

TAC ATTACK



October 1965



TAC ATTACK

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COVER PHOTO:

Skyraiders fold their wings taxiing in from a strike in Viet Nam.

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General Clark

on

Winter SAFETY



LT GENERAL A. P. CLARK
VICE COMMANDER

About this time of year fliers re-brief themselves on slick runway operations, diversion airfields, and arctic air masses. Meanwhile, support people dust off de-icing equipment and rehearse their snow removal plans. These are common accident prevention measures. And, although a great deal of effort is spent preparing for winter operations, only a small percentage of TAC winter mishaps - two or three accidents each year - involve hazards peculiar to the season.

During the cold months we lose more airplanes and aircrews from flying in-to the ground on close support missions, by flying beyond the performance envelope, or through material failure than we lose from winter hazards.

Why then, do we continue to place heavy emphasis on winter hazards if they are no longer a predominant accident cause factor? Wouldn't it be better to spend our prevention efforts in more fertile areas? Certainly we should continue to devote as much attention as possible to those factors which cause the most accidents. This must be in addition to, not in place of, the effort which over the years has practically tamed the hazard of winter flying.

By identifying the causes and taking pertinent action we have steadily reduced the number of factors which cause accidents. However, we must never let ourselves think that we have reduced the number of factors which may cause accidents. Specifically, winter is no less hazardous today than it was when it took a heavier toll of men and machines. We have developed the equipment, special techniques, and precautions that reduce the risk and can now make winter flying efficient and successful. But the hazards are still there waiting for the unwary, the ill-equipped, and the unbriefed!

Angle of Attack

*Chance is a word void of sense;
nothing can exist without a cause.*

-VOLTAIRE

German Air Force investigations are pretty much like our own. They end with a primary cause, contributing causes, and recommendations designed to cure each of the causes. In addition, however, their investigations list what they term the first event. The beginning link of the chain of events that ended in the accident. Like the primary cause, the first event is singled out for additional attention.

There is sound logic behind this approach, if for no other reason than it induces accident investigators to look back through an operation to learn where the material or the system first started to break down. As a result, they will be forced to look more closely at supervision and equipment design since invariably these two factors come into play early in any accident sequence.

By focusing attention onto these two areas, an accident board can recommend actions which will correct the underlying basic causes behind an accident, instead of merely trying to correct the easily spotted superficial symptoms of trouble.

Our present investigation machinery supposedly takes us thru an accident sequence from beginning to end. But, do we always start at the true beginning? Do we actually get down to the first event? Do we go after that first link in the deadly chain which set the stage for the rest of the sequence of errors and omissions? If not, we failed to make a thorough investigation and the same trap will eventually snare another bird. We can destroy the trap if we honestly search for the first event.

For instance, a recent gear up accident was attributed to operator error because the pilot raised the gear too soon after takeoff. However, the investigators soon found that the pilot had failed to properly compute his takeoff speed, had guessed at takeoff speed, and ended up by pulling the aircraft off the runway before it was ready to fly. A recommendation aimed at correcting the first event would have been directed at the supervisor who permitted this pilot to develop his unprofessional attitude toward pre-takeoff computations.



Colonel Gust Askounis
Chief of Safety



Whirly Gig

The nite mobile officer was carefully observing each traffic pattern ... light planes at 600 feet, many-motors at 1000 feet, and the overhead pattern at 1500 feet. The kaleidoscope of lites ... rotating beacons, landing lites, formation lites and runway lites ... made strange and fascinating watching.

As time passed, he started to realize that the line of runway lites was tilted at a slight angle. On second thought, maybe the mobile was tilting too ... no, it had to be the runway because the pilots were flying their patterns to compensate for it. Really outstanding! They now entered initial in a 45 degree bank and went inverted on the pitch.

Having figured this out in a burst of logical thinking, our mobile officer pressed on. He was just deciding that such outstanding feats of airmanship should be rewarded with a medal of some sort, when the mobile unit itself started

to turn ... slowly at first, then faster and faster ... runway lites ... strobe lites ... blue, green, red and white lites ... rotating ... down the runway ... up the runway ... turning ... wing tip lites ... fuselage lites ... whirling into one blurring glare.

He grasped for an emergency procedure. Kick the door open and bail out!

The cold, dew-soaked ground stopped him flat on his face three feet from the mobile unit.

His injuries (fractured ego and scraped chin) can be chalked up to operator error in that he failed to bail out at sufficient altitude, but primary cause of the incident should be listed as an ancient and poorly maintained mobile.

This incident actually happened ... where and to whom will remain untold. But with cold weather around the corner, there's a lesson in it. Now's the time to take a look at the funny

looking house-on-wheels at the end of the runway.

If it is powered by a gas-driven generator, which way does the exhaust blow? When the windows and door are closed, what provision is made for ventilation?

What kind of heater is used in the unit? Does it work? Does it take two or three hours to warm up in the morning?

Who pre-flights mobile each day? And what does he actually do? Are discrepancies recorded in a 781 and corrected promptly?

Who washes the window glass? How often? Is that often enough?

The primary purpose of a runway supervisory unit is that of a "wheels watch," with collateral duties of watching for hazardous conditions in the traffic pattern. The mobile officer's contribution to a safe, efficient operation is not enhanced by carbon monoxide, opaque windows, or a severe case of the shivers.

TAT

YOUR FUTURE



THE AVERAGE SAFETY officer spends a lot of time trying to forecast accidents so he can apply his energy where it will do the most good. In other words, he is continually hunting for that illusive handle to the problem.

Usually, in frustration, he ends up staring at the wall. Every good safety officer also knows that a little window dressing helps sell programs and one program most folks are interested in is promoting themselves - literally. It follows that most safety officers apply their knowledge of window dressing to this promotion program and dress up their office with some impressive charts. Invariably one of these charts will be a graph that shows accidents by month . . . and it also follows that the handle-hunting safety officer will eventually focus that stare of his at this chart. When he does, he'll usually notice that accidents tend to fall in regular cycles. For instance, in TAC we usually have a rash of accidents in late winter and early spring. OK, so he digs thru the accidents that occurred during this period and comes up with an even more vacant stare. Nothing falls into place. He could indiscriminately drag out a similar number of accidents and come up with a similar cross section of cause factors.

This is when our safety type begins to learn that this accident problem has no single handle . . . that many accidents are set up a week, a month, or several months before the hardware comes smashing down.

Should he quit hunting? I'll hedge. He should continue hunting for trends but he should quit hunting for



a single handle to the problem. Hunting for one simple solution is a waste of time, while looking for trends is an important part of the safety job. By and large, tho, the safety officer can do more to stop accidents by doing his best to get each supervisor, each member of the staff, to automatically consider safety as part of each job. And supervisors must do their best, by example and by direction, to induce the people who work for them to take a similar attitude.



When everyone in the outfit sincerely tries to avoid unnecessary risks, then our accident problem will practically disappear.



AN INSTRUMENT MAN ran into trouble while trouble shooting an F-100. He had the instrument panel unfastened and extended out into the cockpit when he found he needed to check a relay terminal in the nose gear well.

The nose gear door was retracted and he couldn't get at it. Oh well, there ought to be some way to open the door. He went over to the line shack where three airmen were relaxing after helping to launch the evening mission.

"Hey, any of you guys know how to get the nose gear door open?"

"Sure...just pull the yellow and black striped handle that's down in the lower right hand corner of the instrument panel."

"Thanks."

Yeah, thanks. He climbed back into the cockpit, located the yellow and black striped handle, removed a safety pin from it and pulled... BLAM! The emergency canopy jettison system functioned as designed.

When you get right down to it, this was a rather minor mishap. The damage was easily repaired and no one was hurt...but as you know, costly accidents and minor mishaps both spawn from the same conditions. So let's look a bit further...

Ordinarily you'd wonder where the crew chief was hiding...however, this was an overseas outfit that might not have our policy on such matters. If they do have a similar policy, the time of day may explain (not excuse) his absence. Too often the night shift is left to operate with a fraction of the high priced help and this can carry over into other areas. With few if any supers around this may be the reason this technician asked relatively inexperienced airmen instead of checking the TO or hunting up someone qualified to answer his question. Find the answer to this one and you could stop a lot of potential maintenance problems in this unit. You don't have problems like this in YOUR unit, do YOU?



TAC ATTACK

ONE OF FOUR F-86s went toolie thumping after an emergency landing, and altho I don't have a full report, complete with facts, I can make an assumption and press home a point.

The emergency was induced by the utility system... the pilot found the gage reading zero 'bout the time he wanted to terminate his flight. He used the lanyard to extend the gear and had another troop check to see that it was down, then landed from a straight-in approach, holding the nose off for maximum aerodynamic braking.

After the nose dropped, he applied brakes, but found he had no left brake. The other one worked and there he was, headed off the right side of the runway with no way of getting things to go left.

The inevitable four foot square slab of concrete protruding above the surface of the ground took care of the nose gear and, indirectly, the lower scoop area.

Since any comments I might have concerning four foot slabs that protrude above the ground alongside an active runway would neither be unique nor printable, my point is directed at pilot technique.

This troop used almost flawless technique, landing close to the approach end and holding the nose off, but I assume he didn't check brakes before landing. Had he applied them two or three times while still airborne, I should think the left pedal would have gone to the floor, warning him he would be without it.

Then he would have landed on the left hand edge of the runway so the aircraft would tend to veer left, and would have either stopcocked right after touchdown or maintained sufficient speed to steer for the barrier with rudder... but don't try this brake test bit in birds having limited emergency brake systems.

HOW MANY TIMES have you pressed on with a mission even tho your radio was acting up before you reached the active? Ever consider some of the possibilities? I don't know if Blue Three considered them, but I'll bet he does in the future! He was having radio trouble when he launched and didn't hear Two call an abort.

Two had let his F-100 accelerate to around 100 knots before he noticed EGT was up around 750 degrees... both he and Lead chopped power. Then along came Three and Four. Three was up to 145 knots before he realized something was up... NOT up would be more accurate... he hauled off throttle and hollered, "abort!" in that order. Four passed Three, then zipped by Lead and Two, with Three in hot pursuit.

Both deployed their chutes, but Four still hit the



MA-1A at about 25 knots, pulling the net from the cable. Four followed him across, but was able to safely turn around about 750 feet beyond the barrier. Happily, no one hit anyone or anything, but all hands agree that an F-100 makes a poor substitute for a Dodge 'um car! By the way, I still haven't figured out why Lead aborted. All he did was help clutter up the runway.



MAC'S MONSTER has an embarrassin' peculiarity. If the utility system fails, the engines have been known to auto-accelerate to 100 per cent (with the exhaust nozzles full open). This gets even more interesting, as one Phantom crew will attest, when you consider the pilot has only air brakes left, which are easily depleted.

With the brakes nearly gone, one or two engines running away, it ain't hard to picture one of our phantom friends frantically grabbing for the engine master switches with one hand while futilely waving for someone to put chocks in front of the wheels. I say futilely, because the chocks probably won't be available unless someone has taken the precaution to provide a pair for the fire chief or maintenance section and briefed them on the phenomenon so they'll expect it anytime they dash out to meet an F-4 landing with a utility failure.

LATE FOR BRIEFING, he rushed thru his flight planning, made a quick guess at rotation and liftoff speeds and was soon blasting down the active. Witnesses report that he lifted off at about the right attitude and distance but the bird settled back. Gear was on the way up. Two skips and a long scrape later he abandoned his badly damaged bird.

The board contended he had used improper technique during takeoff by being too quick to retract

the gear and then allowing the aircraft to set back to the runway. They also observed that he didn't compute and did not know the proper takeoff data, that unit supervision was poor because the pilot's recheck was not completed as per local procedures, that he was not briefed properly for the flight, and that supervisors did not insure he had made adequate preflight preparations.

