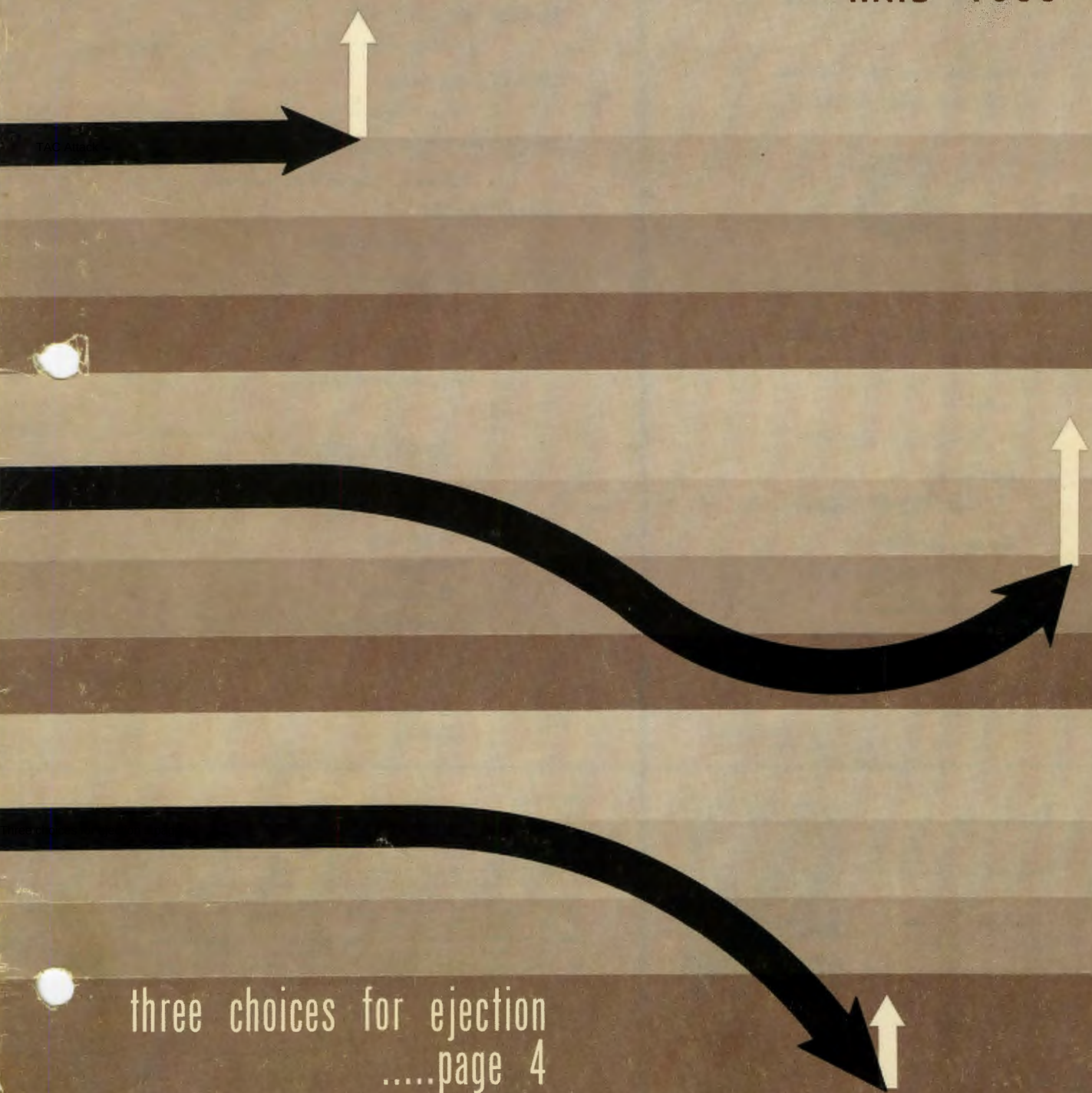
TAC ATTACK

MAY 1966



three choices for ejection

.....page 4

for efficient tactical air power

VOL. 6 NO. 5

TAC ATTACK

MAY 1966

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current interest

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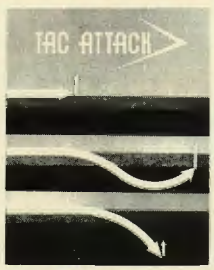
THE COVER

Three choices for ejection

..... pg 4



TACRP 127-1

Distribution F, Controlled by OSEPA - TAC Publications Bulletin No. 40, dated 6 October 1965

Angle of ATTACK

IT'S YOUR RESPONSIBILITY TOO...

Merely advertising and talking safety does not insure accident prevention, nor does the presence of a safety officer in the unit guarantee an effective safety program. Every member of Tactical Air Command must actively work toward conserving our resources. Our combined effort must be directed toward recognizing deficiencies in equipment, procedures, and personnel . . . and then correcting them.

No matter how carefully a safety program is written or administered it will not succeed unless it is a functional part of every element of a unit. Sound maintenance on the flight line and in the shops, aggressive supervision in the squadrons and flights, comprehensive training programs, and unit wide response to the demands of the flying requirements are basic to a successful aircraft accident prevention program. As a rule, if you give a pilot a well maintained aircraft and put him in a healthy operational atmosphere, he will successfully complete his mission. If command and control at all levels is properly oriented and applied, it will create the necessary healthy atmosphere.

Only complete dedication and untiring effort by each member of TAC can produce the goal for which we strive . . . complete elimination of accidents. An accident, regardless of its cause, has a catastrophic effect upon a commander and his unit. It is glaring evidence that all support and supervisory echelons have not made accident prevention an inherent part of their daily routine . . . naturally, critical attention first goes to the unit concerned.

No matter how well a safety program is written, it will not be completely effective until every man, from the commander to the fuel truck driver, makes accident prevention an integral part of his job without having to call it safety.

Gust Askounis

GUST ASKOUNIS, Colonel, USAF
Chief of Safety

Many, many words have been written about ejection since pilots first started strapping themselves into boom-buckets. Safety magazines, tech orders, study guides, and PIF items all have had a go at it. Unfortunately, they have not all been good words... some were misleading, some were confusing, some downright inaccurate. And as a result, a lot of us have carried misinformation around with us as the basis for the decisions we'll make in the few seconds before we pull the handle. No one knows how many pilots have made the wrong decision... and died because they were misinformed.

The article below was originally published in AIRSCOOP, the USAFE safety magazine. It is the best discussion of low altitude ejection we've seen... factual, straight forward and convincing. Read it carefully, think about it, re-read it, and discuss it. Make certain you understand it. THESE WORDS MAY SAVE YOUR LIFE. –Ed

3 CHOICES

You are on a go-around for a closed pattern and full-stop landing. You pull up to a downwind, stabilize your airspeed just below gear lowering speed, are about halfway down the field when the engine flames out! There is no chance of bending it around for a deadstick. Explain exactly what you would do.

Be careful with your answers. Do not be quick and flippant. Think out each step. You might even jot down the sequence so you can see how well you understand the problem we are about to discuss.

First, if you have the gross misimpression that "every fighter pilot in the world knows what he would do under those circumstances," we would like to shock you back into reality.

Within a period of 30 days, Air Force had two accidents that, for all practical purposes, fit these conditions.

– Both of the aircraft were destroyed and both of the pilots are dead.

– Both pilots attempted ejection and both pilots died from the same cause. They each hit the ground with an unopened parachute.

– Both had a 100 per cent successful escape capability.

– Neither understood the circumstances he was in and neither reacted correctly.

– Neither pilot need have died.

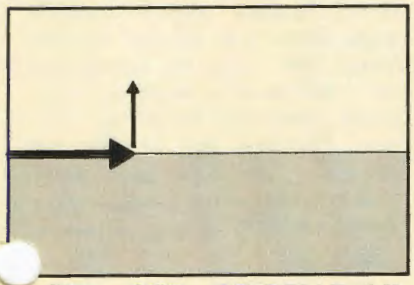
Keep in mind what you have already stated you would do. Now let's discuss it.

To begin with, let's say you elected to attempt an airstart and the engine restarted immediately with full response. Obviously there is no need for further comment.

The important case, of course, is where either the engine would not relight or no relight attempt was even considered. This brings us down to the options we have. There might be all sorts of extenuating circumstances we could crank in; but trying to keep it fairly straightforward, we have three general courses of action. **Two will work . . . one will kill you.**

Let's discuss the options available to us. The actual decision, of course, must be based on the actual circumstances.

