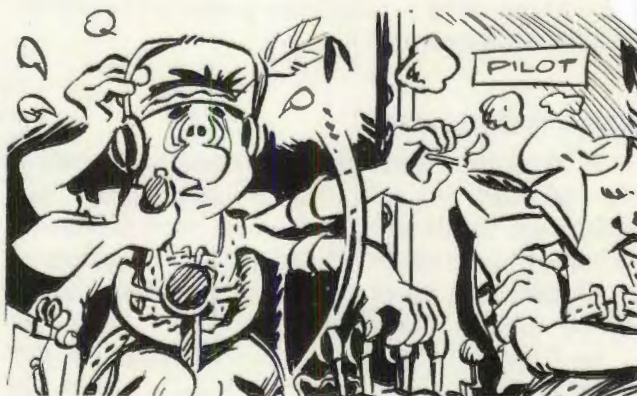
The electrician could find and repair the trouble much faster if your write-up was just a little more detailed. For example, you could say, "The slave gyro is 45 degrees out of phase. Pressing the fast slave button causes indicator needle to rotate to correct heading, but needle soon precesses to point 45 degrees out of phase."

Another piece of sanskrit gibberish which might confuse maintenance personnel is: "Manifold pressure creeps forward." This is a nice one. Did the pilot mean that the throttle crept forward? That the reading on the gage increased with no movement of the throttle? Or that both occurred? Was the friction knob tight? Did it happen in level flight?

When you write up a discrepancy ask yourself if you've included all you can think of that could possibly be of any help to a trouble-shooter. It's a good idea to follow-up to see what the trouble actually turned out to be. The more you know about the aircraft, the more comfortable you will be flying it and the less clutched you will become when something happens.

MODE 3, CODE 75

A T-bird IP reported an incident the other day which pointed out that not everyone is familiar with IFF/SIF procedures. Seems the Center requested the pilot to Squawk Mode 3 with several different codes. The controller couldn't pick up any signals although he was getting a skin paint of the aircraft. The IP asked the pilot to recheck his selection each time the controller requested a change and the pilot always affirmed them. Finally the pilot asked the IP if it was necessary to select the Mode 3 switch on the IFF panel if he had selected the proper code on the Mode 3 code selector knob on the SIF panel. He hadn't...hence the trouble. If you're not sure about the correct operation of this equipment, ask someone to brief you. It may save you a lot of trouble.



CO-PILOT KUDO

According to the Flight Safety Foundation, the co-pilot is certainly necessary on an aircrew. While the pilot is actually flying the aircraft, the co-pilot can perform many chores that make the flight better and safer. He can talk to ATC, get clearances, weather reports or do a myriad of other things which help the pilot do his job more safely and efficiently. Cross checking instruments and keeping a sharp look-out for other air traffic are a particularly important phase of his job.



"JAKE," THE OLD SARGE grumbled loudly enough to override some wailing on the juke box, in stereo, about locomotion, "If you weren't such a good friend of mine you'd never toll me over to a place like this just to drink colored water and listen to you compete with that thing." He inclined his head toward the blaring, brightly lighted noise machine.

Jake bit off a huge chunk of jelly roll and shifted it to one side of his large mouth before answering, "You're just riled because you lost, that's all."

"I don't mind losing," the Old Sarge countered, "but I matched for coffee, not for breakfast. Next time I'll get it in writing . . ." He watched Jake shove the remaining piece of jelly roll in his mouth, lick the crumbs from his fingers, then pick up the donut from his plate. He continued, "Speaking of writing, how did you make out on that inspection last week?"

"You mean that Safety Survey? We done all right. They made a lot of noise about all the cannibalizing we been doing and nicked us on a few other insignificant items . . . records keeping, you know, the usual. Don't see how all that has anything to do with safety."

The Old Sarge nodded his head in agreement, his expression sympathetic . . . too sympathetic. "Cannibalizing doesn't have much to do with safety," he remarked, "not a thing wrong with it, except it confuses the supply set up . . ."

He took a sip of coffee, his grey eyes innocent.

"Who's side you on?" Jake asked.

"Our side, of course," the Old Sarge replied, grey eyes sparkling.

"How you get that I'm lousing up supply?" Jake retorted, his face just a little flushed.

"Oh you're not, you're not. Of course I imagine you do lose track of some time change parts that you shuffle around from bird to bird. Also I'd bet you don't always order parts as soon as you should and you undoubtedly lose track of some parts that you order for a bird that has been fixed with a cannibalized part and end up ordering some stuff twice . . . and in other cases you stand around waiting for a part that you think has been ordered but which has already

aging to look mad, hurt and confused. The Old Sarge grinned widely and continued "If that little speech sounds mixed up, you have some idea how your records clerk must feel."

Jake grimaced, then explained, "I don't like to trade parts back and forth, but when the Old Man wants birds in commission he don't take kindly to excuses . . . anyway, so I louse up supply, that still don't make us unsafe."

"No," the Old Sarge agreed with the expression a medic reserves for his victims on the shot line, "Of course when you cannibalize, you end up having to do each job twice. This overloads your people, and leaves a little more than twice as much chance for error. You also have the added risk that you might damage the thing yanking it off." He pushed his chair back, "I've got to get with it, by the time I walk to the office it'll be time for the Lt to arrive."

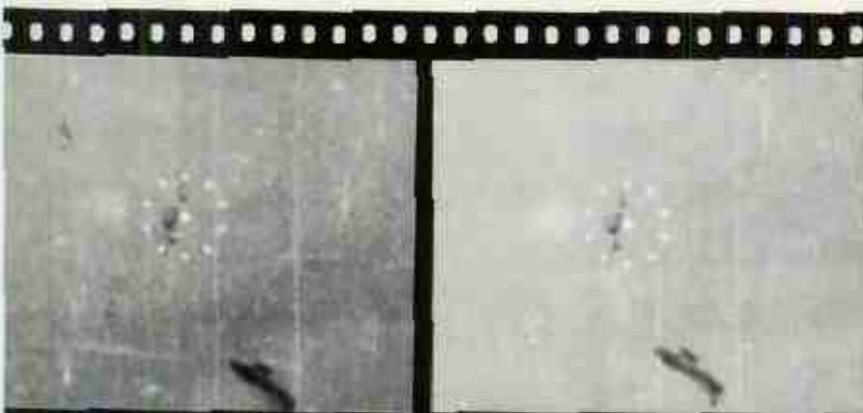
Jake got to his feet frowning, "Just a second, you don't deserve it, but I'll drive you over 'soon as I get a candy bar." He looked back at the Old Sarge, "Want to match for one?"



been used on another bird . . . that could hardly be called lousing things up."