They did not consider existing winds of 18 knots gusting to 28 knots to be a vital factor.

Recommendations were to rebrief all hands on the need to properly compute and comply with takeoff data . . . and remind them of the need to safely control airspeed and altitude before retracting the gear. The board also suggested commanders establish minimum safe criteria for retracting gear and that guidelines be developed for a minimum briefing time, on station time, clearing authority, etc.

Actually, the aircraft handbook and current policies establish proper guidance. The real need is for all hands to stop playing around, get professional and start following the existing directives. Then there will be no need to add guidance on how to follow existing guidance!

A FLIGHT LEADER in an overseas command was a highly skilled pilot with over a thousand hours in the bird and known thruout the wing as an exceptional stick-and-rudder man, high score gunner in the wing and so on. He was flying his last mission prior to transferring as a volunteer to Viet Nam. His wingmen were both recent Luke graduates, each with less than 600 hours total flying time.

Scheduled for a high-low-high, the flight leader briefed to break off from the preplanned route to make a low level run along a nearby beach. The pass, according to numerous witnesses, was quite low and flown with the flight in trail. The leader pulled up slightly, rolled inverted, held it a moment and rolled level. Number two also rolled inverted . . . SPLASH! Scratch one up-and-coming fighter pilot, along with an innocent bystander fishing on the beach. The flight leader and surviving wingman are up for disciplinary action . . .

The outcome is fairly predictable.

Not many days after this flight leader set this undisciplined example of how to kill a wingman and ruin a career, a TAC pilot canceled IFR after completing a Faker mission and flew over to a ranch owned by some friends of his. He made three low passes, waving to them. On his fourth pass, he pulled up, rolled it over, hesitated, and dove in. Four of the

ectators were injured from a secondary explosion.

Stop and think. You know your mission, and know how critical it is. You know how much responsibility goes with it. Can the Air Force afford to trust this mission to someone who is incapable of self discipline or who knowingly violates the most basic of rules? You know the answer and you know that skill, experience, and past good record will not influence it one damn bit.

A TAC DRIVER landed his F-4 about 1772 feet down a 9750 foot runway and got started with the business of stopping. He was landing at a transient base and wanted a quick turn around, so he and the IP in the back seat decided not to use the drag rag even tho the runway was quite wet. About half way down, the bird had slowed to around 80 knots, but slithered around each time the pilot applied brakes and . . . well . . . he ended up dropping the hook to snatch the BAK-9 at around 35 knots.

By the time the fire department unhooked the bird and maintenance towed it to the ramp, and counting time spent writing statements for the safety officer, this bunch lost more time than they'd hoped to save. Seems to me there is a moral here somewhere.

A BOUT AN HOUR and a half after liftoff, an overseas F-100 pilot started having trouble with elevator control. He could move the stick normally, but the bird was slow to respond and seemed sluggish. He declared an emergency and set up a long straight-in final. Altho he had trouble establishing a constant rate of descent due to cyclic movements from the horizontal stabilator, he managed to get the bird down in one chunk. He had to coordinate power with what little elevator control he had available.

On the ground, he ran the stick full forward as maintenance experts checked. The stabilator did not move. Next, he pulled the stick aft about four or five inches before it responded. At other times the stabilator would respond to stick movement, or move when the stick was held steady.

Maintenance troops dropped the Y panel and found a bolt from the stabilator control system lying on the panel! They couldn't find the nut or the cotter pin.

This lad did a superb bit of flying. But all hands should realize that he literally placed his life on the line once he started down that final approach. Had that bird pitched down at almost any point on final, he would have been hard pressed to survive an ejection with even our best seat. The zero zero capability won't hack it if the rate of sink is too high, even with

better than 500 feet of altitude. I do not quarrel with him for taking this risk. It was his decision to make. I do quarrel with the breed and brand of maintenance that forced him into having to make such a decision. A cotter pin is a small item and there are many cotter pins in an aircraft that could cause as much or more trouble . . . and cotter pins are just part of many such items. Small things like this are the chief difference between good maintenance and lousy maintenance . . . the difference between a good outfit and one with a horrendous accident rate.

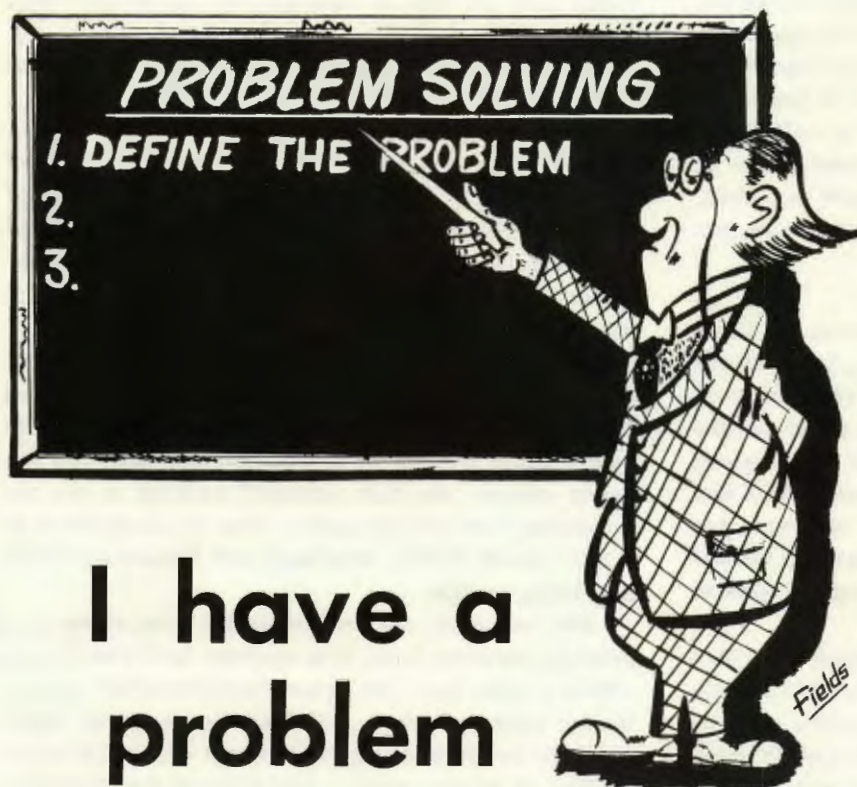
T HIS FOOLISH TIGER has frequently plumbered himself into all sorts of unusual attitudes, so can safely offer one bit of advice that will help you recover should you find yourself hanging in the air wondering how you got there. That bit of advice is to TAKE YOUR TIME! Airplanes are female and don't like being rushed.

For instance, an F-4 troop got a bit steep on a practice snap-up from 20M because he'd started his attack a little late. Going thru flight level 280, he released back pressure, but the pitch attitude didn't seem to be decreasing fast enough - he got tired of waiting in other words - and plunked the stick forward.

The bird stalled in a negative attitude. Both he and his instructor were plastered up against the canopy as the bird rolled inverted and gyrated around until the instructor managed to get the controls more nearly centered. Meanwhile, the bird settled down into a spin. After two turns, still inverted, the IP called for the drag chute and the bird was soon hanging vertically from the chute with both engines flamed out.

They got one started right off, fired up the other during the pullout, and were flying again at around 12 to 15,000 feet. Hoo boy! On a later test hop, they found the bird a bit touchy in pitch, which helped induce this problem . . . the viscous damper was not properly serviced . . . but basically, this scary tale was caused by an impatient pilot.





define the problem or problem which induced it . . . "

"Surely you have some system to identify the near accidents. Couldn't you use this system to identify your problems?"

"As a matter of fact, sir, we have several systems that are designed to locate problems before they have developed into accidents. We have our organizations report equipment which breaks or isn't satisfactory, we have every-one report hazards they encounter, and we have them report incidents . . . the near accidents."

"I see, well this should solve your problem . . . I fail to see where you have a problem."

Major Bumsport shook his head. "The problem is that frequently the people who submit these reports are not identifying the problem. They tend to identify the immediate result of the problem and tailor their corrective action toward it."

"You mean they prescribe a treatment for the symptom instead of trying to cure the disease?"

"Yes, professor. That's the problem. For example I have two incident reports from the same unit. A unit which is flying one of our latest, most modern aircraft. The first report tells of an aircraft which became unstable at liftoff and rolled and yawed at all speeds up to 360 knots. When the stab aug system was turned off it corrected the vertical and longitudinal instability, but the aircraft remained unstable around the lateral axis. The pilot dumped fuel and brought it home. Taxiing in, the nose gear steering system kicked to the right each time it was engaged . . . The unit found the viscous dampener was overserviced, the lateral accelerometer erratic, the transducer switches frozen and the nose gear

"**P**roblem solving is a technique," Professor Anthony stated with enough conviction to discourage questioning. "Like most techniques, we can learn a few simple rules and soon become quite adept . . . "

The weatherbeaten Air Force Major grimaced, causing the good professor to scowl. "Major Bumsport, you seem to disagree." The statement was practically a question.

"Yes sir, I do. You say we can be adept at problem solving by learning a few simple rules. Would you mind telling me the first rule?"

"Ahem, not at all, not at all. The first rule is to define the problem."

"I see. First I have to define the problem." Bumsport's voice hinted at sarcasm. "Frankly, Professor Anthony, my biggest problem is defining the problem.

I've spent a decade working to solve one of the Air Force's more pressing problems. The safety problem, some call it. It boils down to the fact that we lose a lot of our combat potential because we smash up our equipment and kill our people in stupid accidents. Perhaps you can help me get a handle on the problem by defining it."

"I see . . . you really have a problem there, young man. Actually I believe your problem is a group of problems, rather than any single, simple problem . . . ah have you . . . "

"Yes sir, we have tried to break the problem down into individual problems. But again, we run into difficulty trying to define our individual problems before they become painfully apparent."

"Painfully apparent?"

"An accident, professor. After an accident it is a little easier to

stems out of rig. They re-serviced the dampener, replaced the accelerometer and transducer and rigged the nose gear steering system."

"I see what you mean. How about the other message?"

"Well, it was sent just 22 days later and tells of another aircraft which encountered pitch oscillations after becoming airborne. The pilot was able to dampen these oscillations by turning off stab aug. The aircraft required excessive nose down trim, so he brought it home. Again the viscous damper was improperly serviced, a bellows assembly was leaking air and the stabilator controls and auto-pilot were out of adjustment."

"I see, and they serviced the viscous dampener, replaced the bellows and readjusted those other things to fix it?"

"Yes sir, they did."

"My boy, it would seem that the problem in that unit could be partly solved by showing a certain party the, ah, proper way to service the viscous thing-a-majig. In fact, the problem seems to be one of lou . . ."

Major Bumsport interrupted, "Ah sir, I'm afraid you over simplify. My problem may be one of communications. These people may have taken action to find out why these errors are being made and are doing their best to correct them. On the other hand, they may not be asking why these things are going wrong. I hope they are asking why, and I wish they'd let me in on their secret so I could warn other units."

"Young man, you do have a problem. I recommend you take it to MISTER Anthony. I'm Doctor Anthony and, really, I'm not the regular crew chief."



OL' SARGE

The gloom inside the maintenance tent seemed deeper than usual. The Old Sarge was sitting at his desk with his coffee untouched when Captain Green ducked under the entrance flap.

Old Sarge looked up from staring at the spot on the desk, "'Morning, Sir... I have most of the details taken care of, would you like to go over this list I made to see if I left anything out?"

"No, Sarge," Capt Green slumped onto a chair, "I'm in no mood to check on you."