CHOICE ONE



GET OUT IMMEDIATELY. Perhaps this is your plan. Maybe you have long ago made up your mind that if your machine ever quits at traffic pattern altitude and airspeed, your obligations to that machine are over! Your one concern will be a safe escape. The minute she starts to unwind; out you'll go!

No one in his right mind could criticize you . . . except perhaps the way that you got out. If you did nothing except let go of the stick, pull the handles and squeeze the trigger, you'd make it nicely . . . although it's not the smartest thing you could do.

The reason why it isn't smart is because you are not playing your whole hand. You have more going for you and you haven't used it . . . and you don't know what may be against you.

For example, you'd make it okay if you immediately ejected and everything went as advertised. But in the excitement, what if you had trouble finding the triggers? Or what if your lap belt inadvertently came open . . . negating the automatic features of the parachute? Now time is close . . . you may not have enough. If your plan is to get out immediately, what you should do first is pull back on the stick and set up a zoom . . . 10 to 30 degrees will do nicely . . . then step out. Note: We did not say zoom for altitude (one of the most misunderstood principles of ejection). You establish the zoom for the UP VECTOR and you have that the moment you have the zoom angle.

(Yes! This is one of the most misunderstood principles of ejection. The important word here is VECTOR . . . defined as a quantity, such as a force or velocity, having both magnitude and direction. It is not static. The zoom angle will give you an up vector only if you have sufficient airspeed . . . the 220 KIAS assumed below. Pitch angle alone will not give you an up vector. The angle must be coupled with enough energy to give it magnitude in the desired direction . . . UP! Think VECTOR, not angle! –Ed.)

Let's see what a zoom of only 20 degrees does for you. In the chart below we've computed two situations. One is ejecting from a straight and level aircraft and the other is a 20 degree zoom:

The most significant difference is that the 20 degree zoom would give nearly five seconds of additional time.

	Straight & Level	20 Degree Zoom
Initial UP Vector	120 ft/sec (seat only)	188 ft/sec (seat plus zoom)
Altitude Gained	228 ft	665 ft
*Time	7.5 sec	12.2 sec

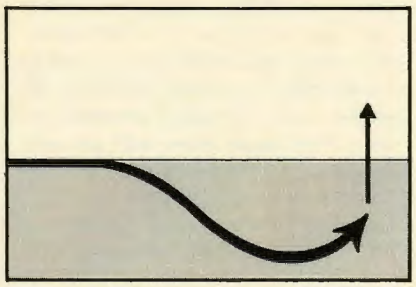
* This is the time it will take from the moment of ejection to the peak altitude, and free fall back to the original altitude at which ejection occurred (parachute not deployed).

If you want to check our figures, we assumed:

- 120 ft/sec rocket seat boost in both cases.
- 220 KIAS for the straight and level bird.
- 180 KIAS for the zooming bird, saying 40 knots would be lost establishing the zoom.
- No parachute opening.
- Seat separation occurred at peak altitude in both cases.

(These figures are representative for a rocket-seat equipped century bird. If you're riding a ballistic seat, the boost will be about half of the 120 ft/sec you get from the rocket, compressing the entire situation. In any event, these are arbitrary and not intended to be exact for any one airplane, but the message applies to all! – Ed.)

CHOICE TWO



ATTEMPT AN AIRSTART... WHILE MAINTAINING EJECTION CAPABILITY.

Perhaps your plan would be to give it the old college try... see if you can get the machine going again so you can land as you had originally intended.

But while making the airstart attempt, you would make sure you could always safely eject. By definition then, this plan will certainly work. And the best way to accomplish this feat is to MAINTAIN ZOOM POTENTIAL.

The big question here is: How do you maintain zoom potential? Success depends on your knowledge and understanding of what you are doing. Let's go through the problem.

There is only one way to maintain zoom potential with a flameout... that is with AIRSPEED. And there is only one way to maintain airspeed... that is to DESCEND. The immediate concern, of course, is how long can you descend from traffic pattern altitude? The answer is easy enough to compute. We'll start by assuming we want to keep all the zoom capability we had at the time of flameout. This means we want to keep our 220 knots. You could probably do this with a 5000 ft/min rate of descent. Some century series aircraft will take a little more than this and some a little less. But 5000 ft/min is a ball park figure.

A descent of 5000 ft/min is about 80 ft/sec. If we were at 1500 ft when flameout occurred, we could descend for 19 seconds before we reached the ground. Naturally, we can't wait until then, so let's save the last five seconds for the zoom maneuver. This means we have 14 seconds maximum from flameout until we must zoom and eject. We can use the 14 seconds for anything we want. This does not mean that you must use the 14 seconds. It means that you can safely use all the 14 seconds and then zoom and eject. You will have a completely blossomed chute above original ejection altitude. But let's go back for a moment and take another look at the descent.

To a person who doesn't understand the principles of ejection... a person who has been brainwashed with the inaccurate information that "altitude" is the most important factor in ejection; a descent might seem like the wrong thing to do. It is not. It is the only way to insure your safety.

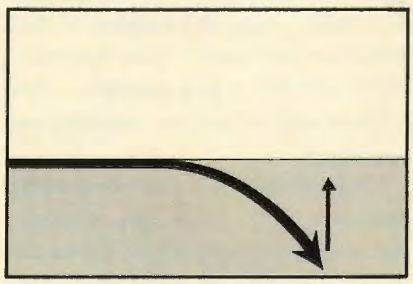
We are not necessarily advocating using the entire 14 seconds and staying with the bird all the way. That decision must be left to the pilot and based on the circumstances of the moment. We merely emphasize that you can use all 14 seconds if you choose.

A pilot may try only one or two airstarts... or use up five or six seconds just analyzing the problem. He has 14 seconds. If he zooms and booms any time before the 14 seconds, his parachute descent will be a little longer. His ejection won't be any more of a success.

But here is one of the most important facts of the zoom to have firmly entrenched in your mind. Zoom for an UP VECTOR, not altitude. This means the instant the zoom angle is established... GO! The sooner the better. Do not wait for the aircraft to gain altitude. In order for the aircraft to gain altitude it must slow down. The rate of climb decreases and it is rate of climb that you want most.

(The altitude you could gain at 180 KIAS is negligible. And depending on your weight, you rapidly come perilously close to the point where you stop climbing, airspeed continues to decrease, and your up vector becomes negative... you're going down! Now you are not only losing what little you gained, you have introduced a negative vector which counteracts the UP of your seat. Therefore, rate of climb, not altitude, is the most certain asset. Grab it while it's at maximum value! Think VECTOR, energy, magnitude! —Ed.)

CHOICE THREE



KEEP YOUR ALTITUDE AS LONG AS POSSIBLE WHILE TRYING TO GET THE BIRD GOING.

If this is your plan then we sincerely hope that you never, ever, are in such a situation. If you make it, chalk it up to sheer luck... not your knowledge of the problem. This one is the killer. This is how we lose them.

The sequence is tragically simple. When the engine flames out, there is, of course, cockpit confusion and a degree of panic... that's true in every case. The pilot makes a valiant attempt to get the trouble corrected while he fully appreciates how close he is to the ground.

In the process, the pilot eases back on the stick so he won't lose what "precious" altitude he has left. The only way he can maintain altitude is to increase his angle of attack. This, in turn, creates a hugh increase in induced drag and in a few scant seconds he notices a dangerously low airspeed. Our pilot now has no choice but to dump the nose. Only all this does is maintain the same low airspeed. He's on the elevator DOWN... and he has no idea how fast. The vertical speed will peg almost immediately and he has no way of knowing whether his rate of descent is 6000 ft/min or 16,000 ft/min.

If he pulls back on the stick he will hardly notice any difference. What little airspeed he had will be gobbled up and the aircraft will either stall or slop into another form of high sink rate.

Let's say a pilot quickly realizes what has happened and decides to leave while still at 900 feet. Let's also assume he's in the stall or high sink rate condition of 10,000 ft/min. Give him three seconds to make up his mind to go, pull the seat handles and squeeze the trigger... that's fast.

But 10,000 ft/min is 170 ft/sec and he has already lost 510 feet... with 390 feet left. He ejects but his rocket seat only serves to decrease his initial sink rate from minus 170 ft/sec to minus 50 ft/sec. In that airstream a chute will take 4 1/2 seconds to blossom. Let's see how our pilot does:

Time After Ejection	Rate of Descent	Altitude
1 sec	50 ft/sec	340 ft
2 sec	76 ft/sec	264 ft
3 sec	82 ft/sec	182 ft
4 sec	96 ft/sec	86 ft
4½ sec	104 ft/sec	34 ft

Okay, he lost 510 feet in the pre-ejection action, so 510 plus 356 equals 866 feet. He has 34 feet to spare when the parachute opens. He started at 900 feet.