Jake tilted his head to one side and lifted one bushy brow, man-

"No thanks," the Old Sarge replied glancing significantly at the bulging waistling of his friend, "I'm watching my weight."



The RCAF Flight Comment staff made it possible print this remarkable gun-camera sequence of an actual collision. We use it because it graphically illustrates the violence of this type of accident.

TWO EYES IN



VISION

ACCORDING TO A REPORT prepared for the Federal Aviation Agency, eight in-flight near misses occur over the United States every 24 hours. FAA's definition of a near miss is when two aircraft come so close together they would collide unless one of the pilots concerned takes immediate action.

Actual midair collisions are more frequent than we realize. Several have been recorded so far this year and several hundred have been recorded during the past 25 years.

The collision danger grows as



for us to
val mid air
strates the



more and more aircraft take to the air and as airspeeds increase. Even now, speed is an extremely critical factor. When two high speed jet aircraft get within a mile of each other on a collision course they are doomed! At 600 kts, they will close the gap in less than three seconds, which is much faster than either pilot can see, react and maneuver.

While it can be argued that midair collisions are a small percentage of aviation's total accidents, we can't arbitrarily conclude that they should receive a similar percentage of our pre-

ventive effort.

By their very nature, midair collisions are sudden and spectacular, especially when they occur between disassociated aircraft. There is seldom an opportunity to bail out or even make a controlled emergency descent.

As military pilots, we are accustomed to a certain amount of personal risk in our normal operations - that's why we receive flight pay and why we pay higher life insurance premiums. But - the danger of midair collisions makes every member of the general public, flying or on

the ground, a very real participant to the hazard of flying. The young lad joyriding his wife and kids in a Tripacer, the gent in the left seat of the converted B-25, and the grey-haired grandmother riding in a DC-8 to see her latest grandson are all sharing the air - and the personal hazard of a collision. We just can't fly with the hope of confining all collisions to military aircraft. We can't look upon the public as detached bystanders who only read of accidents and near misses. Just as the very effective polio inoculation campaign reminded us that



no one is immune, every aircraft that flies is at the mercy of every other aircraft in the same air.

We must be visually alert for other aircraft regardless of the type of flight plan we have filed - VFR or IFR. Remember, an IFR flight plan is not a guarantee of an uncluttered flight path. Every train on every major railroad in the United States operates on a clearance, but the engineer still watches ahead, whistles for crossings, and hopes there are no cows on the track around the bend. We must do the same.

Airborne electronic devices that will help prevent collisions are still around the bend for us... but we do have rotating beacons and high visibility paint. We have placed a great deal of emphasis on using them, too. On the other hand, we must be looking or we can't see the gaudiest, brightest, flashingest airplane in the world. The two eyes in vision are still the best way to prevent a collision. When our eyes are in the cockpit we're a set-up for the other two I's - the ones in collision.

With this in mind let's look at

some of the problems associated with this concept. Some of the reasons it is difficult to spot the other bird in time.

- * Speed, which shortens the time available for spotting another aircraft that is on a collision course.

- * Poor brightness contrast between an aircraft and the sky.

- * Lack of relative movement of the aircraft in relation to the background.

- * Inability to detect small targets with peripheral vision. In other words, you have to look directly at an aircraft in order to see it.

- * A blind area in each of our eyes that is roughly 15 degrees from the center of the retina, where the visual nerves enter the eye. There are no photo-sensitive cells in this area and it is insensitive to light. This blind spot can hide a fighter aircraft until it is just a fraction of a second away. Normally, this only happens when the aircraft is in the blind area of one eye and is hidden from the other by the structure of one's own aircraft.

To get the most from our eyes, we should scan the sky degrees to each side, with occasional glances to 90 degrees. Frequently look at the ground or a far off cloud in order to keep our eyes focused at a distance.

In addition to using good scanning procedures, we can reduce the collision hazard by:

- * making frequent turns when climbing or descending VFR.

- * flying the correct altitude for the direction we're headed when on a VFR flight plan.

- * keeping our windshield and canopy spotlessly clean.

We can also reduce the possibility of a collision by not doing some things:

- * By not flying into marginal weather, VFR.

- * By not waiting to see the miss distance. (Just call me chicken.)

- * By not pushing our luck.

In short, by having a genuine concern for the safety of others we will automatically reduce the collision hazard.

FAA SAYS RADAR MONITORS TO REDUCE AIR COLLISIONS

The Federal Aviation Agency recently announced a major advance in the campaign to reduce the air collision menace.

The agency disclosed that within the next 12 months, all aircraft flying above 24,000 feet almost anywhere in the country will be operating under the protection of long-range radar monitoring, and in drastically restricted airspace.

In effect, the FAA will be extending its positive control system to virtually every area of the nation. The extension plan will provide positive control throughout the high altitude airspace, except for small areas on the country's northern and southern boundaries.

Aircraft operating in this positive controlled airspace must be manned by qualified instrument-rated pilots operating under instrument flight rules and must be equipped with coded radar beacon transponders.

"Unknown" aircraft will not be allowed in this airspace.



FORGET YOUR CHANGE?

The Airscoop in an article on the foreign objects damage problem: "Of all the amazing variety of things left behind for someone to remove from an aircraft, everything from paper clips to 12 inch crescent wrenches have been found...but to date no one has found any loose coins!"

Positive proof that this problem can be cured.

PHANTOM FAILURE

After both flight control systems failed on climb-out, a Navy Phantom pusher deployed the ram air turbine but still couldn't get control. He ejected after the bird stalled and fell into a flat spin. At this writing, the cause appears to have been fatigue failure of an afterburner spray bar. Fuel from the leak caught fire and burned thru hydraulic lines to both control systems. The particular aircraft was not equipped with an aft fire warning light, so the pilot couldn't detect the impending disaster... Our birds will be equipped with an aft warning system, but our experience with this type failure in other century birds indicates that this won't always give warning in time to save the bird. Sure cure will be up to maintenance and engineering experts.