"Well, Sir, I had trouble concentrating on business this morning, too. Just can't stop wondering how we prevent an accident like that. If Jimmy hadn't been wearing the big Mickey Mouse ear muffs he would probably have been able to tell which bird was running up... and yet I lined all the troops up yesterday morning and scolded them for not wearing ear protectors."

"We'll never know, I suppose," Capt Green was almost talking to himself, "but the crowded ramp space here may have had as much to do with it. We wouldn't be running an engine at 85 per cent like that on the ramp at home."

The Old Sarge was tamping tobacco into his pipe, staring blank-

ly across the desk. "I keep wanting to tell myself that it was his eagerness that killed him... you know, he showed up better than any of the other airman thirds we got last June. I'd been watching him... real proud of the way he went about any job we gave him."

"I never heard yesterday just why he was running behind the airplane," Capt Green interrupted. "What was the hurry all about?"

"As I understand it, he was to help launch 826, but was talking to Jerry Chambers about four spots down the line while he waited for the pilot to show up. When he looked up and saw the pilot coming, he took off running... passed maybe 30 feet behind the tailpipe of 724. I heard the shouting as they shut down the engine and dashed out of the tent just in time to see the jet blast finish cartwheeling him across the ramp."

"Although he was relatively new, he had been on the flight line for three months. I'm sure he was well aware of the danger area behind a running engine... just overenthusiasm... eagerness to do a good job, that made him forget all the warnings he'd heard. You just never can stop being careful around these machines... never can stop..."

IN - *efficient management*

Airman Tom Williams arrived at the munitions building just after 0530. Jim, his partner, wasn't there yet, so he drew a cup of coffee and waited.

"Strange," he thought, "that only four of us are assigned to this missile delivery detail. It's an important job, getting the missiles to the flight line for the pilots' training. And the only reasonable shift arrangement is to have two of us come in early, while the other two come in after lunch and work until about 2200. Sure could use more than two guys on this detail, but the Sarge has to work the 0700 to 1700 shift.

Jim arrived in a few minutes and they hooked up a train of missile trailers for him to take to the flight line. After he left, Tom started lining up the next train. He hooked two trailers, with four missiles on each, to the tractor and drove to the rear of the storage building. He went in the build-up bay and started to pull a third trailer out by hand. The trailer, with two missiles and two rockets, weighed about 2500 pounds, but he got it out of the bay without trouble. As he started down the incline toward the other trailers, he tried to apply the brakes. It was all over in a second...the brakes didn't work and the tongue of the moving trailer smashed into the tail cone of a missile on one of the other trailers.

This was Captain Jones' first Bullpup firing and he was anxious to have everything go smoothly. The LABS lite had illuminated right after takeoff and with the steering bars moving, it looked like the LABS system was activated, although he had not turned it on. He cycled the bomb control panel and got a lot of LABS indications...he wasn't sure he understood all he knew about the system.

But now it was time to get on with the mission. Lead took him around the pattern on five dry passes and when he had the pattern the way he wanted it, they prepared to fire their missiles. Lead's pass went smoothly...it looked like a good hit, and they switched positions so Lead could chase him on his pass. As they turned base leg he had Lt. White read the checklist to him from the back seat...Weapon Select switch GAM, Station Select to Inboard Wing. He placed his finger under the Master Arm and Step switches, ready to flip them on, while he rechecked heading, altitude, and airspeed. Everything looked good. He was almost ready to roll into the final turn and pulled his attention out of the cockpit to clear the area before lining up with the target. He must have bumped the Master Arm switch. That was when the missile launched. He felt it and saw it simultaneously. He did his best to control it as it climbed steeply and then plunged to the ground, but it wouldn't respond to his commands.

Both of these incidents happened recently. The names have been changed here, but that's all.

Both of these incidents could have been forecast...there was plenty of warning.

Both of these incidents could have been prevented.

A defective master brake cylinder and lack of brake fluid were the immediately obvious causes of the trailer incident. Although a local checklist called for it, an inspection of the trailer wasn't performed before it was loaded or by Williams before he moved it. His supervisor, a Staff Sergeant, didn't show up to supervise the day's activities until 0730. Young Tom was all on his own!

Captain Jones' missile fired

prematurely because the pickle button was stuck in the ON position. Sometime prior to takeoff, the stick grip had received a blow which depressed the button and crimped the housing to the point that the button was permanently stuck in the down position. The only functional check of the missile launcher's system was performed 18 hours before loading by a load crew unqualified on the system. An aircraft preparation

check of the system was not performed during loading because the load crew skipped the first eight pages of their checklist.

Immediate attention was directed to the principle participants. It was easy enough to say that Airman Williams should have inspected the trailer before trying to move it by himself...or that Captain Jones should have recognized that the LABS indications were telling him the pickle button

depressed.

Capt Jones had not been trained to expect or be prepared for the bizarre malfunction he faced. He had been trained to expect equipment ready to operate...his pre-flight checklist had been abbreviated to eliminate duplication of checks and inspections which are the responsibility of others.

Airman Williams, while required to check the condition of his vehicle before he operated it, was working under the handicap of very short manning and was doing his best to complete a job that he

knew was important.

Who, then, should have prevented these mishaps? Who should have identified the weak spots in the operation before they developed into damaged hardware and an ineffective sortie?

Somewhere in both of these situations, management dropped the ball. Management is everyone from the Staff who couldn't see fit to come to work with his troops, to his supervisor and his supervisor's supervisor.

Efficient management would have stopped an unqualified load

crew before they got to the job. Efficient management would be in close, daily contact with working crews and stop shortcuts like the local abbreviation of the loading checklist. Efficient management would have identified the short-handed munitions delivery crew as a weak link in the missile training operation.

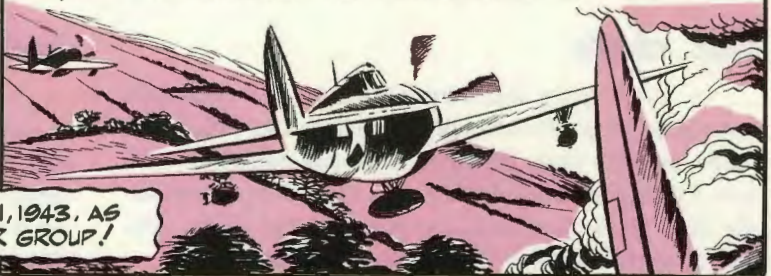
Efficient management aggressively uncovers the weak spots and takes corrective action to preclude an incident report, ... a report of inefficiency!



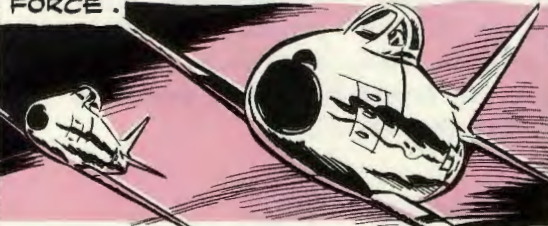
366th
TACTICAL FIGHTER WG
HOLLOMAN AFB, N.M.

ACTIVATED JUNE 1, 1943, AS
THE 366TH FIGHTER GROUP!

WHEN THE GROUP HAD BEEN IN EXISTENCE LESS THAN TWO YEARS IT HAD ALREADY SPENT 13 MONTHS IN COMBAT. TAKING PART IN SIX CAMPAIGNS IN EUROPE WITH THE 9TH A.F., THE UNIT RECEIVED THE DISTINGUISHED UNIT CITATION.



DURING THE KOREAN CONFLICT THE 366TH SERVED AS PART OF TAC'S CONTINENTAL FORCE.



DURING '55 AND '56, THE UNIT TOOK PART IN THE TAC EUROPEAN ROTATION PROGRAM, FILLING U.S. NATO COMMITMENTS IN ITALY.



JULY 15, 1963, THE WING TOOK OFF FROM FRANCE FOR THE LARGEST MASS EAST TO WEST TRANSATLANTIC FLIGHT OF SINGLE ENGINE AIRCRAFT IN AIR FORCE HISTORY!!

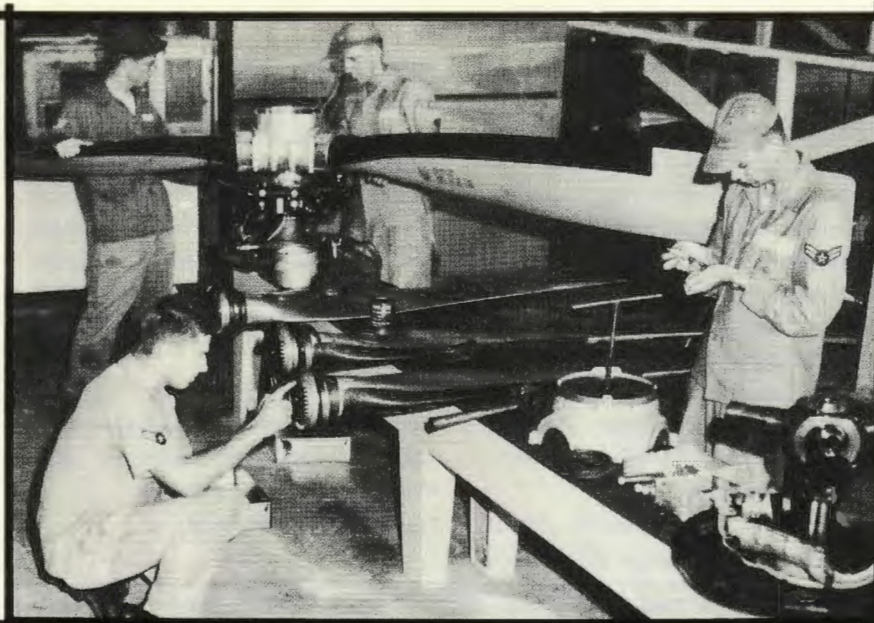


THE 366TH SETTLED AT HOLLOMAN AFB, AND IN 1964 CONVERTED OVER TO THE F-4C "PHANTOM II"



IN SEPTEMBER 1965, THE WING ASSUMED A ROTATIONAL AIR DEFENSE COMMITMENT IN ALASKA.

PRESENTLY, THE 366TH IS COMMANDED BY **Col. C. M. TALBOTT**



chock talk had chute nothing new look before you leap

CHOCK TALK

bad chute

An F-105 pilot found himself making a max performance stop after the drag chute failed. The pilot chute got wet when the pilot made his preflight... it was raining and they didn't have a cover installed over the drag chute compartment during the preflight. The wet pilot chute froze to the main chute, and...

sawed off M-39

A one hundred driver in SEA rolled in on his first strafing pass, pulled the trigger and fired only about ten rounds before the guns quit and the left gun bay door blew off. Back on the ground he discovered one of the left gun barrels had been removed because of a broken locking detent, but that hadn't stopped the armorers from loading and charging the gun.

ultrasonic engine check

The ultrasonic leak detector is a handy gadget, which is being put to new uses every day. One airline uses their leak detectors to check the valves on reciprocating engines. The mechanic holds the detector probe over each rocker box cover with the engine running. Defective valves produce a pronounced hissing noise thru their closed cycle while good valves are silent. The new method is 100 per cent accurate and has eliminated having to pull spark plugs to take compression readings. This cuts time needed to perform an engine analysis by over three hours.

nothing new

For the umpty-umpty time in the past few months, a couple of troops failed to follow their checklists and external stores fell to the ramp when they applied power to the aircraft. It happened like this: An F-105 was loaded with a practice bomb dispenser. The loadcrew left the bomb bay station selector button IN and the safety guard unsafetied. The load crew and crew chief missed it. The pilot was using the approved checklist... well, he had the approved checklist, but he missed the bomb bay button on his cockpit preflight check. When he got ready to start the engine, he turned the battery switch ON... the bomb dispenser came off!

look before you leap

Not too long ago we mentioned an incident where a maintenance type was working on the canopy jettison system of an F-100, pulled the wrong handle and off came the tanks. Well, this time it was a munitions type trying to cycle the special store unlock handle.