In reality, most of the pilots who get into this trap don't realize what is happening until they are well into the IMPOSSIBLE range. There is no getting out.

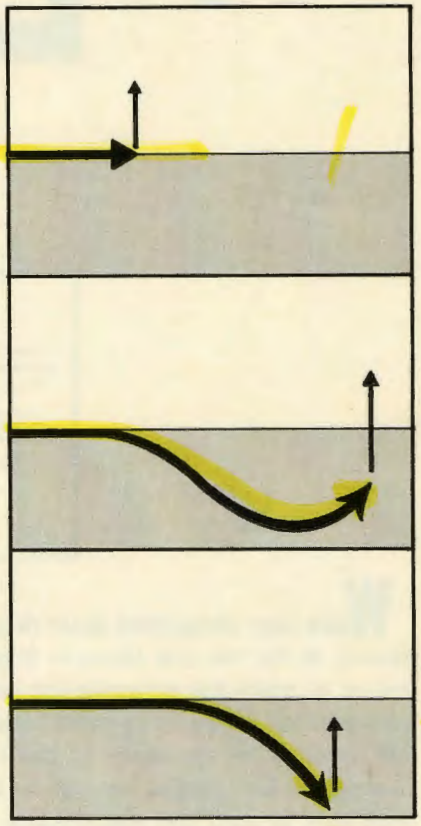
To be sure, we are getting higher boost ejection seats and faster-acting equipment and all this will be a great help... but it will not solve this problem. It will only shrink the limits a bit.

Each new fatality from improper knowledge of ejection is a heartbreaker.

SELF EVALUATION

Well, how did you do? Did you have the right plan? Did you have a plan at all? For now is the time to have it all worked out... not after it happens.

A pilot, unfortunately, doesn't have much control over the reliability of his engine. But he has a great deal of control over ejection situations. In this discussion we've said there are three choices when the engine flames out at traffic pattern altitude. There should be only one action. You start with an ace-in-the-hole,... ZOOM POTENTIAL... keep it!

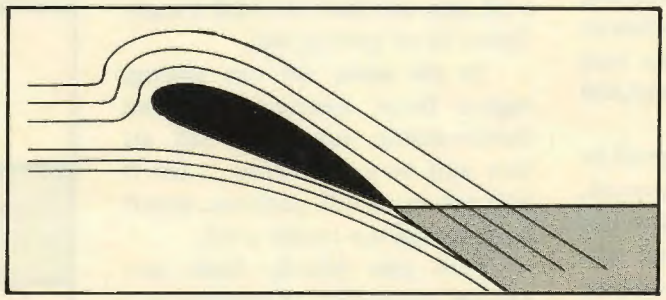


As we go to press, we must admit a heartbreaking failure of our educational efforts... because we were not in time. This article was written, printed, and in the process of being published when USAFE experienced a major aircraft accident that fits the picture exactly.

The pilot used Choice III... he's dead.

If you fly an ejection seat... please re-read this.

A 2ND LOOK



When they completed their range period, the flight joined up for the trip home in formation. Lead fishtailed to move his wingman out into loose formation and started a turn away from him. Wingman, caught off balance at the start of the turn, tracked Lead through a full circle, moved to the inside briefly, slid back in trail and was slightly outside when Lead rolled to the inside of the turn.

Just a bit behind the action, Wingman found himself inverted and slightly above Lead who was completing his roll. Unsure whether to continue the roll or try something else, Wingman hesitated ... and then started to worry about losing sight of his leader. His worries quickly disappeared when he found himself pointing steeply down, heading about 90 degrees to the rest of the flight, with both windscreen and canopy full of desert.

Some serious back pressure on the stick produced a change in attitude toward the horizon ... and a great deal of buffet, wing rock, and streamers from the wing tips. The very brief remainder of the flight raced thru momentary relaxation of back stick, re-application, 7000 feet observed on the altimeter, concern about the proximity of the 4000 foot terrain, apparent lack of improvement in pitch attitude ... and ejection!

The empty airplane went into a lazy left turn, almost leveled, and crashed into a valley nearby.

The accident report directed most of its attention to the actual control Wingman exerted over his machine and his preparation for the predicament he found himself in. It said that through misapplication of controls, he "placed himself in a critical flight attitude from which he could not recover." In effect, when he was inverted with the nose of the bird dishi pretty wide he hesitated, allowed more time for the

arc his nose was describing to enlarge, and found himself coming over the top of a clover leaf. He had about 6000 feet above the terrain, a 90 degree dive, and 250 knots. The board found a chart that said recovery could be completed in 4500 feet ... and decided "correct dive recovery techniques were not employed."

Wingman was an IP who regularly and frequently flew with students in the airplane. The board looked into his training for maximum performance maneuvers and got the impression that there wasn't really much of it going on. They learned that air combat tactics were receiving more and more attention in the training program, but found little evidence of specific training to prepare students ... or instructors ... "for maneuvers approaching maximum performance of the aircraft."

The board concluded that "knowledge of maximum (sic) turn radius, the relationship of airspeed, G loading, and angle of attack to maximum performance pullouts, was not emphasized or demonstrated during the IP upgrading program, nor was this information at the pilot's disposal during his difficulty."

Contributing to the accident, the report said, was the instructor pilot training course, in that it "is not specific in directing that pilots in this course demonstrate proficiency and knowledge in ... flight characteristics beyond normal precision acrobatics."

A second look at the report leaves you wondering how many of us really understand what maximum performance means in contemporary fighter aircraft.

The pilot apparently had not been very close to max performance either in his flight manual or in the airplane. When he became really concerned about his closure rate with the desert, he hauled back on the stick and felt the bird "shudder." Sensing that the buffet meant he was applying too much positive G, he relaxed back pressure. But this left him staring at the desert and the cactus was only getting larger. He reefed back on the stick again and this time encountered wing rock. This, he reasoned, was "indicative of post-stall gyration," so he pushed the stick forward and set about the business of ejecting.

In fact, when he first encountered the "shudder" he was probably entering the area of flight where he could get maximum turn from his bird. His airspeed at the time made about four G available to him before stall, and the buffet should have reached a moderate value before he entered the region of accelerated stall where his turn would start to deteriorate. Wing rock, too, would build up in the pre-stall, max turn area and progress to a fairly high frequency, large amplitude roll oscillation in the accelerated stall. Had he reached the post-stall condition he was worried about, he would have encountered a tumbling motion about all three axes which is significantly different from the "both wings rocked" situation he described.

In questioning expert witnesses ... senior instructors in the program ... the board brought the discussion around to zero airspeed, rudder rolls below 100 knots, and similar maneuvers which are of no value and have no significance in any fighter more recent than the Mustang. They did not inquire about Wingman's understanding of the dive recovery charts in the handbook, or his knowledge of the best dive recovery technique. The report quoted a chart from the Dash One to show that the pilot could have recovered from his dive. But the chart was based on a six G pullout ... about 165 per cent of the four G available before stall at 250 knots in this particular airplane! The report contained no discussion of G-onset or pitch rate in relation to dive recovery.

The people who investigated this accident were high-experience, high-competence people in the fighter pilot training business ... it follows that their approach reflects the attitudes and opinions of the majority of us who grew up in a fighter pilot environment. The board's conclusions may shed some light on our general frame of mind: They acknowledged that the training program had short changed the pilot on basic understanding of the aerodynamics that made him fly ... or not fly. But they only recommended that the instructor pilot course be changed to "specify maneuvers to be performed for more complete familiarization" with the flight characteristics of the airplane. They did not mention any requirement that the trainee, whether an initial check-out or upgrading to instructor status, understand the basic principles of aerodynamics so that terms like max performance, angle of attack, pitch rate, buffet, or post-stall gyration would be truly meaningful to him.

Do we really think we need only demonstrate maneuvers in teaching a man to use efficiently the full capabilities of his fighter? Are we convinced that we do not need a greater understanding of aerodynamics ... the foundation of our business of making airplanes work for us ... thru serious study of the technical fundamentals of flying?

By - Lt Col Paul L. Smith
Hq TAC Office of Safety

SUPPORT FROM THE TOP

We have all known for a long time that without the support of the commander our Safety Program just doesn't function. When the old man gets behind the safety officer, accident rates go down, unsafe practices decrease, and the whole base operates a lot more safely.