CUT SHORT

A maintenance crew had gotten in the habit of inflating the high pressure side of an air compressor to check tires. They were doing this to save time, even

though it was against instructions. When they thought a tire was properly inflated, one of them would shut off the air compressor while the other disconnected the fitting. The last time they used this procedure was on a nose wheel. The wheel assembly exploded just as one airman started to disconnect the fitting. The rim severed his left arm at the elbow and broke both his legs. A grim example of the high price you can expect to pay for short cuts.

OFF THE ROCKER

A B-50 was on a functional check flight after a periodic inspection. Just before climb power was set, light oil smoke started trailing from No. 2 engine. This increased to heavy smoke and the fire warning light came on. The crew shut down the engine using the checklist, and returned to the base without further incident.

Smoke was from oil leaking thru a one half inch square hole in the D-4 cylinder rocker box cover. When the cover was removed, a loose rocker box cover nut was discovered between the valve adjusting screw head and the rocker box cover. Impact of the adjusting screw against the nut knocked the hole in the rocker box cover. The oil that leaked out then caught fire. The nut was left in the rocker box during valve check at the time of the periodic inspection.

Every maintenance job is directly related to safety. Every maintenance job must be done right. Removing and installing the rocker box covers on the big piston engines is, admittedly, a monotonous job, but it is an important job as this incident illustrates.

TAC ATTACK

A SIXTH OF A TURN

Shortly after the Lieutenant brought the J-57 out of afterburner, the engine overheat warning light came on. Instinctively he eased back on the control stick and punched the mike, "Red lead, this is two, I have a fire warning light!" Then he realized that his leader was talking to ground control and blocked his transmission...

However, the leader noticed the Lieutenant pull up from a normal wing position and saw fire streaming from the lower aft section of his F-100. He called, "Stopcock and Eject! You're on fire!"

The Lieutenant received the last half of this transmission and reached for the right hand grip. Seconds later he was floating down, wondering if he'd hit the ground as hard as the ejection seat had hit him when it boosted him clear of the bird.

For the next few days, experts combed thru the wreckage trying to find what fed the fire. Every component of the fuel system was carefully inspected and found clear of fatigue failure or cracks. The only source seemed to be afterburner manifold pigtail B-nuts. One was a full sixth of a turn short of the position it should have been when properly torqued. Four other B-nuts had backed off over an eighth of a turn. Leak checking another engine, the board found that B-nuts would start to leak quite briskly after they were backed off a sixth of a turn.

The question is... did afterburner vibration cause these nuts to back off against their safety wire? Were the nuts undertorqued to start with or were they loosened by crash forces?



We relate this story to remind you to be very, very careful when you torque afterburner B-nuts. Be doubly certain that you use a properly calibrated torque wrench... and then pay particular attention to the leak check.

RIGGIN' PIN

This photo shows the left hand bell crank assembly of an F-101 as it was found during IRAN. A 3-1/2 inch number ten bolt was used as a rig pin, but had not been inserted thru the rigging holes in the aileron and stabilator bell crank support assembly. Bell crank action caused the bolt head to gouge the support assembly, bending the pin about 45 degrees.



Streamers on rig pins, along with more strict control should prevent another goof like this. The next time, we might not be as lucky.

IRAN AND F-100 PERIODICS

For quite some time IRAN has always gone beyond a periodic inspection in most areas. However, since it is against AFLC policy for an IRAN facility to accomplish organizational field level maintenance, the depots have always refused to sign off the forms to give a bird credit for a periodic after it has been thru IRAN.

Early this year, after some negotiating, the depots agreed to furnish a workbook on each aircraft they process. This book certifies all work that has been accomplished. Entries in the book are coded to the inspection requirements listed in the dash six.

Using organizations can cross check the completed items in this workbook against the dash six and readily find out what still needs to be done to complete a periodic. These requirements can then be completed during the acceptance inspection.

This procedure should eliminate some over inspection and needless disassembly of the aircraft and its components. It will also save two or three thousand manhours per month at the average F-1 wing... to say nothing of increasing fleet tim

WOULD YOU FLY THIS AIRCRAFT?

We hope not, because the seat belt was installed backwards. Perhaps you've flown such an aircraft and escaped with only minor irritation. But one Army aviator wasn't so fortunate... On a test hop, he noticed that the seat belt was installed backwards, but decided to fly the aircraft anyway. He figured it would be a simple matter to release the belt since he knew it was backwards.

A materiel failure caused the aircraft to crash. Fire broke out and spread rapidly to the cockpit. Instinctively, the trapped pilot grabbed for where the seat belt release should have been. Four times he tried for it and missed! The heat became so intense he drew his hands up to protect his face while the seat belt held him firmly in place.

Two bystanders rushed to the aircraft, removed some broken plexiglas, unlocked the belt, and pulled him from the fire. The pilot spent 60 days in the hospital recovering from his burns.



Except for the presence and action of some intrepid bystanders, the seat belt installed like the one in the picture above could have cost the pilot his life.

F-84F STARTER EXPLOSION

It started with an engine system malfunction... The crew chief didn't trouble shoot the system according to the T.O. before he called in a specialist.

The specialist, an electrician, was not briefed on the trouble by the Shop Chief and didn't read some of the more pertinent parts of the maintenance handbook. In fact, he violated the book and wired around the centrifugal switch in the starter. Next he made a continuity check of the electrical system... It didn't find the trouble.

So, the crew chief tried another start—without

using a check list—and with the centrifugal switch still bypassed. The starter oversped, exploded and damaged the aircraft.



No one intentionally clobbered this bird... but the crew chief and the specialist could easily have prevented it from being clobbered by following the T.O.'s. Why guess or take a chance when the proper instructions are written out?

Supervisors could also have prevented this one by making certain that everyone under their control used the maintenance handbook, rather than groping blindly, and by having the crew chief or flight chief brief specialists who were not completely familiar with systems they were expected to work on.

Each crew chief must never forget that he is responsible for all maintenance that is done on his aircraft. Each supervisor must realize that it is his ultimate responsibility to see that all the people under him perform their work correctly. When in doubt, don't shout—just research and read.

UNPINNED F4H

A Navy crew punched out of an F4H after it went into an uncontrollable roll. After sifting thru the pieces, investigators found a bolt, two washers and a castellated nut in the fuselage cavity near the rudder actuator. The cotter pin was missing—apparently never installed—and the nut had backed off permitting the bolt to drop out and disconnect the rudder power control. This made the rudder go hard over, causing the bird to roll.