It seems that during his preflight the pilot noticed the centerline pylon didn't have any cartridges and was uncocked. He continued the preflight and pulled the drop tank pins. When two munitions airmen arrived they couldn't get the type VII pylon cocked. Under the supervisor's direction one of the airmen climbed into the cockpit to cycle the special store handle... pulled the jettison handle and off came the tanks.

warning signs

warning signs

A Navy F-4 unit has a neat gimmick to keep someone from accidentally applying electrical or hydraulic power when they are doing maintenance on those systems. They use a sign the same size and shape as the receptacle access doors and lock the signs into the same airlock fasteners used for the access doors. With this system it is impossible to apply power without first removing the warning sign. The sign keeps the receptacle covered and protected. With a bit of stencil work, the sign can identify the shop which installed the signs. Sounds like a good idea which could be adapted to other aircraft in addition to the F-4.

terrifying torque

terrifying torque

As he broke ground on takeoff, the pilot noticed his altimeter drop 300 feet, and when he checked with his wingman, he found his airspeed was reading 50 knots low. At times during the flight, the airspeed would drop to zero and his altimeter would be as much as 3000 feet in error. He landed safely, but only with the aid of his wingman. Investigation revealed at instrument plumbers had removed the instrument panel three days before, then failed to properly torque the static connection when they slapped it back together. The incident report did not contain the pilot's remarks, but we wouldn't be able to print them anyhow!

bundle trouble

bundle trouble

During a 4 G pullup from a weapons delivery run, an F-4C pilot noticed the left hand generator out light come on. He reset the generator, but the light illuminated again under Gs and this time it wouldn't reset. After recovering at the home patch, maintenance discovered the generator wire bundle, PN 53-79006B204, figure 4-136, index 65 page 4-471, TO 1F-4C-4-4, had worn thru by rubbing against hydraulic power control number one tee fitting, AN783D16, figure 3-119, index 29 page 3-423 TO 1F-4C-4-3, during G maneuvers. Electrical arcing caused the generator failure and burned a hole in the hydraulic tee fitting. Fortunately, hydraulic pressure wasn't lost, but a serious fire hazard was created.

A one time inspection revealed about fifty per cent of the unit's aircraft had similar chaffed wire bundles. It seems this problem usually occurs in the number one engine area above door number 140. A look-see in your birds wouldn't hurt.

improper safety

improper safety

A pair of F-100s were about three miles from touchdown on a practice GCA when the chase pilot found himself dropping back. He checked and found he was getting about 90 per cent with the throttle at full military. He jettisoned his 335 gallon tanks and managed to complete a successful landing as full throttle power decreased below 88 per cent.

After rolling back the aft section, maintenance investigators discovered one bolt missing from the left diffuser case air bleed adapter plate. The other three were loose. Hot air escaping from this leak affected the thermostat capillary tube and induced the loss of power.

oops

oops

A certified load crew from another command was uploading an F-4C at night. They installed the fins before they removed the MJ1 Bomb Lift . . . "because the light was poor and we were using the MJ1 spot light."

When they backed the lift away from the aircraft, the lift table hit the bottom rear fin, cracked the rocket motor, and bent the fin.

broken fuel line

The F-4C was on short final after completing several practice GCAs when mobile saw fuel mist streaming from the lower aft fuselage. The pilot completed the landing and stopcocked the engine. Luckily there was no fire and no damage.

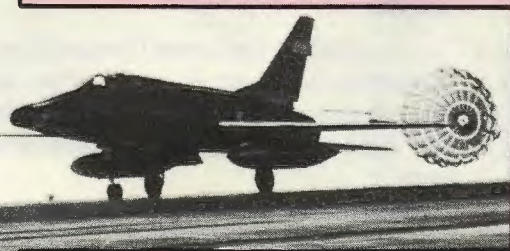
Checking, maintenance experts found that the afterburner fuel control sensing line had broken due to fatigue. In fact, they found that this was the third time the same line had broken on this particular engine. The engine flew nine hours between the first and second breaks and accumulated 37 hours before the line broke the third time.

Maintenance pulled the engine and put it on the trim pad to check vibration readings. All were within limits. Altho they could see no shift of the AB fuel control, they removed it for a closer look and to install another fuel control to compare vibration readings.

They found the inside surface of the hold in the AB fuel control mounting flange had been grooved and scored by the fuel control mounting bolt . . . indicating a shift was taking place. The shift apparently was inducing the line failures.

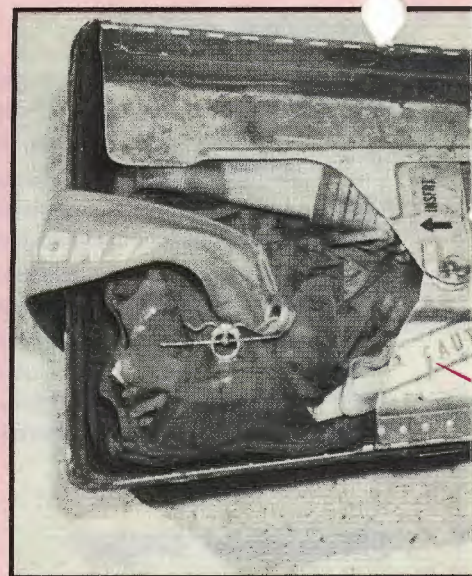
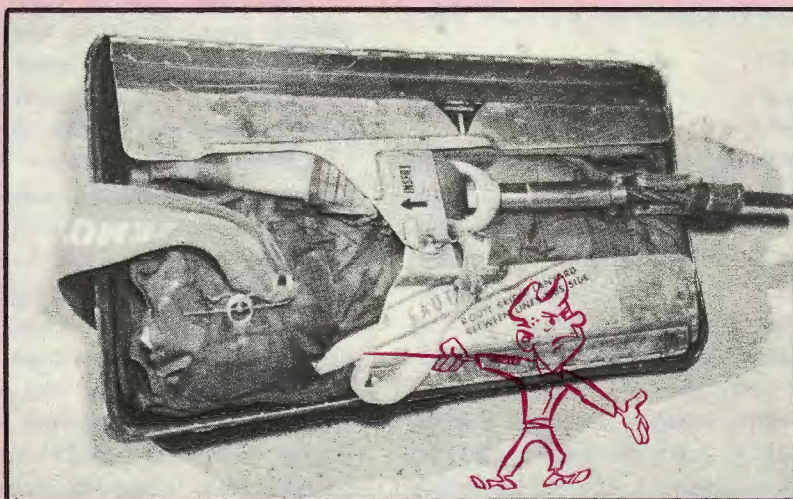
D R A G C H U T E

100

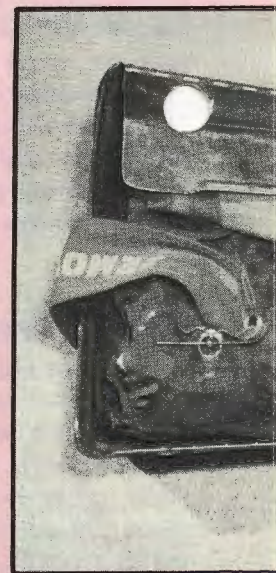


D R I L L

With the liner door pin installed correctly and only part of the bridle outside the door it is easy to miss this error. Generally, the result is a pin that doesn't get pulled because the pilot chute does all its yanking on the edge of the liner door.



This improperly routed lanyard is the easiest error to do is pull on the liner door. It won't pull.



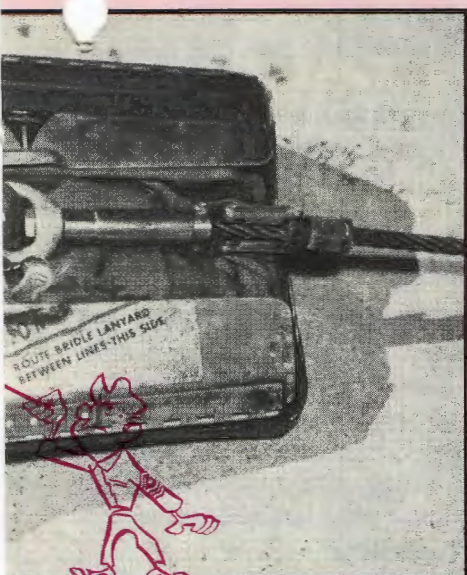
Here's how it looks when installed in the proper direction, as it is routed outside the doors. The photos show proper rigging. And, when the pilot chute will

For over ten years the F-100 has been flying in and out of bases all over the world. Yet, hardly a day passes that a drag chute failure doesn't quicken some pilot's pulse. Fortunately, most do

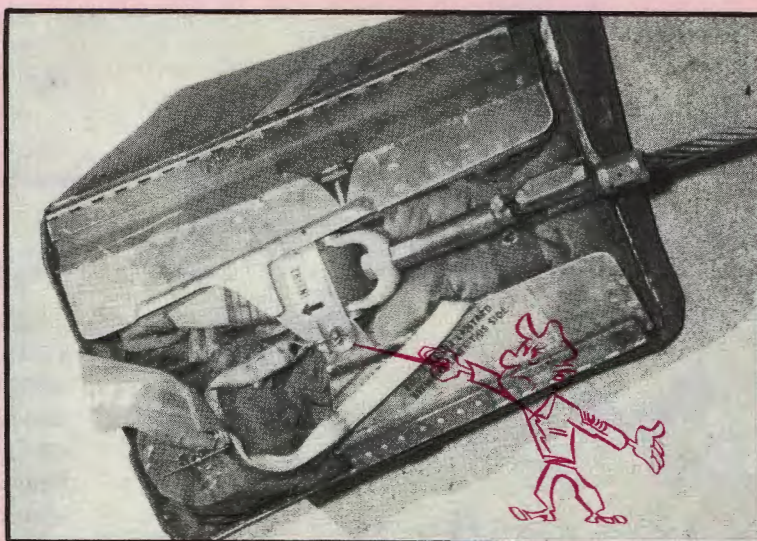
nothing more . . . but it's not uncommon for a chute failure to end up in the major accident files. A set of hot brakes, a tire change, or a barrier engagement are often the best we can hope for when the

drag chute fails to blossom shortly after touchdown on a wet, slick runway that suddenly got very short.

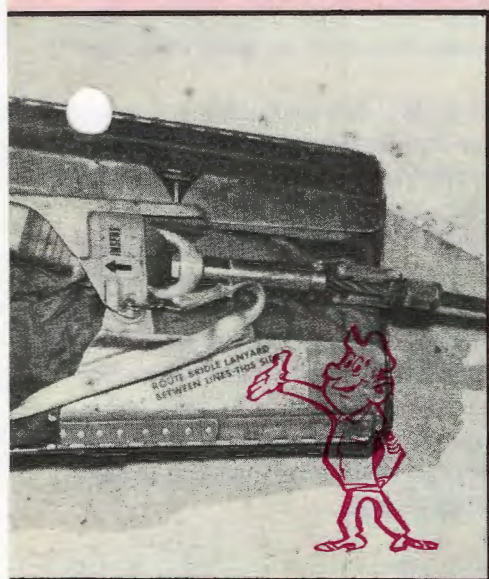
The most frequent cause of chute failures is improper instal-



error to spot. In this case, all the pilot chute-can
all the door pin or deploy the drag chute.