With the beginning of Mission Safety 70 we really have the horsepower on our side. When the President said that he desires a 30 per cent reduction in overall accidental losses by 1970, you can be certain he got the attention of every military commander down the line. As Commander-in-Chief of the Armed Forces he is the apex of service authority. He has recognized the terrible loss in men and equipment that we experience each year from accidents. In dollar costs these losses represent a substantial and needless waste of our tax dollars. It is our task to implement Mission Safety 70 immediately and aim for even greater reductions than those established in the basic program.

To begin a program we must recognize our problem. In this case, to more easily define the actions needed, I recommend we separate our problems into the three functional areas of accident prevention: flight, ground, and missile/explosive/nuclear.

Problem areas again can be broken down into long-term, seasonal, and short-term hazards. For example, a long-term problem in flight safety is the constant decrease in skill level of our pilots, maintenance people, and support types. A seasonal item is winter icing, or summer thunderstorm flying. Examples of short-term problems are taxi hazards due to construction, or more specifically, a recent flooding of the weapons ranges at one of our western bases that made clean-up difficult.

Now that the problem types are defined, how about some answers? To counter the decreasing skill level problem, increased training and close supervision are definitely required. For the recurring seasonal problems of icing or thunderstorm flying, timely advertising alerts the people you need to reach. For the short-term category, close supervision of night lighting, hazard diagrams in base ops and briefing rooms, and word-of-mouth communication will handle the taxi hazard problem. On the weapons range flooding, the unit temporarily backed up the foul line to 2,000 feet until they could clear the range. Sound sensible to you? That's what safety really amounts to... Common Sense. And Common Sense is what we need to apply in large amounts to make Mission Safety 70 an effective accident prevention program.

Let's look at the other functional areas of safety. For instance, long-term goals in ground safety include improvement of existing hazards such as narrow roads, heavy vehicle traffic, devious traffic routes, lack of adequate traffic signs, and weak enforcement of traffic laws. Solution of these long-term problems again amounts to getting the word to the individual so he can guard against an accident in these hazard areas by practicing defense driving. It also involves continuing contact with local authorities. Ice and wet roads are seasonal problems, and short-term problems are temporary road construction, or large exercises involving vehicular traffic and your people. Again, the important thing is to get the word to the troops.

In the missile area, the decreased experience level of personnel with its resultant assembly problems is obviously a long-term problem. In explosives safety, flight line handling is a continuing problem and falls into the long-term problem area. Short-term problems can result from a special exercise in which large amounts, or unusual types of explosives are involved. In the nuclear area of safety, a short-term problem can involve special airlift of weapons for a contingency operation.

You may ask what's different about this approach. These are all problems that a safety officer should recognize. They are

zards he should do something about. The difference, I think, is in the type of approach we use to get the ungarbled word to the individual.

I recommend that the Safety Office identify its long-term, seasonal, and short-term problem areas and then bring them to the attention of the unit commander on a monthly basis by means of a hand out sheet. In this manner Flight Safety will discuss its increased foul line needs during the rainy season. Ground Safety will discuss driving on icy roads. Explosive Safety will discuss a forthcoming exercise. Nuclear Safety can review Human Reliability problems periodically, and Missile Safety the early-burst problems. TAC squadron commanders would probably get hand out sheets on all the areas of safety. The transportation commander, however, would probably see only the hand out on defensive driving. The hospital commander may be interested only in the nuclear portion. By providing the information to commanders we have gone back to the precept we talked about at the beginning. Get the boss behind the program! Also, Commander's Call is one of the best ways to get the message to all our people . . . and, because it is the commander talking instead of the safety officer, the emphasis and impact is far greater.

If we can get commanders behind Mission Safety 70, I am convinced that TAC can reduce accident rates by more than 5 per cent a year. Let's do it!

Identify your problems, program a presentation on each area of safety for your commander, give him the word and then watch your safety posture improve. ght even get you promoted!

Outstanding Air Force Reserve Wing

Brig. Gen. Tom E. Marchbanks, Commander, 433d Troop Carrier Wing, Kelly AFB, received the Air Force Association's Outstanding Air Force Reserve Wing Award for 1965 from Lt. Gen. A. P. Clark, Vice Commander, TAC, during ceremonies at the Air Force Association National Convention held recently in Dallas. General Marchbanks accepted the AFA award for tactical excellence on behalf of his wing. The 433d TCW is also the first Air Force Reserve unit to be awarded the Air Force Outstanding Unit Award.

CREW COORDINATION

Happily, this incident occurred at a time and in sufficient airspace to avoid tragedy. Two minutes later the results could have been catastrophic.

A C-119 pilot on a night weather GCA, ceiling 300 feet and visibility 1/2 mile in drizzle and fog, turned left to intercept the centerline just prior to starting descent on the glidepath. The control wheel jammed, and the pilot was unable to roll right to return to level flight. The aircraft completed a 360 degree turn before the cause was discovered. The co-pilot's free-swinging C-4 spotlight was wedged between the yoke and the wheel. The cracking of the spotlight case under the pilot's increased pressure on the controls finally alerted the untidy co-pilot and identified the culprit. To free the jammed wheel, the pilot rolled farther to the left; and control was normal after the spotlight was removed.

Re-enact the same incident about two minutes later during the final stages of the GCA as the pilot breaks out of the low overcas the right of the runway and transitions to contact flight. As he picks up the approach and runway lights, he turns left to line up for touchdown . . . and turns . . . and turns. If his exceptional flying skill and correct power application can keep the turn level or climbing, the 1/2 mile visibility and unseen obstructions will probably get him.

Crew coordination is a difficult term to define. At times, it is easier and more significant to explain crew coordination by relating examples of its omission. But for the timing and terrain clearance, this uncoordinated aircrew escaped the end product of failure in a multi-place aircraft to fulfill an individual responsibility. Crew coordination begins with a realization on the part of each crewmember of his individual obligation for the lives and well-being of the entire crew.

FLYING SAFETY AWARDS

363 TACTICAL RECONNAISSANCE WING, SHAW AFB

481 TACTICAL FIGHTER SQUADRON, CANNON AFB

516 TROOP CARRIER WING, DYESS AFB

434 TROOP CARRIER WING, BAKALAR AFB

349 TROOP CARRIER WING, HAMILTON AFB

4510 COMBAT CREW TRAINING WING, LUKE AFB

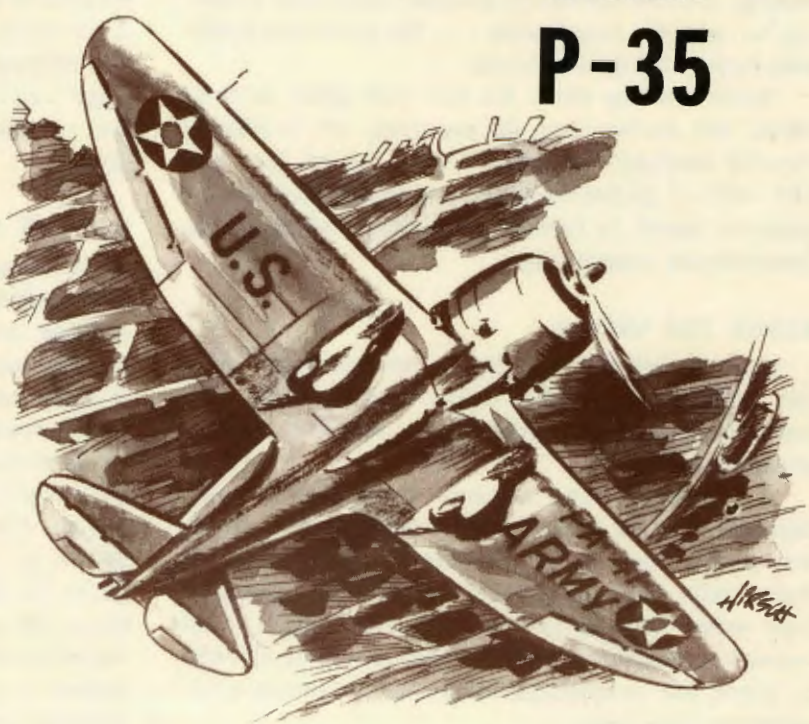
The PEASHOOTERS

SEVERSKY P-35

Seversky introduced new standards of performance for our fighters in 1936 with the aerodynamically sophisticated all metal P-35. Highly maneuverable, and with good visibility and fire power, it was a military pilot's dream. A total of 136 P-35s and P-35As were procured by the Army. Civilian models established a number of world speed and cross country records.

Seversky later became the Republic Aircraft Corporation, making the P-35 the direct ancestor of the famous P-47 Thunderbolt, F-84 Thunderstreak, and the F-105 Thunderchief.