Over three and a half million dollars down the drain because someone left out a part worth less than one cent! This goof is not unique with either our friends in the Navy or the F4H. USAF accident records are liberally sprinkled with similar accidents. All could have been readily prevented by quality work coupled with good inspection.

Don't underrate the need to.....

COMMUNICATE

BY COL. JAMES K. JOHNSON



ACCORDING TO THE EGG HEADS, man was able to shove himself above the other animals because his front paws were built differently, because he learned to reason, to communicate, and because he discovered fire, tools and the good old wheel.

Of these, the ability to reason and communicate undoubtedly played the most important role. By reasoning, man was able to tell a good thing from a hazard and then - first thru signs, grunts and signals, later by words and writing - to let others know of his discoveries and mistakes.

Communicating helped man to learn...he didn't have to start from scratch, but could build from the experience of others. It is no accident that the industrial revolution first started to roll when old Gutenberg invented the printing press and accelerated each

time someone found a new or better way to pass on the word.

The telegraph, the telephone, radio and - ough - even T V have all formed key blocks in the pyramid of knowledge we will eventually use when we conquer space.

This business of transferring knowledge is vitally important... yet we treat it rather lightly... and sometimes get into trouble because we do. For example, someone discovers that a certain aircraft gets obstinate when excess aileron is applied at low speed. We describe this with a caution note and put the note in dash one and lean back, thinking we have the problem solved... that we have communicated with all pilots flying the bird. Obviously we didn't reach everyone because we lost six F-100's to adverse yaw since the first of 1961... The last one was in August of



...year...yet the phenomena and every are described in the handbook. What's more, an article on the subject was published in the May TAC ATTACK under the title, "When the Centuries Take Over."

There is more to communicating than just sending a message. The right person has to receive the message, and equally important, understand it well enough to put the knowledge it contains into practice.

Supervisors at the working level are the ones who must insure that pertinent information is received and understood. It is no small chore. Take the flight leader who briefed a young Lieutenant on a bombing and rocket mission. He warned the Lieutenant to break off any pass that didn't look right and stressed how important it is to recover straight ahead until the nose of the aircraft has been pulled over the horizon.

The Lieutenant's gun camera film clearly indicated that for one reason or another, the flight leader failed to get thru to him. He made a rolling pull-out on each pass. The range officer even warned him on one pass. On his last pass, which was a dive bomb

run, he angled in toward the target and made a steeper than normal run. He rolled upright just in time to pickle and start his typical rolling pull-out. He hit the ground left wing first...his education completed the hard way. This was the third aircraft this year to slam into the ground on a weapons pass...another similar accident happened a few weeks later to bring the total to four.

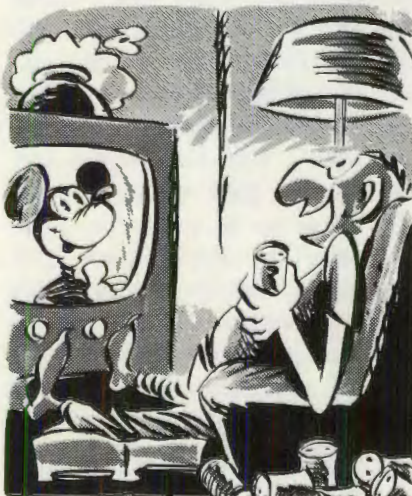
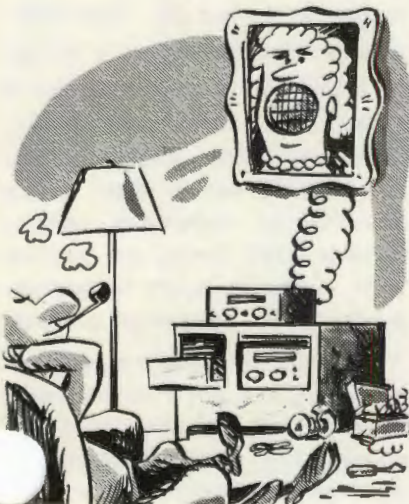
We picked our examples with good reason. They illustrate the two most common pilot factor accidents experienced in this command. Neither is easy to guard against.

It is difficult to explain adverse yaw to a young F-100 pilot. It is even more difficult to explain it well enough to induce him into taking proper corrective action when he encounters it. The proper corrective action is contrary to his normal reactions as a pilot... When the bird is in a roll induced by adverse yaw he will have to neutralize aileron and back pressure instead of fighting against the roll. When he does neutralize the controls, the roll (which progresses into a steep spiral) will stop and he can fly right on out.

The problem is to get this across so forcefully that a young birdman will recall it under stress...the stress that is always induced when one's aircraft seemingly is reacting on its own.

The rocket and bomb pattern poses similar problems. Here an accident is caused by an accumulation of small errors. A pilot gets a little too close in, which makes him steeper than norm... he has more speed and more trouble tracking and stays a little too long...the next thing he knows, he's had it. Here, a supervisor has one advantage. He can check gun camera film for dangerous trends and often stop trouble with a few well chosen words before anyone gets hurt.

Some other problem spots. An F-84F pilot stalled turning final last year... an F-100 pilot over-rotated during take-off. Two C-119 pilots mismanaged engine failures. An F-100 and a C-123 crashed while their crews were trying to stay VFR in IFR weather. These are all old, well established trouble spots and there is no really good reason those involved did not get the word...but apparently they didn't. The proof is the accidents!



ON THE ROAD

to a Degree

COLONEL FRANCIS R. ROYAL
Deputy for Personnel, TAC



EVERYBODY WANTS to get ahead and education seems to be the key. A bachelor's degree often has been the deciding factor in below-the-zone promotions, integration into the Regular Air Force, and overall career development.

Consequently, Base Education Offices are being crowded with individuals who are seeking advice on how best to complete their college educations. Although the average TAC aircrew member is as eager as the next man to get his bachelor's degree, he is hampered by TDY commitments and must fight to receive credit for his interrupted classes. TAC aircrews have another strike against them because all our bases are located within regional accrediting associations which are among the most rigid in the United States. Many succeed in getting their degrees despite the obstacles, but too many others give up without a struggle.