Another way to keep the chute from working is to install the liner door pin backwards. To make this goof, you must force the pin over the pin stop in the opposite direction from the insert arrow. Now, when the pilot chute is deployed it will bend the pin that holds the liner doors closed or force the pin in tighter. In either case . . . it will be a no chute landing.



it is done right. The liner door pin is installed
indicated by the insert arrow. The bridle lanyard
and between the lines that have been painted to
when the drag chute compartment doors are opened,
I have a direct pull on the liner-door pin.

lation. Despite education pro-
grams, drag chute modifications,
and check lists, people still mis-
route the lanyards and put pins in
backwards. Because of this, many
commanders have instructed their
pilots to make the final inspection
before the drag chute doors are
closed at a transient base. Granted,
the drag chute installation might
be inconvenient and transient alert's
job, but it requires little more effort
than just looking at the chute com-
partment. And, it's better than
having a bird end up in the over-
run with a sickly looking pilot chute
barely hanging out of the drag chute
compartment.

This series of pictures show
how a chute for the hundred looks
when it is improperly installed in
the liner, and three of the most
common errors made during in-
stallation. The last chute and liner
are correctly assembled . . . make
sure the drag chute you have in-
stalled looks like it!





ground SAFETY

crunch

The National Safety Council says almost one fourth of the vehicles registered in the US were involved in some type of accident last year. Over half the traffic deaths occurred on weekends and smaller cars have about as many accidents percentage wise as the heavy jobs. However, being lighter, light-car accidents are more severe.

To fight these statistics, drive defensively and keep your machine in tip top shape. Here's a list of things to check at frequent intervals.

- * Rear lights - Are all working and bright enough?
- * Stop lights - Again, are they working and bright enough?
- * Front lights - Better check their alignment, too.
- * Turn indicators - Remember, if the other guy can't see 'em, they don't do the job.
- * Brakes - Check effectiveness and pedal adjustment as well as amount of brake and band wear.
- * Windshield wipers and washers - Will they keep the front window clear or not?
- * Exhaust system - Hold a rag over the tail pipe and if it doesn't build up a bit of pressure, you have a leak.
- * Tires - Slick tires can cause all kinds of trouble . . . uneven wear can indicate poor alignment or unbalanced wheels. Both can wear out your tires early and both can be dangerous at high speed.

- * Horn - Loud and clear?
- * Steering - Positive, without free play or binding?
- * Rear view mirror - Clear and clean where you can see it? A side mirror on the left is a must on multi-lane roads.

defensive driving

The report sounded like fiction, made to order for a safety pitch. The story started in the base theater with the wing commander stressing the importance of defensive driving and urging all personnel to stay off the highway during a coming three day weekend. They also ran the new film called, Broken Glass, which shows what happens when automobiles collide at 20, 30 and 40 miles per hour.

Enter the principal character, an airman first we'll call Luke E. Sonagunovitch, because that ain't his real name. Luke E. attended commander's call and took it to heart. However, he was transferring PCS on Tuesday and his parents, girl friend, etc., etc., only lived a couple of hours drive from the air-base and, well, would you stay on base under the circumstances?

Neither did Luke E. Instead, he headed home. got there OK and had a right fine visit. Shortly after dark on Monday, he fired up his little foreign car and headed back. There's a curve just outside of town and Luke E. was up to about 45 mph when he entered the curve . . . that's when this knubbrain in a big Detroit job came barreling from the other way, hacking his half out of the middle. Luke E. whipped the wheel and headed for the shoulder. The tires skidded on gravel and off in the ditch he went, rolling about four times. He woke up in the hospital, but thanks to a seat belt and defensive driving, he only had to spend one night there before returning to duty.

minor incident?

It was really just a minor incident, the only damage he did was to the glide slope antenna. Everybody seemed to get terribly excited, though . . . just because he bumped into the airplane when he was backing his truck. Well, that's right . . . he was supposed to have somebody outside the truck to keep him clear. And that ton-and-a-half could have done an awful lot more damage to the airplane. Maybe they had a right to be angry . . . 'specially that pilot who had to abort his flight!

The ROUGH ROAD



Mr. T. M. Bughlin, a research and development engineer with Lockheed, discussed turbulence at the 1965 Navy/Lockheed Safety Symposium. This article, extracted from that discussion, should be of interest to all pilots.

Two important items must be considered when determining the handbook turbulent air penetration speed. The chosen speed must be high enough to protect against a gust-induced stall, yet low enough to protect the aircraft from encountering excessive structural loads. In the past, the tendency has been to select a penetration speed

all below that which could lead to structural damage from the gust loading. In moderate turbulence, such speeds are completely satisfactory and provide a smoother ride. However, in severe turbulence the aircraft will be operating significantly closer to the stall buffet area and since angle of attack changes caused by severe turbulence can be high, there is a greater chance of encountering buffet, high drag, and loss of altitude which might tempt a pilot to make undesirable thrust changes. Trim changes due to thrust changes are higher in the low speed region and lateral and directional control is less effective. Finally, trim changes due to aircraft speed changes are greater in the low speed region than when operating at higher speeds.

There is a strong suspicion and some direct evidence that almost every structural breakup that has occurred in extreme turbulence

the rough road

has been preceded by a severe change in attitude, with the breakup being brought about by the attempted recovery maneuver in combination with the severe turbulence.

The best technique for penetrating turbulence, if sufficient warning is available, is to slow the aircraft to the recommended speed, adjust power to hold that speed, trim the aircraft, and fasten seat belts and shoulder harness. If the encounter is unexpected, adjust power to give the appropriate best penetration speed and retrim as the aircraft gradually slows. It is better to be slightly fast than to induce trim and control problems attempting to slow the aircraft too fast. Concentrate on aircraft attitude and ride out changes in speed and altitude. The aircraft's natural stability will tend to minimize loads imposed by turbulence. Avoid over-controlling, keep elevator inputs small and use aileron and rudder to keep wings level and dampen yawing.

Basic aircraft stability often leads to confusion in a strong sustained updraft or downdraft. For example, in a sustained downdraft the aircraft will initially pitch nose-up, yet altitude will decrease. The natural stability of

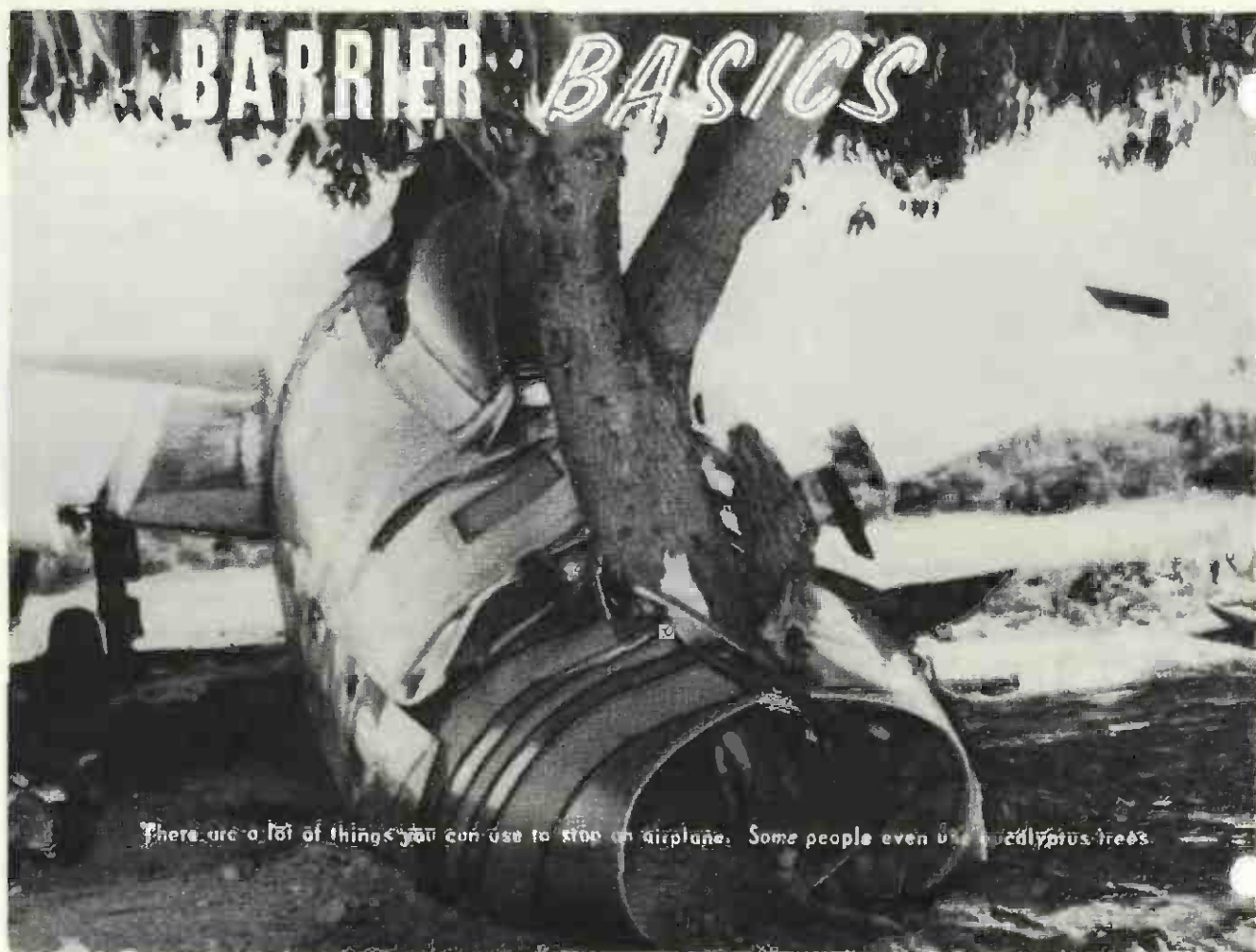
the aircraft will cause it to start a long-term pitch oscillation unless the oscillation is controlled.

This is easily done, but since the direction and magnitude of the next gust is unknown, you should allow some excursion in pitch attitude rather than attempt precise control. The aircraft will tend to return itself to stable flight and this usually starts before you have recognized the departure, discriminated and acted, so it is quite easy to reinforce the aircraft's tendency to return level and end up overshooting the desired attitude.

Apply elevator smoothly to resist motions away from the desired attitude and relax the input as soon as the aircraft starts toward that attitude.

If the autopilot has a limited rate of control and will not abruptly disengage without warning, it can usually do a pretty good job in turbulence since it is not easily distracted and doesn't need to rely on instrument readings and interpretations for its actions.

If you use an autopilot in turbulence, monitor pitch trim since it is possible for the aircraft to become significantly out of trim when it encounters a sustained up or downdraft then encounters an opposite gust. ➤



There are a lot of things you can use to stop an airplane. Some people even use acetylene trees.

We prefer more conventional barriers like MA-1s or BAKs. Any barrier, though, must work correctly the first time. We don't get a chance to run it up before we use it and there is rarely a back-up system if the thing fails . . . it is the back-up. We need it when something else has failed.

The base civil engineers are usually the ones who insure that the barrier is more than just a cable lying loosely across the end of the runway. It takes a lot of hard work by these dedicated people.

Too often, we who are closer to the airmachines fail to think about barriers until we are barreling down on one of them, dropping hooks and stores, retracting boards, steering for the center and hoping everything will work. But

if we can establish a before-the-bash frame of mind, ops and safety types can help the engineers by understanding some of the exacting requirements imposed on aircraft arresting barriers. Because of our vital interest in the readiness of the system installed on our base, we should be highly critical of the barrier and inspect it as regularly as we do our ejection seats or parachutes.

What, then, do we look for and where do we look?

First let's look at the installation itself. The MA-1A, if it's the anchor chain variety and hasn't been interconnected to a BAK-9, should have 1000 feet of hard surfaced runout. The battery and air compressor used to raise the stanchions should be protected from

the elements so they will stay relatively dry. The chain should be kept straight . . . no kinks. It should not be buried in sand or dirt just because it has not been used in several months.