Gross Weight... 5,600 pounds
Wing Span ..... 36'
Top Speed..... 290 mph
Cruising Speed. 265 mph
Landing Speed. 80 mph
Range..... 1192 miles
Armament ..... Two .30 cal mach guns
Engine ..... Pratt & Whitney R-1830, 950 HP



CHOCK TALK

while waiting

As an F-105 slowed to 40 knots on landing roll, the pilot engaged the nose wheel steering for directional control. The nose wheel went to full left travel when he applied slight left rudder pressure. The pilot stopped the bird with normal braking just as his left main gear entered the grass shoulder of the runway.

When the maintenance types dug into the problem, they found the cannon plug on cable assembly P/N THM 33147 was disconnected at the follow-up potentiometer. This plug is not designed for safety wiring, and the pilot had operational nose wheel steering on takeoff. Conclusion . . . the connector probably backed off during flight.

While waiting for a fix that will allow them to safety the cannon plug, the reporting unit is placing special emphasis on item 9 card 1-8 of T.O. 1F-105 - 6WC-1 post-pre-flight inspection. They make a physical check by turning the locking portion of the troublesome cannon plug.

check the valves

Last March we reported a problem concerning life rafts that pop out of C-130 wings in flight. The problem is almost as old as the airplane... it is also very current!

A recent overseas incident report tells of a raft that was lost in flight. Altho it was not recovered, inspectors found after landing that the remaining three rafts were packed and installed with manifold vent valves closed! In this condition, even a small amount of trapped air will expand enough at altitude to break the restraining straps and force the compartment door open.

phrozen phantom

A recent report from another command told of the first case we've seen of a drag chute freezing in the compartment of an F-4C ... and refusing to deploy when it was supposed to. If this is going to be a problem on our new and phancy Phantom, we'd all better spend some time correcting it before it costs us a bashed bird. Check the seals around the drag chute compartment doors ... if they're deteriorating, let's replace them, UR them, or both. Check local installation SOPs ... if the present procedure allows a chute to sit in the bird for any length of time when it is not going to be flown, let's change the rules. In any climate, drag chutes should be installed on preflight and removed, if unused, on postflight. But in a wet climate this should receive even stronger emphasis.

crossed connectors

A recent F-100 Unsatisfactory Report stated that it is possible to cross-connect two electrical connectors leading from the landing gear switch panel and the engine trim control panel. Investigators found it possible to forcibly cross the connectors into the wrong receptacles altho one is two-pin and the other is three-pin. The two receptacles are shown in the Illustrated Parts Breakdown, T. O. 1F-100D(1)-4, Figure 413, Indexes 6 and 10. The connectors are shown in Figure 429, Index 38, and Figure 419, Index 54. Since the connectors are the same shell size, it's possible to forcibly interchange them inadvertently. A remedial measure that has been suggested is to color code each pair of connector-receptacle units to avoid any mix-up.

...bort...cold coffee

The big many motor cruised serenely thru the night sky at FL 310. The oven worked fine and the crew's frozen steak dinners were tasty. They plugged in the hot-cup and set the timer for after-dinner coffee and cigars. Unfortunately, the hot cup shorted at the receptacle and before it could be disconnected the damage was done.

In addition to failing to heat the coffee, the shorted hot cup "cooled" the radar, pilot's attitude indicator, transponder, N-1 Compass, fuel gauges, cabin temperature control, and seat positioning switches. Of course, they could have worked around all that, but there was no hot coffee either!!

door damage

At 1.8 Mach on a test flight after periodic, the Phantom phyler noticed that the left auxiliary air door light had illuminated. He reduced power and as the bird decelerated felt a good deal of airframe vibration. The vibration stopped once he was subsonic. He called the test flight quits and landed without further incident.

Back safely on the ramp, he found door 82L hanging by its hinge fittings. Three bolts that should secure the door had been left out after engine trim and the dzus fasteners had torn out during the supersonic run. Door 82L had battered the left main gear door and the left main gear fairing door causing twenty-four manhours worth of damage. Loss of these doors has serious implications because cooling airflow around the engine is disrupted. Sustained high power settings under these conditions could cause engine damage or fire due to heat concentration. The unit recommended that any time doors 82L/R are opened, it be considered a red cross condition to insure inspection after maintenance is completed.

bombs away

The F-105 pilot had completed six passes across the range trying to deliver four practice bombs. Each time he was told no release had been observed, and of course, no spot for scoring. When he checked the bomb dispenser after landing, all four practice bombs were missing. Because the dispenser doors were open only over the range, there was little doubt they came out during his passes, but not when he wanted them to. Maintenance troubleshooters found an improperly spliced wire making an intermittent ground for the release selector valve relay. Intermittent ground ... erratic release ... fortunately, on range.

small comfort

Shortly after takeoff the Phantom phyler saw the fire warning light for number two engine come on. It went out as soon as he retarded the throttle to idle, but he shut the motor off as a precautionary measure and went home.

Maintenance investigators found the fuel line to the afterburner valve had not been properly torqued. Of course, there was only a small leak . . . and it just caused a small fire in the engine compartment!

screw loose

The two F-100s had joined in formation after completing a low approach when the wingman noticed a pylon fairing panel missing from the lead aircraft. Maintenance investigators found the forward edge of the panel had remained with the aircraft and that three 8-32 screws were installed where 10-32 screws should have been. Most probably the short screws had been installed on other edges of the panel and were torn loose in flight by the airstream.

time for a change

After fifteen minutes in the air, the '104 pilot noticed smoke and fumes in the cockpit. He turned off all electrical equipment and opened the ram air scoop. The smoke and fumes cleared out and he landed without further incident. Investigators found that the IFF blower motor had frozen and its winding had burned. Further checking revealed that the motor bearing had apparently failed.

The reporting unit, knowing the F-104 isn't a new airplane any more, requested a teardown to determine the useful life you can expect from IFF blower motors, and recommended they become time change items.

HOME of the HER

4442nd ... Sewart's

Col. Ralph E. Bullock, Commander of the 4442 CCTW, emphasizes safety, efficiency in the wing's operation.

"If you want peace, train for war." Under this motto the 4442 Combat Crew Training Wing at Sewart Air Force Base trains pilots and flight mechanics to fly the C-130 Hercules for most U. S. Air Force commands, the U. S. Navy, Marines, and Coast Guard. In addition, the wing trains C-130 crews for seven foreign Air Forces.

In an intense atmosphere of ever-increasing training loads, the 4442nd last November passed three years without an aircraft accident. As this was being written, the wing was reaching for three and one half years with over 77,000 accident-free hours.

As in any training environment, the Sewart unit's accident exposure is greater than in an operational unit. But you can't really understand the significance of Sewart's accident-free record until you can visualize the magnitude of the round-the-clock operation.

The 4442's three flying training squadrons and two maintenance squadrons operate twenty-four hours a day, seven days a week. During 1965, as the demand for C-130 crews increased, the wing almost doubled the number of aircraft it was using for training. It is now operating with 47 C-130A and C-130E aircraft.

Instructor reviews flight plan with students from Royal New Zealand Air Force.

These aircraft fly over a ten state area, using 28 airfields, both civilian and military, within a 300 mile radius of Sewart. They average twelve landings and eight instrument approaches per five-hour sortie.

In the past year, 874 student pilots and 437 student flight mechanics were graduated from the 4442nd's C-130 Advance Flying Course. The increase in instructor personnel, aircraft, and maintenance technicians was accomplished without any serious mishaps, which speaks well for the caliber of the personnel and the training they received.

The increased flying training schedule also made it necessary for the 4442nd to make arrangements to use several civilian airfields in the vicinity of Sewart for approach and landing training. Although there is no question that these fields are thoroughly safe to use, they are for the most part, shorter and narrower than most military airfields. This places greater demands on students and instructors alike. One hazard that is appreciably greater at the civilian fields is the presence of numerous light aircraft and airliners in the traffic pattern . . . in addition to several C-130s.

The record is even more impressive in view of the 4442's unique mission. Each four weeks the instructors receive a new student crew for two weeks of simulator training and two weeks of flying. Many of the students have little flying experience and

CULES

professionals

Photos courtesy Capt Len Sokol and Sewart AFB Photo Lab

most of them have never flown in a large cargo aircraft. Some are recent graduates of basic flying school and have only flown jet trainer aircraft.

These student crews, under the careful guidance of their instructors, are required to fly the greatest part of the time in the most hazardous phases of flight . . . takeoff, landing, and approaches. e wing flew a total of 43,334 takeoffs and landings and over 40,000 instrument approaches last year. This was accomplished in an area where often weather is not good, using the same minimums as a tactical unit, and without the additional assistance and safety of having a navigator crew member aboard.