Unlike the weather, we here in TAC are doing a number of things to help aircrews get their degrees. Instead of looking for a single magic formula, we are constantly making proposals to help remove difficulties. For example, we requested authority from USAF to use command welfare funds to establish a revolving loan fund for those Operation Bootstrap applicants who want financial aid. While this request has not yet been approved, the proposal has triggered the Air Force Aid Society into expanding its program to include loans for education. The Aid Society now lends up to \$250 for Short Term TDY and up to \$500 for Final Semester or Final Year TDY Schooling. This is a step in the right direction, but we believe many students need TAC's more liberal program which proposes interest free loans to cover up to three-fourths the combined cost of tuition, special fees, and books.

Our bases are making local colleges aware of the peculiar problems faced by aircrews. We have asked the senior commanders of each TAC installation to personally brief local college presidents on the unusual circumstances faced by crew members. College officials always cooperate better once they realize the extent and magnitude of the crew members' problems and this action is paying off. One commander was able to get a college to establish a special program to admit rated officers as juniors. This action was based on their commission and on their having successfully completed service schools, GED tests, and at least nine semester hours of correspondence or extension courses.

Special concessions are not easily gained, but TAC personnel have shown commendable ingenuity. One imaginative tact squadron commander had seven

...classes tape recorded and the ... s airmailed to his unit while ... was on rotation. A Base Education Services Officer succeeded in arranging for an instructor to accompany another rotating unit.

An individual can also earn his own special concessions. A master sergeant at Seymour was shocked to learn that East Carolina College would not accept half of the USAFI courses he had successfully completed. He persuaded the Dean of Extension Studies to prepare exams on the subjects. He passed these exams with ease. Or take the case of the Captain at Sewart who induced his squadron commander to release him for Operation Bootstrap. Twenty years ago he had been more interested in parties than classes. His transcript was studded with 18 semester hours

...Ds - for which credit is not ... nally transferred. He was in ... spair until the Base Education Services Officer made an appointment for him with the Dean of Admissions at the local college. The Base Education Officer offered to accompany the Captain to the Dean's Office, but the Captain replied that he preferred to carry the ball for himself. He was carefully briefed on how to handle the Dean and sold himself completely. Admitted as a reformed prodigal, the Captain achieved a B+ average while on Bootstrap.

What else can the individual do to help get his degree? He can enroll in correspondence courses from USAFI or the cooperating colleges participating in the USAFI program. One advantage of correspondence courses is that they can be completed on a non-regular schedule. The crew member can work on them whenever

or wherever he may find himself.

With very little trouble, a crew member can remove one roadblock in the way of his education by passing the four parts of the college-level GED test battery. The colleges which accept the battery, and many of them do, give six semester hours credit per test, or a total of 24 hours for the battery, provided the tests do not duplicate courses he has already completed.

An aircrewman can remove another roadblock by letting his Education Project Officer know which courses he wants to enroll in while he is TDY overseas. Arrangements have been made in the majority of rotational areas for TAC aircrews to join University of Maryland classes. Special classes also can be arranged for 18 or more students. Rotating units are appointing Education Project Officers to accomplish advance planning and to coordinate between their units and respective Base Education Services Offices.

Still another roadblock falls when the crew member takes advantage of the Short Term TDY phase of Operation Bootstrap. This project, originated by TAC and now adopted by Air Force, was designed to help crew members get their degree faster. After an individual finishes a series of correspondence courses and has completed the evening courses which are available locally, he reaches a point where he needs courses that are only conducted during the daytime. If these courses are directly related to the crew member's career field, or lead to entry into the AFIT program, he can apply for a 12 week Short Term TDY (See AFR 34-52A). If he needs a full semester and has enough accrued

leave to add to the 12 weeks TDY, he may apply for the full semester. After Short Term TDY, the crewman reverts to correspondence or extension courses until he is again eligible for Short Term (once each calendar year) or is ready to complete his degree under regular Operation Bootstrap (final semester or final year).

The biggest roadblock in the path to a degree will be removed when TAC has achieved its long range goal of an on-base, degree-granting Resident Center at each installation. We are pressing hard to achieve this goal as soon as possible and despite many setbacks. Modified Resident Centers, which will eventually grow into full-fledged institutions, have been started at three bases. Other bases are ready to open similar centers. Still other bases have centers in pre-planning stages.



Getting a degree is still not easy. But if commanders, Education Services Officers and the individuals concerned continue to work toward that goal, we can look forward to an increasing number of TAC officers who can proudly write BA or BS after their names.

VORTAC VIGNETTE



JUST IMAGINE how happy 2d Lt Willy B. Wrightsharp was when he finally made the schedule for a ferrying mission. He'd long since given up hope of making flight commander and here was his chance to make like one all by himself. It wasn't that he

wanted to get out where he couldn't be seen and violate all the regs - he was convinced there was no profit there. He just wanted to be in command. That way he'd convince those who couldn't seem to recognize natural ability even when it spoke up in the middle of a briefing.

Now picture Willy whistling along on the second hop of his cross country mission. For a change he's got a real clean machine... even all the new equipment is in commish. That last SID was a lead pipe cinch and a good thing it was 'cause there was no radar available. He rechecks the departure instructions - climb 350 degrees until intercepting the 045 radial of Augment VORTAC, then direct to Augment. There were no altitude restrictions, just VFR on top. Heck, he'd have made that detour anyway to avoid the prohibited area southwest of Lepoff AFB.

He looks down at the shadow of his bird on the now solid undercast. Gad! He's really in command now. There's the wing man to prove it.

Ol' Willy feels wide awake and wonderful. He chuckles a bit about that gag the Base Ops officer at Lepoff tried to pull on him. Airborne VORTAC checkpoint yet! Why he hadn't fallen for anything like that since preflight when he spent a half day looking for the key to the flag pole. So, he'd looked that B.O. type right in the eye and said, "Sir, I don't even move my aircraft out of the parking slot until I've checked my nav equipment."

Things are running real smooth. As a matter of fact they're running a little too smooth to s Willy. It sort of gives him that what-am-I-forgetting feeling so he reminds himself to be more alert. His experience has been that a fighter pilot is never even with his work in the cockpit - he's either ahead or behind. Remembering this, he rechecks engine instruments, fuel flow and ETA for his next reporting point.

The correct bearing is in the course selector window, the CDI is centered, the ambiguity meter shows To, the alarm flag is not showing and Augment ident is loud and clear.