The BAK types have other peculiarities. If they are not interconnected with the MA-1A webbing, they should be at least 900 feet from it. And wherever they're located, the runway pendant should not be close to joints in the concrete, flush mounted runway lights, or other surface irregularities that could make a tail hook bounce and miss the cable.

Next, look at the "pre-flights" . . . who performs them, when and how. Daily inspections should be performed on all barriers on the airfield by specialists familiar with, and able to interpret the

myriad of tech orders in the 35E8-series. The changes, corrections and new combinations of barriers that have come out in recent years make these TOs an often confusing compilation of technical jargon. But notwithstanding their complexity, the tech orders contain the secrets to the 100 per cent readiness we demand. Both the laborers who perform the checks and their foremen must understand them.

Now, what should we check? Ops and safety spot checks should answer the following questions.

For tail hook type barriers (BAK-6, -9, -12):

- * Is proper cable pre-tension maintained?
- * Are cables frayed?
- * Are inspections during high-density traffic frequent enough to assure that proper grommet spacing exists to keep cables off pavement?

* Are hydraulic reservoir levels, nylon tape condition, sheave movement, and tape freeze-up checked on the daily BAK-9 pre-flight?

* Is the BAK-6 fluid adequately protected by anti-freeze? Is the piston checked free in the tube each day?

For nylon-webbing type barriers (MA-1A):

- * Is there two feet of slack at each end of the steel cable to allow it to override main gear tires?
- * Is the pneumatic system free of moisture?
- * Is the battery charged?
- * Is the webbing kept taut?

For all barrier systems:

- * Are the bolts securing the cable ends properly torqued? (The barrier is useless if the cable pulls away from the restraining device.)
- * Are spare parts on hand? Be especially critical of the stock

level of those parts which shear during an engagement and must be replaced.

* Are appropriate TOs available in the work center where the people concerned with barrier maintenance assemble? Are the TOs up to date?

* Does the snow removal plan emphasize the importance of aircraft arresting barriers during slippery winter conditions?

* What provisions are made for freeing frozen anchor chain, grommets, webbing, or tape?

* Who is responsible for inspecting and readying the barrier after an engagement? How often do they drill? What is average down time?

* Does the MA-1A have to be removed from the runway for an approach end engagement? Who removes it? How long does it take? (Anything over 10 minutes is excessive.)

The PEASHOOTERS

The all metal bombers that began to appear in 1931 were so fast the speediest biplane pursuits were not able to keep up with them. Back to the drafting board, and in 1932, Boeing rolled out the P-26, our first all metal pursuit plane to go into production. This sleek, stubby monoplane became the standard Air Corps fighter in the mid 1930s. Well streamlined for its time, the P-26 had a 600 horsepower Pratt & Whitney Wasp which pulled it thru the air at 234 miles per hour. It could climb to 27,000 feet in less than 15 minutes. Two .30 caliber machine guns were synchronized to fire thru the propeller, and it carried two 216 pound bombs. As war approached, improved fighters replaced the P-26, but a few remained to put up a gallant fight in China and the Philippines against the Japanese early in World War II.

Gross Weight 3012 lbs
Wing span 28'
Length 23', 10"
Landing speed with flaps 74 mph
P-26As procured 111



TAC TIPS

SLOO-O-OW LEAK

The F-4 was making a radar bomb run when the pilot noticed that his antenna drive had failed. Since there was no other sign of malfunction, the aircraft commander returned to home base and flew three landing approaches. Altho he cycled the gear and flaps on each approach, utility hydraulic pressure remained normal. Just after touchdown on landing, utility pressure dropped to 1200 psi. He used emergency brakes to taxi clear of the runway. One minute after he noticed the pressure drop, and before engine shutdown, system pressure went to zero. Maintenance investigators found a slow leak around a carbon seal in a hydraulic transfer pump. Although the fluid had been leaking for some time, it didn't show on the gage because the pumps in the system were able to maintain system pressure with a decreased volume of fluid until a drastically low quantity condition was reached. A slow leak of this nature is difficult to recognize, but we're learning from experience. After several similar failures, we can safely say that antenna drive failure is a good warning that you'll soon lose utility pressure. If you suspect a slow leak situation, watch hydraulic system recovery after you actuate gear or flaps. If recovery to normal pressure takes longer and longer, your fluid volume is diminishing ... get it on the ground before the juice is all gone.

MESS OR NEAR MISS

A major air tragedy was attributed to an unsafe departure procedure. Investigators learned that other aircrews had experienced difficulty with the departure, but altho they had come close to trouble, they didn't get around to filling out a hazard report on it. This is even more tragic ... they knew a problem existed but didn't pass the word to the people who could correct it. This would have been a perfect place for an OHR.

Incidentally, some pilots are reluctant to report hazards, particularly when their own errors helped contribute to the hazard. Just remember that all pilots regularly make minor errors such as misunderstanding verbal instructions, starting a procedure turn a little late, overshooting a desired altitude by one or two hundred feet ... our system should be tolerant of these errors so they will be of no consequence. If the system is not tolerant, then it must be revised or all aircrews warned so they can use extra caution in the area of flight where it is necessary.

Don't fail to report a hazard even if you must share the blame for helping create it. Someone else may make the same mistake under a slightly different set of circumstances and become an accident victim. If you are the shy type, write an anonymous report.

LOSE ENDS

When he tried to hand his drag chute out in the wind after landing, the Phantom driver found he could only pull the drag chute handle out half way. The chute deployed all right, but when he moved his hand to pull the throttles to idle, the handle returned to its down position and the chute jettisoned. After he got his chariot slowed and turned off the runway, and things settled down in the cockpit, the Phlyer phound ... (oops!) found that the plastic pin on the loose end of his survival kit attaching strap had jammed between the seat and the back of the drag chute handle. When this happened, he was able to raise the handle far enough to deploy the laundry but not enough to lock the handle in the deploy position. Obvious solution is to keep the loose ends of the survival kit straps beside the kit ... inside the seat.

POSITIVE LOCK

A Phantom Phlyer raised the drag chute handle as the aircraft touched down. The chute deployed momentarily and then fell off. The investigator found that the locking pin on the drag chute handle would extend very slowly, allowing the handle to pop back down if it was released before the pin had fully engaged. This allowed the jaws to unlock and the chute to jettison. Corrective action was to clean and lube the shaft assembly and brief aircrews to be sure the handle is locked before they release it.



BARRIER BALLAD

What's the best configuration for hitting an MA1A barrier? Like some hard and fast rules? We can give you some, the rest will depend.

First, if you have a hook, extend it. If the barrier is tower controlled, ask them to raise it. This gives you two tries instead of one ... and helps take care of adverse configurations. Keep the canopy closed.

TAC ATTACK

Raising it leaves you exposed to fire, barrier webbing and even the cable itself!

Get rid of external stores if at all possible, but here the picture becomes less sharp and clear. If you delay your decision to get rid of the tanks, and the tanks are full, you may find yourself with a hot problem. If you are closer than 3000 feet when you dump tanks, they may come bounding to a halt with you. If you keep them on, you may get a partial engagement and end up sliding along on a set of burning tanks. In either event, keep the canopy closed, unbuckle and wait for the fire to subside before you do anything. That is what the pilot did who was in the bird we have pictured. He stayed put until the crash crew foamed things down, then opened the hatch and calmly climbed out, unsinged.

Best course of action is to get rid of the tanks as soon as it looks like you will have to hit the barrier. We'd punch even if almost in the barrier figuring two chances at snagging the net are better than one chance of having to wait for a fire to subside. Remember, our plan is to keep the lid on until we are completely ready to run like hell! On the other hand, don't dump 'em off when traveling less than 100 knots, or so, when only three or 4000 feet down a good long runway. You're just inviting the next element into the mishap.

HOLD 'ER DOWN

Back in the days when the only two-seater around was the T-bird, a guy never took off with the rear seat empty until he went thru the ritual of strapping down everything loose back there. But now we find that the rear cockpit of the '105F doesn't lend itself to securing so easily and some of us have been driving around solo with the aft survival kit loose in the seat. One such troop, returning from a refueling mission, experienced a violent pitch-down while trying to trim the bird. His hands were thrown up in the air and the big 'Chief went thru several oscillations before he could paddle off the stab aug. In the course of the gyrations, the rear seat survival kit bounced off the canopy, breaking the plexiglass and spewing its contents about the cockpit. Some of the survival gear lodged behind the stick and caused a few anxious seconds during landing when the stick wouldn't come back far enough.

Immediate reaction to the successful, but difficult, landing was to remove the survival kit whenever the F is going with the rear seat vacant. With the leg restraints removed, it is impossible to secure the survival kit firmly in the rear seat. In a few short hours,

however, the fellas who would rather fight (the problem) than switch (the heavy survival kit), came up with a better idea. They secured the kit by knotting a pair of leg restraints together about eight inches from the floor, bypassing the snubbers and hooking them to the lap belt along with the shoulder harness straps. By raising the seat to take up the slack, they had the kit secured, the problem solved, and had avoided the wear and tear that would go with repeated removal and reinstallation.

OSCILLATING WHEELBARROW

The C-119 crew shut down one engine and made an unscheduled landing when their machine started to shake and rattle more than usual. They saw they were losing prop fluid, and the prop dome seemed to be oscillating abnormally. When the maintenance people checked the engine, they found no excessive vibration. General conclusion by all hands was that the vibration was the result of a lower than normal power setting. The loss of prop fluid fully justified their actions . . . 'specially when they couldn't tell how much they'd lost, but the oscillating prop dome wasn't a very good indicator of anything. The red-bordered section III pages of the dash one give better procedures.

CRAZY CANOPY

An overseas T-33 was climbing thru 12,000 feet when a three-foot section of plexiglas from the rear part of the canopy blew out with explosive force. All conditions prior to the blowout were normal . . . cabin pressure had settled down to 8000. When they checked the bird after landing, they found some light crazing on the remaining plexiglas. Altho no one can be sure that the craze marks caused the failure in this case, we know that scratches and crazing have been the cause of plexiglas failure in the past. As some of our birds go past the ten and twelve-year old mark, it becomes more and more important to check thoroughly for canopy deterioration and damage . . . frequently.

TRAINING TIP

Now that touch-and-goes have all but gone, pilots who wish to practice landings should haul out the dash one and check the time interval needed to cool brakes between full stops. On some types, this interval is shorter if you fly around with the gear extended. Regardless, 'tis best to abide by the book and avoid having a wheel explode in the well or on the ramp.

BOMBS AWAY

On climbout, the oxygen gage in an F-4 dropped zero and the light came on along with the right AC generator off light. The pilot reset the generator. With numerous thunderstorms in the area, the IP decided to play it prudent and told the pilot to head for home. Since the runway was wet, he told him to dump wing fuel.

The pilot got the wrong switch and jettisoned the centerline tank. An effective, but expensive way to dump fuel. The only corrective action we can think of is to again caution all hands to engage brain before taking any action.

DISCONNECTED DISCONNECTS

The squash bomber was being ferried back from the depot after modifications. As the pilot descended thru 15,000 feet, he heard a thump and his wingman reported fuel siphoning. When they got to checking around the collapsed bomb bay tank after landing, they found the vent line disconnects in the aft section had not been connected . . . they were still covered with neat little plastic dust covers! The incident report says that ferry pilots are now being briefed to check for this condition . . . well, I guess they have to if the inspectors won't.



WHEEE-EE!