The very nature of the 4442nd mission, requiring repetitious use of various aircraft systems and constant power changes, has caused them to experience turbine failures, frequent prop failures, abnormally high incidence of asymmetrical flap conditions, and numerous landing gear problems. All of this, of course, taxed the skill and ingenuity of the instructor crews and imposed a greater workload on the maintenance crews.

Without a doubt, the superb maintenance support that was provided to the flying squadrons has contributed immeasurable to the accident-free record. In recent months mission requirements dictated a substantial increase in the programmed flying hours for the wing. However, this was accomplished without sacrificing the quality of the maintenance product. The 4442's average in-commission rate for 1965 was 80.1 per cent for their C-130Es and 72.4 per cent for the C-130As.

Colonel Ralph E. Bullock's insistence on conscientious supervision at all levels of management, professional compentence on the part of instructor and aircrew personnel, efficient work practices by maintenance support units, and pride in mission fulfillment has diminished the additional hazards that always accompany greatly expanded training programs. As a result, the 4442CCTW has an enviable record.

Well done, 4442nd. . . TAC is proud of you!

cheduled maintenance is a 'round-the-clock operation at Sewart.

Early takeoffs mean earlier preflights . . . instructor and student flight mechanics give Hercules a thorough going over.

Airman Mueller's jig in use.

Old methods were hard on valve (above) and knuckles (below).

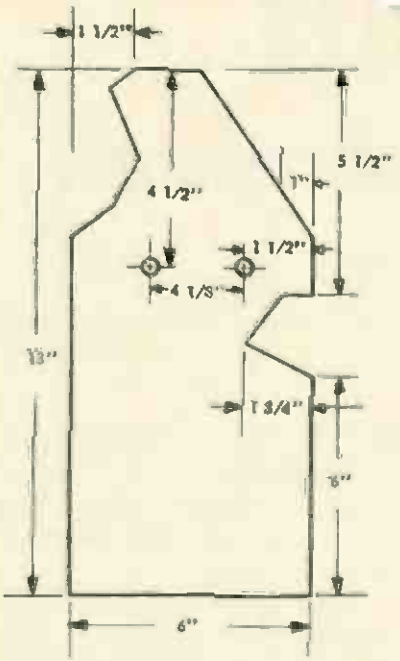
A/B IGNITER VALVE REPAIR JI

NOTE;

3/8" HOLES

R/2" THICK METAL PLATE

3/8" DIA. X 1" BOLTS



BETTER MOUSETRAP DEPARTMENT

The afterburner igniter valve on the F-100 requires periodic cleaning, repair, and inspection as most working parts *usually* do. But this *particular* valve presents a special problem in handling. It is irregular in shape and all fittings on the valve are torqued to values between 400 and 1200 inch pounds. In addition, there is no prescribed procedure for disassembly and no fixture or jig to *hold* the ignition valve while work is being performed on it. Common practice has been to clamp the valve in a vise and risk damage to the valve while fittings were loosened. An alternative, having one man hold the valve while another tried to disassemble *it*, risked more damage to hands than the valve.

Airman First Class Norbert Mueller of the 31st TFW at Homestead AFB, has devised a simple jig that will hold the ignition valve safely and securely, and allow access to all parts and *fittings*. Basically a piece of one-quarter inch boiler plate, the jig incorporates cut-outs to provide access to portions of the valve and two three-eighth inch holes to mount the valve.

Airman Mueller's Better Mousetrap can be *held* securely *in* a vise without risk of damage to the valve or hands. It may be turned as necessary to make disassembly, assembly, and safety wiring easier and faster. In fact, this simple jig may save as much as three-quarters of the *time* spent on *maintenance* and inspection of the valve.

Congratulations, Airman Mueller . . . your idea is a good one! And it can probably be adapted to other hard-to-handle items in other airplanes.

Phyllis

plays...

THE CHEAT YOU CAN'T BEAT

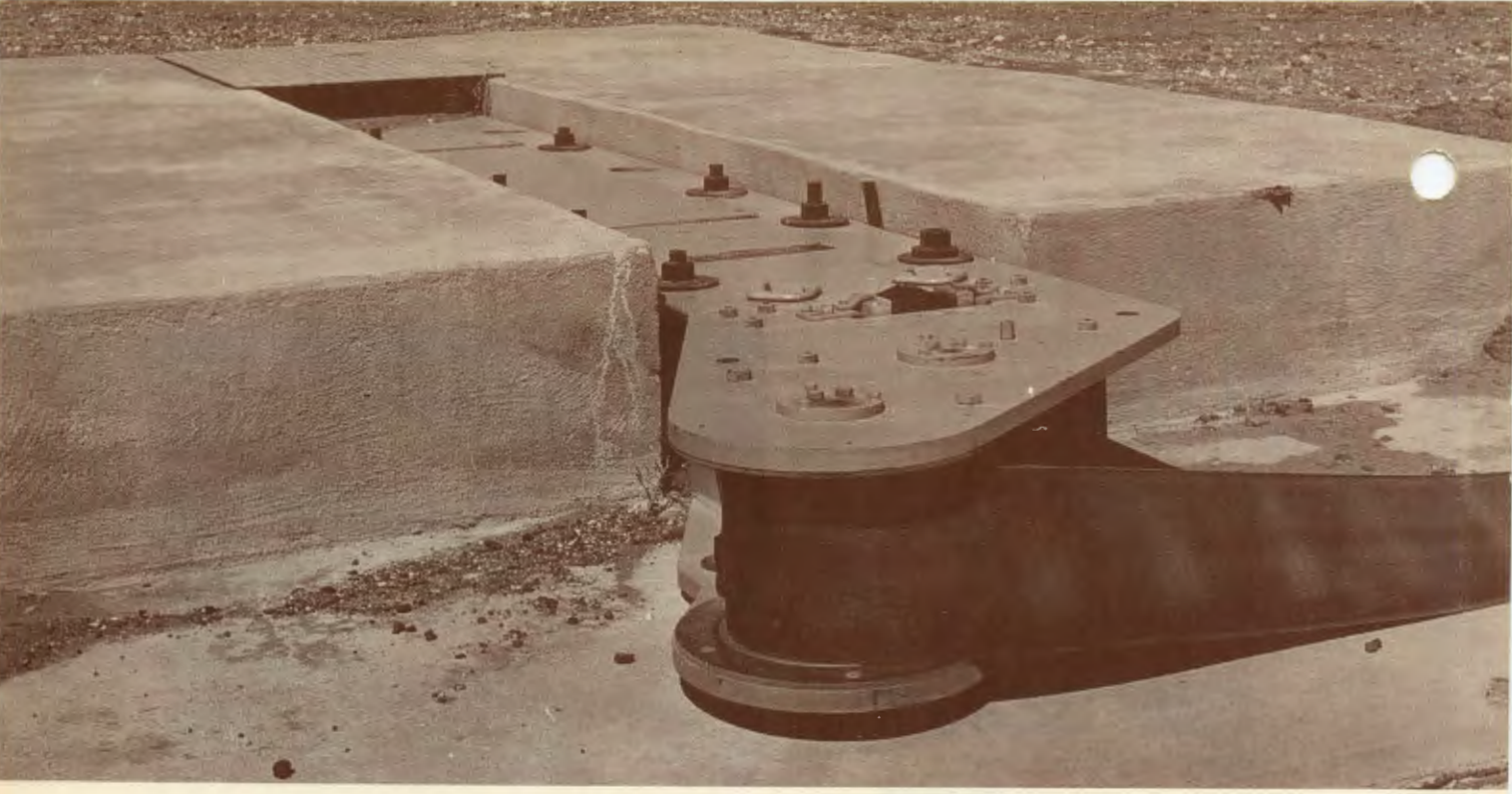
Altho spotting a card cheat is a science and whole books have been written on the subject, we'll assume you don't come up against professional cheats often enough to do you any real harm. However, there is still one cheat that will make you lose consistently... and he is the hardest one to catch. The culprit... yourself. If you are working against your own interests, you only make it easy for your opponents.

First of all, learn to properly shuffle a deck of cards. You give other players in the game numerous advantages if you don't. Cards often tend to stay together. While you may not notice it, your opponents might. Secondly, keep your hand well out of sight of the enemy. Most people don't deliberately peek, but hardly anyone can resist when the cards are practically shoved under their nose. Third, you don't have to expose your cards to kibitzers. Many a hand has been given away by an innocent (or is it?) remark or look from a bystander.