Still, something seems out of place... now he even has an uneasy feeling that he is no longer alone... he looks around and... Oops! Why is that clown in the F-106 setting close in at eight o'clock?

After the mission was completed, Willy met the F-106 pilot at the F.E.B. He turned out to be one of the chief witnesses for the prosecution. You see, the board was after poor Willy for bisecting the prohibited airspace near Lepoff.

Willy swore his innocence to the board and maintained it throughout as determinedly as a four year old. The board was composed of sympathetic heads but they kept harping about that airborne check - point he flew over on his departure from Lepoff AFB. So... that B.O. type wasn't pulling his leg!

The story you have just read is not true, but keep reading lest it happen to you. If it does, you may not be as lucky as AlC Wrightsharp.

This is true. Recently a pilot reported a 60 degree bearing error in an otherwise norm

omni. He had a positive To in the ambiguity window, the Offflag had appeared, the CDI was centered, station identification was clear and the double barreled pointer of the RMI gave a steady reading. In short, the set was working up a storm but was giving the wrong info.

There are three possible methods for checking against this error...the ground checkpoint established at some point on the airdrome, airborne checkpoint established over some readily recognizable geographical point near an airdrome, or, one of several test stations set up over the continental U. S. You will find at least one of these at or near most military bases. Ask

the tower personnel, flight service station or airport manager for location details, frequencies and so on. You can check your set against specified radials and distances by using the ground or air checkpoints and if it's off more than four degrees on the ground or six degrees in the air, you shouldn't attempt IFR flight.

To use the special test stations, tune to the frequency listed in the Airman's Guide, identify the station and center the CDI. The ambiguity meter should show To, the RMI should indicate a mag bearing of 180° and 180 should be in the course selector window. If From is in the ambiguity meter when the CDI centers, then 000 should be in the course

selector window and the RMI should indicate a mag bearing of 0 degrees. Audio reception on these stations will be a series of dots or a steady tone. The allowable error on this check is two degrees.

On any of these checks the difference between the ID 249 and the RMI should not exceed two degrees. If your set is in error, but within tolerance, remember the error only applies to the bearing and transmitter checked. However, it does indicate whether your receiver is operating properly. When flying other bearings and transmitters, assume the error is zero and do not try to compensate.



This is the tale of an Aero Club T-34 incident that could easily have been an accident. We print it as a caution to all pilots of all aircraft.

**By Capt Allen C. Lambard
England AFB, La.**

Flight instructors preach pre-flight and pre-planning. They insist that students remove fuel tank caps and look into the tank to insure they have petrol. Actually seeing fluid under the neck of the tank is adequate proof that the tank is full...or is it?

Recently I followed one of my students through a pre-flight. He removed the gas cap and sure

enough, there was the gas. After pre-flight was accomplished we took off and made an uneventful flight in the local area.

Upon entering the pattern my student switched the fuel selector to the fullest tank and made a full stop landing. As we taxied toward the ramp the engine quit. Restart attempts were unsuccessful until we switched fuel tanks. The engine started immediately and we taxied in and parked.

After shutdown we removed the left tank cap. Once again there was the fuel, almost to the top of the tank. However, a closer inspection revealed that it was not fuel at all. It was only the wet rubber tank liner pulled up under the tank neck. This raised the float and caused a 3/4 full indication on the gauge. Actually, the tank contained about one quart. T.O. 1T-34-532 had not been complied with. This T.O. requires installation of a clip on the bottom of the fuel cell to prevent deflation and erroneous fuel gauge readings.

From now on my students and I will use a dip stick as well as making a visual check for fuel.

Captain Lambard's first thought was to get the information to others who might be concerned. He reported the incident immediately to Captain Hawkins, Wing Director of Safety, and together they put the word out to as many T-34 agencies as they could contact....an excellent example of cooperative accident prevention.

ON THE ROCKS

LET'S SAY you're taking off on a 600 N.M. cross country, going from one side of a mountain range to the other. Cruising 8,000 feet you'll be in the soup all the way but it's smooth stratus and there's no icing.

Altimeter setting at your point of departure is 29.92. When you set that in the Kollsman window your altimeter indicates the correct field elevation.

Highest terrain within 25 miles either side of your course is 6000 feet MSL. You'll cross it about 60 miles from destination. Though not flying airways you've planned to overfly five VOR stations. These will give plenty of check points.

Leveling at cruise altitude you trim her up and turn the duties over to George, the pushbutton slave.

Stuttering Sam VOR, your first check point, slides beneath and From flips into the ambiguity meter exactly on your ETA. Scramble Center acknowledges position and gives you an altimeter of 30.07. A re-set of the Kollsman dial gives you an indicated altitude of 8,150 feet. Being a professional you quickly make a manual adjustment and give it back to Ol' George.

Mentally you review your flight planning. There's plenty of fuel on board, weather meets the commander's criteria, terrain clearance is minimum allowable but

within the law... Nothing to this field grade weather flying. It's really simple, but you can't help wondering why so many good pilots have run head on into mountain peaks while flying smooth weather. Must have been they didn't pick a proper altitude for cruise or they just didn't pay attention to their flying.

A short distance from your journey's end and about 20 miles before reaching the highest terrain you cross Silent Sioux VOR with ETA and fuel right on the money. Sayagin Center answers loud and clear and gives you 30.72 for altimeter setting. After re-setting the Kollsman dial, you notice you're above desired altitude. While lowering the nose to lose the excess altitude you also reduce power to maintain air-speed. "A red hot bird," you say to yourself, "Doesn't take much power to maintain a good indicated speed."

Ten minutes from destination the center turns you over to approach control. They give you an en route descent and straight-in GCA. As you give your copy of the DD 175 to the A.O. he asks, "How was the trip?" You reply with a yawn, "Oh, just so, so."

Well, it might not have been so so-so as you think. Let's have a look-see at your flight.

You've been taught that when you fly from a low pressure area into a higher pressure there's no

sweat 'cause you'll be higher than your altimeter shows. You will providing you don't re-set your altimeter. You were also taught that, if you fly the reciprocal under the same circumstances, the reverse would be true. Low temps and low pressures are dangerous so you've been told. No argument there. Then why are we so interested in the flight you've just completed?