The C-119 (boom-boom) was serenely cruising 9500 feet above the southwestern desert when the bottom fell out . . . a strong downdraft lifted men, baggage, shaving kits, and assorted tools from their resting places and scattered them about the cargo compartment. Happily, the pilot, co-pilot, and primary load were securely strapped down, but the loadmaster suffered a nasty head cut and a puncture wound on one thigh. Their pre-flight forecast had mentioned turbulence in the vicinity of rain showers, but the clear brilliance of a summer day made a rough ride seem pretty remote . . . or do they call it "isolate now?"

Reduce the airspeed by pulling the throttle to IDLE and maintain attitude by holding the nose up. When the desired speed has been attained, it can be maintained by varying the thrust.

SIDESLIPS

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.

STALLS

1G Stalls.

At 1G and gear and flaps up the airplane stalls normally, with plenty of warning; it mushes noticeably and begins to shake and buffet.

high near the horizon. The rudder should be applied against the spin when the nose is at the lowest point of oscillation because the controls are more effective. Recovery initiated when airspeed is low will take one half to three quarters of a turn.

INVERTED SPINS.

Note

An inverted spin is easily recognized because negative-G forces exerted on the pilot will force him against the lap belt.

Inverted spins are usually caused by too much forward stick during slow speed in inverted flight or by pushing the stick forward too quickly when rotation stops during recovery from an erect spin. In

TEMPORARILY

Disoriented

"OK, Willie," Sideslip shook the stick, "I've got the bird." He wriggled around on the seat cushion. It had been a long time since he had flown in a T-bird, and he had forgotten how uncomfortable it could be. Still, it was getting him home for the weekend. If he hadn't stumbled across The Whale in the club, he would have had to wait for the C-123 to haul him home from Sea Survival School.

Willie had been in the squadron in Europe years ago...Willie the Whale, they had called him. But he had settled down since the good old days...had himself a maintenance job and a couple of promotions.

As Sideslip watched the DME roll from six back to seven miles, he glanced toward the headrest in front of him and asked, "What's the next heading?"

"347, I'll set it in the window."

"Isn't 360 the heading out of

Charleston?"

"I filed direct to Appleton... and then to the fix at Pat..."

He was interrupted by a tremendous noise and vibration. Sideslip saw wisps of smoke coming thru the vents by his feet, and called, "You got it!" Both started looking around for the trouble.

"Sounds like it's right under me, Willie...you got any ideas?"

"Don't know, Slip...I've got a light on the panel..." The noise stopped.

Sideslip was engulfed in a sea of silence until the interphone came back on. "Must've been the generator...I turned it off and the noise stopped."

"You bet it did, Willie...right along with the DG, the attitude indicator and all the nav clocks."

"I turned off the inverter and the boost pumps before going Battery Only." Willie was serious.

"I've been looking around for some more things to turn off... you know, non-essential...like it says in the book."

"Well, you got the inverter and fuel switches, you said..."

"I switched to the standby inverter while the battery was off, but it doesn't look like it's gonna work...dunno what's a matter, but I'm not turning the main inverter on. It'll eat up the battery for sure!"

"What about IFF?"

"It quit with the inverter, but I'll turn it off anyway."

"And the TACAN and VOR things?"

"Got the TACAN, but the VOR's supposed to work on the battery...DC..."

"Yeah, I remember something about using the TO-FROM and the course needle."

"That's it, Slipper...no sweat!"

"Well, cheez, Will . . . you're the IP guy on this trip . . . what else do you think we should shut down?"

"I don't want to turn off the radio, because it takes too much battery to re-start later. About the only non-essential items I see now are these red lites for the generator and inverter."

"How long's the battery going to last this way?" Sideslip began to absorb some of Willie's concern. "Do you think we should turn the generator back on . . . just to see if it'll still make that noise?"

"No, Slipper," Willie was sure of himself. "All that noise and smoke . . . I'm leaving it off. The battery should be good for 25 or 30 minutes. We'd better be on the ground by then."

"So OK . . ." Sideslip hated to admit it, but this wasn't becoming any picnic. "You keep holding the pole and I'll find the nearest Air Force Place on this map . . . how's about Lockbourne? They've got the ramp all cluttered up with troop-haulers, but . . ."

"How far . . ."

"Oh, I'd say . . . lemme see . . . 90 miles."

They turned toward Lockbourne and Sideslip dialed in the VOR. When he was unable to get an identifier, and the off flag didn't go away, he tried Appleton and then Charleston. Still no success.

He tried to call Indianapolis Center, but got no reply. "Maybe if we just drill along here above the clouds they'll see we're off track and start calling us." Sideslip mused.

Sure enough, in a few minutes Indianapolis Center called. Sideslip advised that they were in an emergency condition and requested a radar steer to Lockbourne. Apparently Center

couldn't hear him, and continued to call. Finally Center asked them to make a turn for identification. They turned, but the center didn't see it.

"Probably can't see us without our IFF." Willie was unhappy.

"Oh, they could . . ." Sideslip replied, "but they'd have to use their primary radar . . . not just the IFF receiver."

After discussing triangles for lost communications, they decided it would be a waste of time and fuel since radar wasn't painting them. Sideslip's dead reckoning had them almost over Lockbourne, but below them the clouds were still solid. Weather at Wright-Pat had been forecast to be 2500 broken and high broken. Bunker Hill, their alternate, was about the same. Since there were no holes near Lockbourne, they continued on toward Wright-Pat, hoping they would spot a small piece of ground when they got there.

About five minutes short of Dayton, still DR'ing, they still hadn't seen a hole. Willie had been quiet for several minutes, except to comment every time he turned on boost pumps to fill the fuselage tank. Sideslip had tried to call Indianapolis Center again, but received no answer. Although they were afraid it would seriously drain the battery, he had even switched to guard channel and tried Dayton Approach Control but gave up after several calls. The transmitter just wasn't hacking it!

"We've got 212 gallons left," Willie stated pensively. "That dog-leg down to Spartanburg fixed that for us . . . and I don't feel like burning any of it trying to press on another 80 miles. We probably wouldn't see the ground at Bunker Hill either."

"I'm with you on that," Sideslip agreed. "What's your plan?"

"Well, the emergency s. altitude for 100 miles around Wright-Pat is 5000 feet. I'm for going down that far."

"By virtue of the fact that I'm looking at the back of your head-rest instead of your wingtip," Sideslip tried to sound carefree, "I'm forced to stay in trail . . . besides, it sounds like a pretty good idea."

Willie pulled back the power and started down. The cirrus was only a thousand feet thick, but they hit a lower deck at 10,000 feet. Willie gave the aircraft to Sideslip so he could look for the ground.

"It's been a while since I tried to drive around on needle, ball and intuition," Sideslip commented. "You'd better glance at the gages now and then."

"Don't worry, Slipper, don't worry."

Sideslip was still trying to correlate the rapid oscillations of the turn needle to the lazy swinging of the mag compass when he saw they were approaching 5000 feet. He increased power and leveled the bird.

"If you haven't noticed, Willie, we're still in the goo . . . got any bright ideas?"

"Yes, I do . . . the minimum safe altitude for 25 miles is 3000. I just decided that we're within 25 miles of Pat. We aren't making any money staying here."

With that, both crossed their fingers and Sideslip pulled the power back again. Just as the altimeter was approaching 3000 feet, the clouds seemed to darken and Willie saw the ground. They were at 2500 feet before they broke out. It looked like they were about 1500 feet above the ground.

"Not very impressive viz," Sideslip mumbled.

"Two to three miles at the very

it," Willie agreed. "And nothing I recognize . . . no towns, no rivers, no big highways . . ."

"...and no map!" Sideslip finished for him. "I'd give my half share in this flying circus for one mouldy old WAC chart."

"You sound like you don't feel too well, Sideslip . . . this the first time you been lost?"

"I couldn't be any loster if I'd practiced. Off hand, I think we're south of where we should be. The wind at altitude was from the north."

More on a hunch than anything else, they headed northwest, resisting all temptation to wander from heading to heading. Six or seven minutes later they spotted a small town off to the left. Willie bent the bird around and before Sideslip realized what was going on they were making a pass by the water tower.

"Back when I was stationed at Pat I knew most of these little towns, with any kind of luck I'll recognize the the name on this tower . . . did you read it?"

"I didn't get the name, but it sure looked like it had IND after it."

They were past the tower and Willie was turning back for another pass. "If that means we're in Indiana, we're at least 35 miles west of the base. Get a good look this time . . . Yup! You're right, Slipper, that sure does say Indiana!! I'm turning south."

"South??" Sideslip was startled. "Wright-Pat's east of here!"

"That's just it . . . I don't know how far east, and that little red lite for the fuel gage just came on. We've got to put this thing on a runway or step out real soon!"

"OK, OK . . . I won't argue h that, but what's south of us?"

"Poorsville, Indiana . . . right



on the state line, and it's got a little airport. There's a big highway that goes east and west thru town. If we find a good-sized highway, we'll take it east . . . and hope we can find that field before we flame out."

"And if we're already south of it???"

"I'm stowing the loose gear up here and tightening my chin strap. Let's leave the visors up until we decide to punch out. I can hardly see thru this murk as it is!"

They busied themselves preparing to eject, while both peered ahead for the highway they hoped was there. Sideslip found himself glancing more and more often at the fuselage tank gage. The highway still hadn't appeared when they decided to try calling Poorsville on guard. They had made two calls when suddenly the interphone started to fade out.

"The battery's going, Sideslip, I'm gonna try the generator... we haven't a damn thing to lose." Willie was shouting with his mask off.

Sideslip saw the generator-failure lite go out and the interphone came back . . . he waited for the noise and smoke . . .

"What in hell . . . Hey, Slipper, it looks like it's going to work for

us!" Willie was jubilant. He called Poorsville Tower and waited . . . no answer. He dejectedly made one final Mayday call in the blind and started looking for a field to eject over. Their ejection preparations were interrupted by a very weak call on Guard. It was Poorsville Tower . . . Willie replied immediately.

"Poorsville...we're Mayday-Minimum-Emergency-Fuel!!! Can you give me an immediate DF steer to a runway? Over!"

"Your signal . . . pfsszt . . . steer . . . pfsszt-zsshrrr . . ."

"Poorsville, you're very weak, too . . . we're . . . uh, believe we're northwest . . . heading south. Will have to eject in three or four minutes . . ."

"Pfszst . . . flashing runway lites . . . zsshrrr . . ."

"Hey, here's the TACAN channel in the supplement . . . turn on that good inverter . . . we've got gen . . ."

His voice faded out as the terrible grinding racket started again. Willie had hit the switch as soon as he realized what Sideslip was saying. Smoke immediately started billowing thru the cockpit.

"No good, Slipper . . . no good. I'm . . ."

"Left! Left! . . . Break left,

port!! . . . lites . . . runway . . .” Sideslip was almost incoherent as he tried to tell Willie about the runway lites he saw flashing in the gloom.

They turned the inverter off and managed to get the gear and flaps down in time to land in the first 500 feet. Although they had no trouble stopping a thousand feet from the end of the runway, Willie had the canopy open before they had slowed to forty knots.

“That smoke really burned my eyes, Slipper . . . if we’d had another mile to go I would have blown

the lid.”

“We might not have made another mile!” Sideslip was watching the fuel gage descend from five gallons toward zero. “Let’s shut this thing down and see what’s burning. I’ve got a terrible feeling that it was the inverter lite we saw when the noise started . . .”

“I was trying not to think about that, Slip . . . thanx a lot!”

When they opened the gun bay doors they found that the inverter main bearing had failed, throwing bearings and shrapnel-like pieces of the bearing race all over

the electronics bay. The shaft had become so misaligned it made a fantastic noise. Flying debris had damaged the cables coming from the standby inverter and VOR. It also damaged the UHF radio antenna lead, explaining their transmitter problems. In fact, they were fortunate that Poorsville had been able to read their signal at all.