Unlike cards, proper cheating in driving is OK in my book. After all, you do have to defend yourself against all those other idiot drivers. Several months ago I told you about a way to make other drivers treat you with caution. You remember, make them think you are the idiot driver who they have to be on the qui vive for instead of vice versa. I understand that some of you could not bring yourself to try my method even though it is foolproof. So I've come up with another way to trick the other driver into thinking your mind isn't on your driving. It's easier, more fun, and just as effective.

Ready? Get a large bottle of white shoe polish, some old tin cans, and several old shoes. You can figure out what to do next, can't you? Of course, you'll need a woman in the car and something tells me your wife will refuse. I suggest you buy a life size mannequin. Why not buy several ... a blonde for Sunday, Tuesday, and Thursday... a brunette for Monday, Wednesday, and Friday ... and a redhead for Saturday night? Did you ever have it so good?

Just one word of caution. There is still one cheat you can't beat ... even on the highway. Think how silly you'd look lying in a ditch with a broken doll in your arms.



RUNWAY READY

....ORI of BAK-12 at Cannon proves value of preparedness

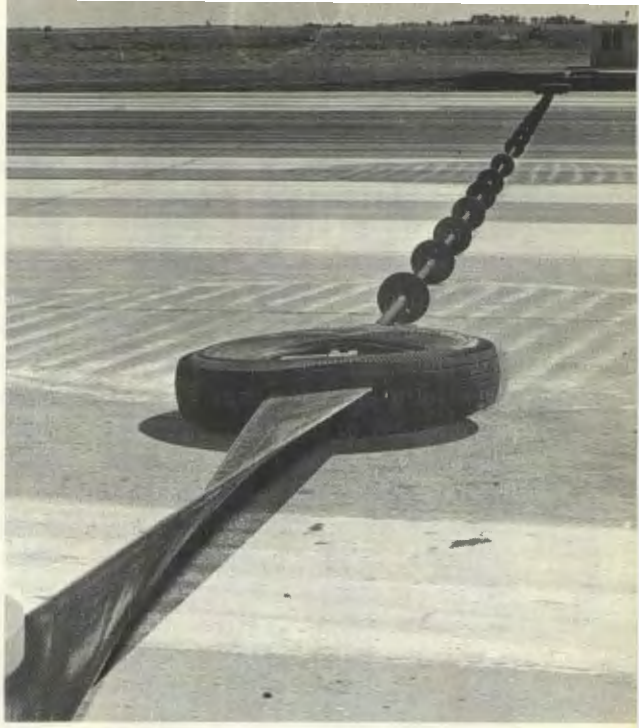
by Capt Buren G. Galbraith
and
Capt Stanley H. Wells
Office of Safety
832AD Cannon AFB, NM

Last spring we at Cannon AFB experienced two failures of our BAK-6 barrier...one at each end ... during high speed engagements. It was obvious to all that something a little better was needed to catch our F-100s safely when they ran into trouble on take-off or on a heavy-weight landing. With our 4300 foot pressure altitude and 90 degree (F) temperatures in the summer, takeoff true airspeeds frequently exceeded 190 knots. In short order we had BAK-12 barriers in place on the primary runway.

To give you an idea what the BAK-12 means to us, let's take a look at the figures in the box and try them on a warm spring day at Cannon. A little fancy slipstick work will show that on a 68 degree (F) day, the max indicated engagement speed for an F-100 is 170 knots (174 KCAS). For those of you who are so inclined, try the equation for kinetic energy, $E = \frac{WV^2}{2G}$, insert 190 knots converted to feet per second, and the max energy figure of 65×10^6 foot pounds. Solve for W and you get a shade over 40,000 pounds. This means that the BAK-12 will handle an F-100 with everything we can hang on it up to 170 knots IAS. * This even makes an approach end arrestment no sweat ...provided you touch down at a reasonable speed.

* A note of caution for you Squat Bomber and other heavy fighter types ...your max indicated engagement speed is going to be about 12 knots lower at Cannon than your normal sea level figures.

SSgt James Cordwell coordinates the tape retrieval crew as they reset the BAK-12 barrier.



BAK-12 in operational position. Second engine house is in background.

We were happy with the weight and speed capabilities of our new BAK-12, but being born skeptics and worriers, we started wondering about cycle time, or how long it takes to clear the runway and reset the barrier after an engagement. Being very sneaky fellows to boot, we decided that an ORI of the barrier was in order. The BAK-12 had been exercised only once since it was installed and this test would serve as a good operational checkout.

On a sunny afternoon a few days later, our plan was ready. The last F-100 to land in the afternoon would engage the barrier... intentionally. We had told the crash crew to expect a test, as a courtesy and because notification of a test is required by the rules. But when the time arrived, we found that they were just returning from another call... this was going to be pretty close to a real, no-notice barrier engagement!

The aircraft wheeled up to the barrier, dropped his hook, and smartly pulled out 100 feet of tape. The tower activated the primary crash net and fire vehicles, crash removal, and barrier crews decended on the end of the runway like a swarm of locusts.

Five minutes and ten seconds later the barrier was reset and the field was open for business. The five minute cycle time that the manufacturer advertises for the BAK-12 proved to be good as gold when a well trained crew is readily available.

Our entire Crash Fire Department responds to a barrier engagement. Once they have secured any fire hazard, all but one 0-11 crash truck and a control vehicle are released. At the same time, Transient Alert drops everything they're doing and responds to the scene with at least six men as a crash removal team.

Three men from the Fire Department form the barrier retrieval crew. One goes to start the engine on each side of the runway and the third takes up a position to direct the retrieval.

At the same time, the Transient Alert troops are cleared to start removing the airplane from the runway. A pickup truck pulls

The BAK-12 is a highly mobile, air transportable, bi-directional aircraft arresting system. It is an entirely above-ground installation that may be either permanently located in concrete fixtures or erected rapidly in the field on a hastily-prepared airfield. The BAK-12 consists of two identical arresting engines and associated equipment. The three major components are: rotary friction drum units with dual aircraft disc brakes, nylon tape systems, and retract motors. The BAK-12 will arrest aircraft within the following parameters:

AIRCRAFT GROSS WEIGHT (NOMINAL)	40,000 pounds
MAX ENGAGEMENT VELOCITY	190 knots
ENERGY ABSORBING CAPABILITY	65×10^6 foot pounds
RUNOUT (NOMINAL)	950 feet

some slack into the cable. The hook is released and tied up. The bird is ready to tow away... unless brakes are locked or there is some other problem.

If problems arise the crash removal crew is ready. They arrive with an impressive train of equipment behind their Coleman tug. One trailer contains aircraft jacks, fire extinguishers, and tools. In case a landing gear has collapsed or the aircraft can't be towed for some other reason, the trailer also contains slings, cable, and chain, as well as various tow bars for T-birds and other aircraft that might land at Cannon. Easily accessible on the outside of the trailer are chocks and downlocks for the F-100, and PSP, handy in many recovery situations if the bird sinks into mud or soft ground

The second trailer carries Lift-O-Wheels for the F-100. These are ingenious, off-center, or eccentric wheels that attach to the main wheels of an aircraft with a blown tire. They lift the bad wheel off the ground and then roll to act like a normal wheel for towing. This trailer also carries buddy wheels that can be attached to the aircraft for a similar purpose. The last item in the crash removal train is an F-100 tow bar.

And finally, if their locally-devised collection of equipment isn't enough to clear the runway rapidly, a 20-ton crane responds to every barrier engagement!

Meanwhile, the Fire Department people have started the engines on the two BAK-12 motors. On signal from the man in the observation and control position they release the clutches that engage drums to brakes in the arresting mechanisms. Then they engage the running gear and start to reel in the tape... which is attached to each end of the cable pendant. In good weather they receive visual signals from the man on the runway. But just in case darkness or weather makes visual communication questionable, there is a telephone system and headsets for each man on the barrier retrieval crew.

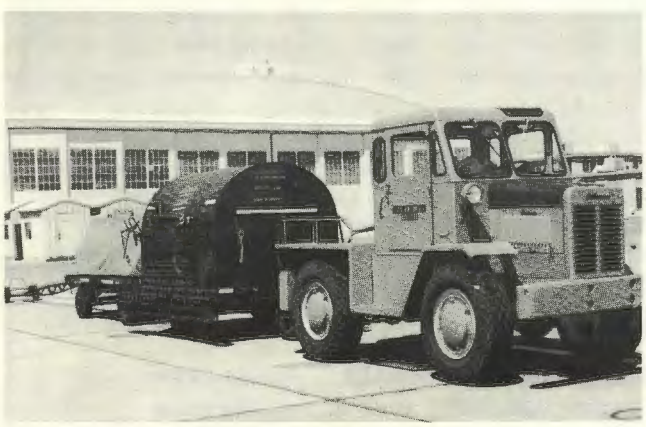
Marks on the runway show where the ends of the cable should be positioned. When the tape on either side has been reeled in to the mark, the controller signals that engine to stop. The other side continues until the cable end is in position. Both engines are run to put the correct pre-tension on the barrier and the operators set their clutches.