The 8,000 foot cruise altitude you chose approximated the 750 millibar surface (8,091 ft) for the standard pressure area covering your departure point. This level sloped downward toward your destination (some 800 ft) due to pressure and temperature changes. Actually you flew into a low pressure area aloft.

By setting the Kollsman dial to 29.92, station pressure corrected to sea level at departure, you weighted your altimeter to sense your planned level at 8,150 feet MSL in standard pressure. Remember that the actual height of the 750 millibar surface changes as pressures and temperatures change. Unknowingly you aggravated the situation with altimeter settings along the route. In effect you kept weighting the altimeter for pressure areas in which you were not actually flying. Each time you changed your setting you had to drop down a bit to maintain 8,000 feet indicated. Add your total altimeter change of eight tenths of an inch (800 ft) to the 800 feet downward slope of the pressure level and you can see that 1,600 feet of your planned terrain clearance have disappeared. Throw in a plus 150 feet altimeter position error, a plus 50 feet instrument error and you'll see you were at ILS minimums without benefit of an ILS. No wonder you thought you had

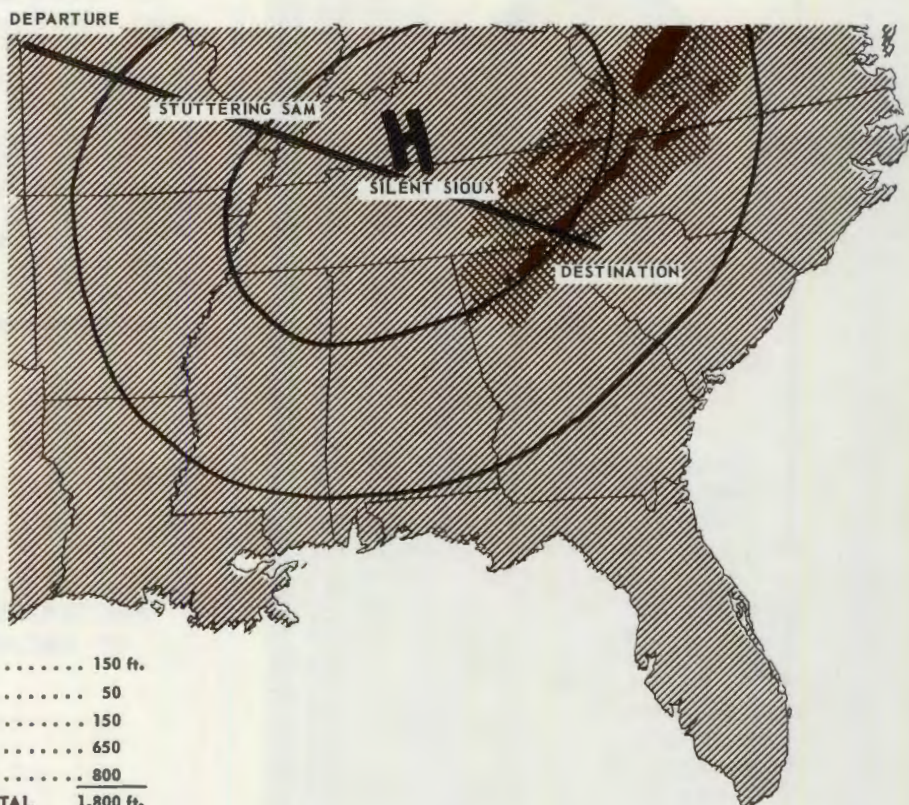
such a hot bird... They all run
od downhill.

A look-see at a horizontal view
of your mythical flight, as shown
in the accompanying illustration,
will give you a better idea of how
easy it is to have one on the rocks.
The other illustration shows how
a like situation might show up on
the surface weather chart.

Paragraph 51a, AFR 60-16,
states that the pilot will request
sufficient information from the
weather forecaster to safely com-
plete his flight. The next para-
graph of the regulation says the
weather forecaster will inform the
pilot of all weather conditions that
could affect the proposed flight.
So, don't let him off the hook until
you're sure you have all of the
necessary information.

True, the situation we've been
talking about is an abnormal one
but accidents seldom occur when
everything is normal. So, before
you cross them thar hills, be sure
you choose a flight level that will
take you A-OK all the way.

According to the Flight Safety Foundation, six civilian airliners
crashed into mountains during the first three months of 1962. Three of
these belonged to scheduled and three to non-scheduled airlines. At
this writing, the most logical reason for most of these accidents is
suggested in a study of aircraft instrumentation made by Dr. Edgar
Roessger of the Berlin Technical University. In his study, Dr. Roessger
warns pilots to use caution when approaching either a low pressure
area, or the lee side of a mountain range. Terrain clearance diminishes
if the pilot is flying QNH altitude (Elevation above sea level).

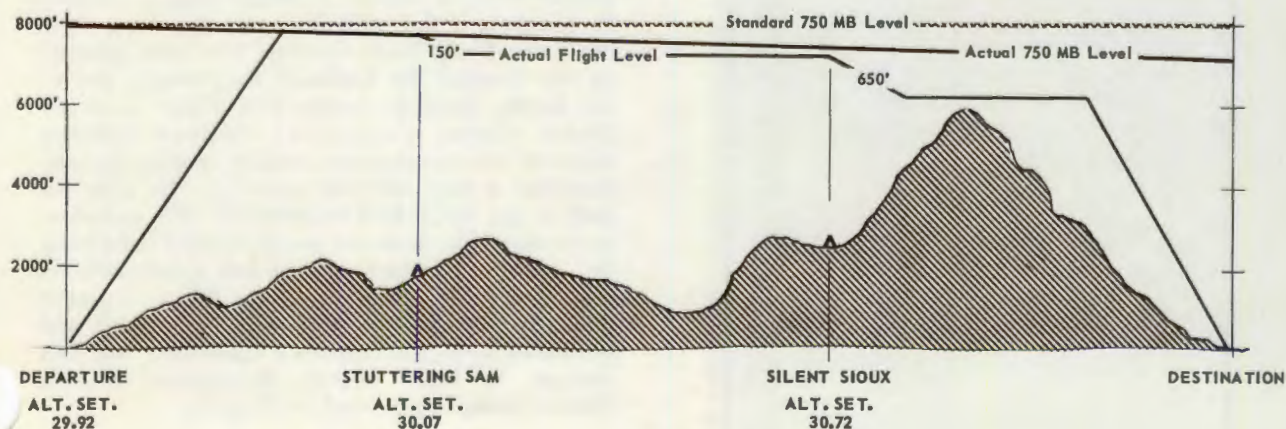


ERRORS

| | |
|-----------------------------|---------|
| Alt. Pos. Error | 150 ft. |
| Individual Alt. Error | 50 |
| First Alt. Set. | 150 |
| Second Alt. Set. | 650 |
| Slope of 750 MB Level | 800 |

TOTAL 1,800 ft.