There was nothing wrong with the generator.

Outstanding

outstanding



FLYING SAFETY OFFICER

Major Clifford Allison, Jr., of the 4453d Combat Crew Training Wing, Davis-Monthan, Air Force Base, Arizona, has been selected as the Tactical Air Command Outstanding Flight Safety Officer for the six month period ending 1 July 1965.

The mission of training students to become combat ready fighter pilots creates problems which would challenge any safety officer. Major Allison has met this challenge in an outstanding manner and has developed a flying safety program which has enabled his wing to accomplish its mission safely and effectively.

Major Allison authored a positive and carefully designed wing safety operations plan that provided excellent guidance to supervisors and safety personnel. He arranged for aircraft company sponsored briefings on the F-4C that covered such critical areas as post-stall gyrations and hydroplaning. Major Allison published Safetygrams on items requiring rapid dissemination as well as contributing regularly to the bi-monthly Wing Safety/Stan Eval publication, “Phumbs Up.” In addition, Major Allison has maintained his instructor pilot qualification in the F-4C aircraft.

These accomplishments combined with his keen insight into the Wing training program, and his unique ability to recognize potential problem areas qualify Major Allison as an Outstanding Flight Safety Officer.

Recognition

MAINTENANCE MAN OF THE MONTH

Master Sergeant Tyrus R. Newman of the 4511th Organizational Maintenance Squadron, Luke Air Force Base, Arizona, has been selected as the Tactical Air Command Maintenance Man of the Month.



CREW CHIEF OF THE MONTH

Staff Sergeant Donald O. Copsey of the 314th Troop Carrier Wing, Sewart Air Force Base, Tennessee, has been selected as the Tactical Air Command Crew Chief of the Month.

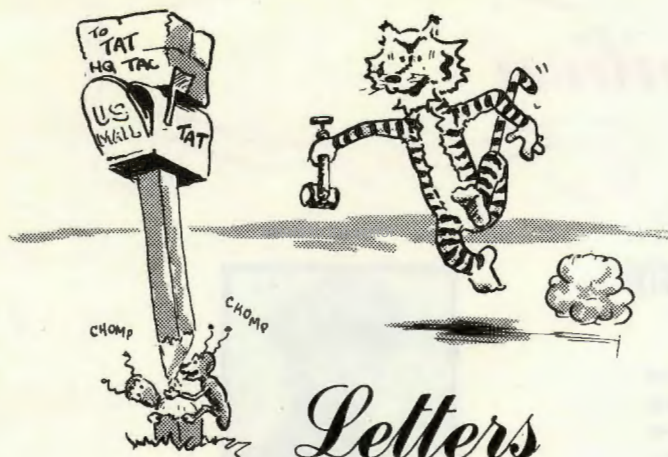
PILOT OF DISTINCTION



Captain Teddy Gay of the 354th Tactical Fighter Squadron, McConnell Air Force Base, Kansas, has been selected as a Tactical Air Command Pilot of Distinction.

As Captain Gay leveled the wings of his F-105 on a rocket pass, it rolled violently to the left. He aborted the pass and concentrated on regaining enough control to make a recovery. Captain Gay then turned off the stability augmentation system, generators, and battery, but the abrupt rolling motion continued making aircraft control extremely difficult. He determined the left spoilers were moving from down to full up at an erratic rate and interval, independent of any stick movement. A prelanding controllability check produced only marginal results. As a final measure to gain enough control for landing, Captain Gay engaged the auto-pilot system and altitude hold mode. This made control of the aircraft much easier. Leaving the auto-pilot system engaged and delicately handling the aircraft so as not to exceed the auto-pilot limits, Captain Gay completed a successful landing despite the uncontrollable spoilers.

Captain Gay's outstanding display of a manship while handling a difficult flight control emergency, qualify him as a TAC Pilot of Distinction.



to the

Editor

Dear TAT

"Nothing New from Danang" by Capt Bob Oakes in the August ATTACK is the best advice printed in recent years for the TAC fighter types. One hundred per cent of the line jocks have been screaming this for years.

The misinterpretation of the term "Flying Safety" has put the red light on most ACT programs. For too long we have put the red flag out when a troop gets into trouble during a hassel. This type corrective action only treats the effect. The cause goes on and on and on - i.e. lack of realistic training.

Let's put a big light behind the word, "Safety," that shines thru like - "Efficiency" - or - "Combat Capability" - or - "Effective Mission Accomplishment." Anyone who puts the stop on an ACT program in the "interest of safety" has put the primary mission secondary.

I haven't had my day in the bad lands as yet and if I left tomorrow I certainly would not be ready. Like so many others, I've avoided the good hassels to keep my wings, but you can be assured that I get all my shots 30 days in advance and all my laundry is marked properly.

Capt Bob Kinne
390TFS, Holloman AFB

Dear Bob -

Your comments are on target as far as I'm concerned. In the distant past too many troops let their aggressiveness overcome their good sense. Playing games instead of learning their trade and hanging with a hassel well after one party had moved into shooting position are prime examples of things that turned red lights on that program. I firmly believe some control is necessary, with proper management and a little resourcefulness this control will not compromise realistic combat training.

TAT

Dear TAT

I read an article in your publication last winter telling of a course offered to aircrews that taught how to look for other aircraft in flight. The author of the article claimed that the graduates of the course could expect to pickout fifty percent more targets after this training than beforehand.

I fly both for an airline and the Air Guard and find that I cannot identify most targets called out by Air Traffic Control Radar. It is easy to rationalize that the conflicting traffic is far above or below my altitude, but often I feel that the traffic is passing close by and the eyeball just isn't functioning properly.

Please send me any information as to the credibility and accessibility of this course.

1stLt Philip C. Ecklund
120th TFS
Buckley ANGB, Colorado

Dear Phil -

Experience is the only school I know of that teaches pilots how to spot other aircraft. The only article we published on that subject last winter made no reference to a school... must have been another mag. True, there IS a definite technique for spotting other aircraft and good eyesight alone doesn't make the difference. Some F-86 pilots flew a whole tour in Korea without ever seeing a MIG while others spotted them quite frequently. Being of the latter group, I can safely pass on my technique. Frequently move about in the cockpit to keep from hiding things behind aircraft structure, focus on a cloud or other distant object before starting a scan. Focus on a closer cloud, or aircraft and make an additional scan. Make a cross check inside the cockpit, refocus on a distant object and repeat the cycle.

TAT

TAC TALLY

A COMPARISON OF TACTICAL AIR COMMAND ORGANIZATIONS

AUG TALLY

MAJOR ACDNT RATE

TYPE	1965*	1964
TAC	9.9	10.5
A-1	25.8	10.7
F-4	11.7	4.9
F-5	30.9	0
F-84	11.6	16.1
F-86	56.4	13.4
F-100	13.6	17.8
F-101	0	20.1
F-104	27.4	12.1
F-105	23.5	26.7
B-26	0	76.0
B-57	16.1	0
B-66	0	0
T-29/C-131	0	0
T-33	0	0
T-39	0	0
C-47	0	0
C-54	0	0
C/KC-97	10.6	15.3
C-119	1.8	1.9
C-123	7.1	5.6
C-130	2.0	1.2
U-3	0	0
U-10	0	17.2
O-1	0	0

ACCIDENT FREE

MAJOR & MINOR

JET

ACTIVE	MONTHS		ANG
354TFW	6	18	108TFW
8TFW	3	8	126ARW

CONVENTIONAL

ACTIVE			RESERVE
4500ABW	50	105	434TCW
4442CCTG	33	66	435TCW

UNIT	MAJOR	MINOR
131TFW	1	
102TFW		1
4520CCTW	2	
4TFW	1	
4411CCTG		1
355TFW		1
474TFW	1	
15TFW	1	

The Tally for the eighth month of the year was six major accidents, half as many minors. One pilot was killed when he tried a low altitude roll in his F-100D. An F-100C pilot ejected safely after a violent explosion was followed by fire and overheat warning lights and loss of engine thrust during takeoff.

An F-4C received major damage when it went off a slick runway on landing.

Loss of utility pressure and a left main gear that would not come down led an F-86F pilot to attempt his landing on a foamed strip. The aircraft slid off the runway and received major damage when the nose gear collapsed. An F-86H lost utility hydraulic pressure and left brake during landing. The bird received minor damage when it went off the right side of the runway.

An F-105D was destroyed by fire when the pilot raised the gear too soon on takeoff. Another D had the right 450 collapse during letdown. The tail of the tank came off, causing minor damage to the aft fuselage. A Thunderchief B model pilot heard a clunk as the controls froze and RPM went to zero. He tried two airtasks before ejecting successfully.

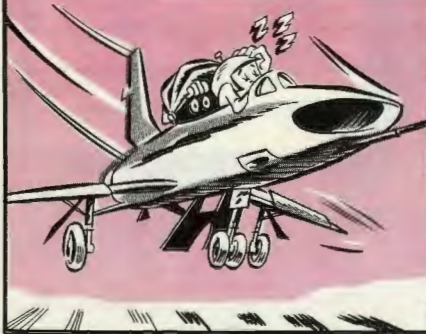
The pilot of an F-101F landed with an unsafe gear indication after using the emergency gear lowering system and getting a visual check from mobile. At about 80 knots, the gear collapsed and the bird slid to a stop with minor damage.

*1 JAN -31 AUG 1965

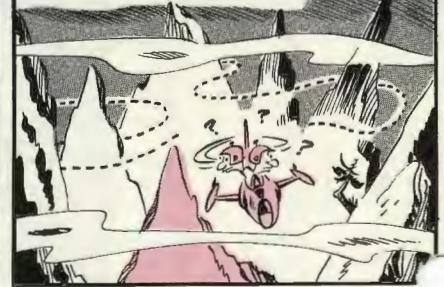
ates are estimated where ANG acft are involved
due to non-receipt of ANG figures at presstime.



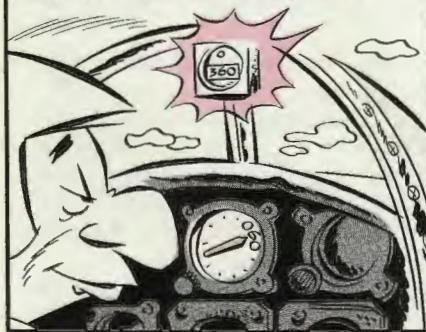
PRACTICE BUILDS CONFIDENCE AND COMPETENCE, BUT WATCH OUT FOR COMPLACENCY!



REMEMBER THAT SIDs DON'T GUARANTEE TERRAIN CLEARANCE, NOR DOES A RADAR MONITORED DEPARTURE. YOU HAVE TO PLAN THE DEPARTURE ROUTE TO CLEAR THE HIGHEST OBSTACLES !!



SOME PILOTS HAVE BEEN KNOWN TO FLY OUT THEIR FUEL WITHOUT CHECKING THEIR HEADING INDICATOR AGAINST THE WHISKY COMPASS!



A MISREAD OR MISSET ALTIMETER CAN GET THE BEST GAGE GAZERS INTO TROUBLE - SO CROSSCHECKING YOUR CABIN ALTIMETER ON EACH LETDOWN MAY AVOID EMBARRASSMENT!



LOST COMMUNICATIONS PROCEDURES, MISSED APPROACH INSTRUCTIONS AND MINIMUM SAFE ALTITUDES SHOULD BE STUDIED BEFOREHAND TO SAVE!! PANIC !!



FUEL TO GET TO YOUR ALTERNATE IS LIKE MONEY IN THE BANK - BUT MAKE SURE YOU CHECK YOUR NOTAMS, FLIP AND ENROUTE SUPPLEMENTS SO YOU DON'T SPEND IT FOOLISHLY!