Actual Clearance 200 ft.



RECOGNITION

PILOT OF DISTINCTION



Captain Norman N. Huff of the 476th Tactical Fighter Squadron, George Air Force Base, California, has been selected as the Tactical Air Command Pilot Of Distinction. Immediately after take off, Captain Huff experienced nozzle closure and engine compressor stalls in his F-104C. He correctly analyzed the emergency and jettisoned his external tanks, stopcocked the throttle, engaged the ignition switches and advanced the throttle to full military. This cleared the compressor stall but resulted in an overtemperature condition, so Captain Huff reduced power to 96%. Rather than attempt a heavy weight landing, he decided to climb to altitude and burn out fuel. He monitored his engine instruments closely and stayed close to the base so that he could make a flame-out landing if he experienced further trouble. When 3000 pounds of fuel remained, he made a precautionary landing using take off flaps. Because of his expert analysis of the emergency and his positive and proper corrective action, Captain Huff prevented an aircraft accident.

CREW CHIEF OF THE MONTH



Airman First Class James F. Bryant of the 4520th Maintenance Group, Nellis Air Force Base, Nevada, has been selected as the Tactical Air Command Crew Chief of the Month for his outstanding performance. By giving attention to the little things, Airman Bryant is able to keep his aircraft in an excellent state of readiness. During the month of July, his aircraft flew 32 of 33 scheduled sorties and achieved an effectiveness rating of 970 out of a possible 1000. Airman Bryant never hesitates to work overtime to maintain a high in-commission rate. His initiative and willingness demonstrate the character and professionalism that make him an outstanding airman.

MAINTENANCE MAN OF THE MONTH



For his outstanding performance as NCOIC of the Aircraft Records Section, Technical Sergeant Charles H. Sweeting of the 464th Troop Carrier Wing, Pope Air Force Base, North Carolina, has been selected as the Tactical Air Command Maintenance Man of the Month. Working closely with Flight Line and Quality Control personnel, Sergeant Sweeting improved the maintenance records keeping system, providing a more efficient operation. He also did much to get TACR 65-5 implemented. The procedure he developed for document pre-sorting and correlating has saved many man hours and has greatly reduced the amount of out-of-sequence filing. Sergeant Sweeting completed the FTD refresher course, and to become better qualified as a supervisor, took ECI courses in OCS, Aircraft Maintenance Officer, Reciprocating Engines and Jet Engines.

TAC TALLY

A COMPARISON OF TACTICAL AIR COMMAND ORGANIZATIONS

| MAJOR ACCIDENT RATE 1 JAN - 30 SEP | | |
|--|------|------|
| TYPE | 1962 | 1961 |
| ALL | 13.8 | 16.5 |
| F-105 | 39.9 | 21.8 |
| F-104 | 29.1 | 75.1 |
| F-101 | 17.6 | 7.4 |
| F-100 | 20.4 | 23.5 |
| F-86 | 76.1 | 50.3 |
| F-84 | 20.6 | 62.4 |
| B-66 | 0 | 30.2 |
| T-39 | 0 | |
| T-33 | 4.0 | 3.5 |
| KB-50 | 11.2 | 7.1 |
| C-123 | 10.2 | 6.8 |
| C-124 | 0 | |
| C-130 | 0 | 3.6 |

| SEPT TALLY GUARD AND RESERVE | | |
|---------------------------------|-------|-------|
| UNIT | MAJOR | MINOR |
| 121 TFW | 1 | |
| | | |
| | | |

| ACCIDENT FREE (MAJOR & MINOR) | | | |
|----------------------------------|--------|----|---------|
| JET | | | |
| ACTIVE | MONTHS | | ANG |
| 4411 CCTW | 8 | 46 | 123 TRW |
| 363 TRW | 7 | 14 | 107 TFW |
| CONVENTIONAL | | | |
| ACTIVE | | | RESERVE |
| 4430 ATG | 46 | 70 | 434 TCW |
| 314 TCW | 38 | 59 | 94 TCW |

| SEPT TALLY ACTIVE UNITS | | |
|----------------------------|---------|--------|
| UNIT | ACDNTS* | INCDTS |
| 4 TFW | | 3 |
| 12 TFW | | 5 |
| 15 TFW | | 4 |
| 27 TFW | 1 | 38 |
| 31 TFW | 1 | 11 |
| 354 TFW | | 16 |
| 355 TFW | | |
| 388 TFW | | |
| 401 TFW | | 11 |
| 474 TFW | | 19 |
| 479 TFW | | 4 |
| 363 TRW | | 2 |
| 4411 CCTW | | 3 |
| 4510 CCTW | 1 | 36 |
| 4520 CCTW | 3 | 9 |
| 64 TCW | | |
| 314 TCW | | |
| 463 TCW | | |
| 464 TCW | | 2 |
| 4505 ARW | | 2 |
| 1 ACG | | 3 |

*MAJOR & MINOR

SEPTEMBER was a bad month for the F-100 units. We lost three pilots, wrecked four birds and put less than major dents in two more. Other aircraft fared better, in fact, the only other accident in September involved an ANG F-84F that flamed out due to fuel system icing or malfunction. The pilot ejected successfully.

Two of the F-100 pilots were killed on the gunnery range, one firing rockets, the other dive bombing. Both made the same combination of errors. They made their base leg too close in which resulted in a steeper than normal run. The steeper run caused higher airspeed and made tracking difficult. Both tried to salvage their run, and recovered too late.

The other fatal accident was caused by an engine hot section failure. The unit lost thrust on final approach, the aircraft hit short of the runway and broke apart.

A severe in-flight fire followed by control failure forced the fourth F-100 pilot to eject.

An F-100 pilot made an excellent emergency landing after one main wheel fell off on take-off. Aircraft damage is minor. A failed nose gear caused the other F-100 minor accident.

PRINCESS ANN

5 BASIC EXERCISES