The three-man crew quickly checks hydraulic levels in the reservoirs and repositions the rubber donuts on the cable pendant. All that's left is to clean up and get off the runway... ready for business!

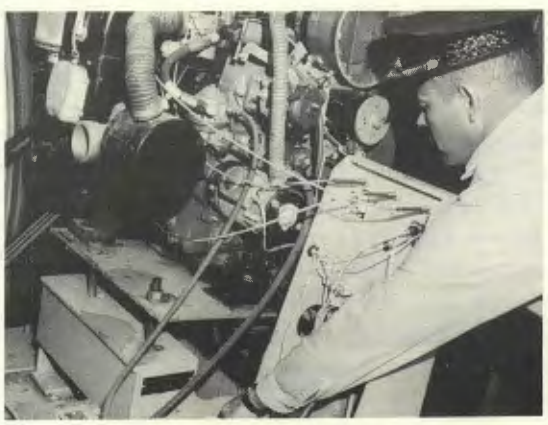
There are others though, who help keep the barriers in top shape. Our barrier maintenance people leave nothing to chance. Operational inspections are performed twice daily by the Fire Department. During high winds or snow and icy weather, the barriers are inspected hourly. They are also inspected immediately after any period of heavy rain. A weekly inspection is performed by the Base Fire Marshal and the Base Operations Officer. Each month the Civil Engineer barrier maintenance crew performs a functional checkout and general clean-up of the system.

With heads up maintenance and rapid, appropriate emergency actions, we hope to maintain Cannon's BAK-12 catch record at 100 per cent undamaged aircraft.

Departing visitors: If in doubt, drop your hook and stay a while. (We also have good transient maintenance.)



Transient Alert crash removal crew at Cannon keeps all necessary equipment ready, responds to all emergencies.



Mr. Jay D. Standefer, Cannon Fire Dept shift chief, starts the tape retract motor.

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 about 10 knots

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 of by pushing the stick forward too quickly when rotation stops during recovery from an erect spin. In

..... meets a regular crew chief

Sideslip always tried to spend some time under the wing talking to the crew chief for a few minutes before he started his walk around. That was one of the things he liked about flying the test flights in the outfit. Although there was a scheduled takeoff time and all that, the whole atmosphere was more relaxed than on the regular training flights. And he felt that this exchange with the guys on the line was valuable . . . something about feeling closer to the care and feeding of the birds that he flew.

"All ready to go?" Sideslip called as he jumped from the back of the pickup.

"Yeah . . . ah, yes Sir, Cap'n! came from the figure that scrambled out of the wheel well and stepped out to meet him. "I was just checking the accumulators... ...rain. Just out of periodic, but ...u know that . . ."

Sideslip realized that he hadn't seen this face on the line before and instinctively stuck out his hand. They introduced themselves and Sideslip hung his chute on the ladder, then stepped back to take the long look at the bird that he used to start his preflight.

But this time he stopped in his routine and turned to the man beside him. "Haven't seen you around the line before, Jim . . . just come back from . . . ?"

"No, sir," Jim replied quickly. "Haven't been over there yet. I was in Europe for four years and got here about three months ago . . . took a while to get a bird to crew, though. Sure glad to have one at last."

"You were crewing before, then?" Sideslip turned an inquisitive look at his crew chief, sizing him up.

"Seven years crewin' airplanes . . . most of it on these..."

"Good!" Sideslip's face broke into a wide grin of acceptance. "Glad to have you aboard! Let's get it in the air . . . okay?"

They turned back to the airplane and started the meticulous process of checking, looking, poking, and prodding that Sideslip insisted on for a test flight. Sergeant Jim Fowler stayed at his elbow, and Sideslip tried to sense his attitude . . . was he looking for discrepancies too, or was he hoping that nothing would come to Sideslip's attention that would show a half-hearted preflight?

Before they had gone half way around the airplane Sideslip was deep in his routine of getting serious about a critical flight . . . any question in his mind of Jim Fowler's sincerity and ability as a crew chief was gone. Although he didn't realize it, Sideslip had com-

pletely accepted the new crew chief and was working with him.

Jim followed Sideslip up the ladder and watched him thru each step of the checklist as he went around the cockpit. Then he helped arrange the straps over Sideslip's shoulders and waited until Sideslip connected his oxygen hose and radio cord.

When he had his chin strap fastened, Sideslip looked up as if to say . . . what're you waiting for? Jim reached over the canopy rail and flicked the zero lanyard that was hanging from Sideslip's parachute harness.

"Okay . . . you got one on me," Sideslip laughed, embarrassed, as he hooked it to the D-ring. "Now, let's get this thing started."

The start and pre-taxi checks went smoothly. Sideslip found himself making extra effort to give the signals carefully and distinctly, to match Jim's precise execution of each step in the familiar routine . . . trim check, full up and full down . . . controls, full throw each direction . . . cycle the speed brakes . . . flaps, cycle and back down . . . ready to taxi . . .

Pre-takeoff checks complete, Sideslip released his brakes and leaned against the throttles. Engine instruments were steady as he approached nose wheel liftoff, when he began to be concerned about the crosswind . . . he fed in more and more aileron as the bird picked up speed. About the time that he was completely airborne, he realized he was using rudder to keep the wings level.

Flaps! . . . retract the flaps . . . Sideslip checked airspeed quickly and moved the flap handle. No difference . . . the indicator said the flaps were down and the airplane was still trying awfully hard to roll to the right.

Out of burner and slowing down . . . plenty of airspeed now . . . as he decelerated thru 240 knots the flap indicator started to show that the flaps were coming up. The roll tendency decreased. The airplane trimmed out normally after the flaps showed full up, so Sideslip reached for altitude while he thought about what had happened. Split flaps . . . roll to the right would mean the left flap was down. The right one either didn't come down all the way . . . or it might have blown up during takeoff. The meter had said they were down . . . but the flap indicator is only hooked to the left flap. It doesn't know and doesn't care where the right flap is.

Satisfied that the trouble had been split flaps, and that it would not recur unless he tried to put the flaps down again, Sideslip decided to press on with the test flight. He could do most of it without getting into the low airspeed area where he would need flaps.

For a while he was engrossed with the business of going thru the familiar check list, recording the important figures and readings that he might forget before he got back on the ground to fill out the completed report. After he completed the supersonic run and was headed back toward the field, Sideslip started to think about the takeoff and the flaps again. Never heard of one flap blowing up on takeoff roll like that before, he thought, that right flap was probably never down. That would sure give me the roll I had on takeoff! Yes! Right roll . . . left flap down, right flap up.

He decided to call the command post and tell them of his troubles and suspicions . . . that he would make a no-flap landing. He assured them there would be no problem as long as he didn't try to use flaps. He had already slowed the beast to landing speed at altitude without flaps . . . there was no question left in his mind.

No question about the airplane but a nagging thought kept coming to the front of his mind as he drove toward the traffic pattern. Jim Fowler, the new crew chief, should have seen that only one flap was down. How come he didn't do anything about it?

The more Sideslip thought about it, the more it made him mad. The guy said that he had been crewing fighters for seven years . . . he should know what's important and what isn't. He had sure seemed pretty sharp on everything else.

Sideslip called the tower and went thru his story again. The tower sounded concerned, but not as excited as the command post had been. He made his pattern large and loose . . . at least it was all up to him now, Sideslip thought . . . the guy on the ground's important, but a lot of the challenge of flying these airplanes is up to the guy holding the stick. He caug.

nself thinking about Jim Fowler again as he turned final.

Long, careful approach...he had done it so many times before . . . keep the speed up, flat approach, touchdown point is now more important than ever. Then he was over the end of the runway, making the final adjustment that placed him on the ground opposite Mobile.

The throttles came back almost automatically and his hand went for the drag chute handle. In the second or two before he felt the chute, all the unhappiness about his crew chief came back. By the time Sideslip turned off the runway and saw the line truck waiting for him, he had worked himself into a good fit of anger.

As Jim put the ladder against the side of the airplane, Sideslip saw the worry and concern creasing his face . . .

They both started shouting over the sound of the engines at the same time, but Sideslip waved Jim back off the ladder, "It's okay, now," he finally got the other man to understand, "I'll taxi back . . . and then I want a talk with you!"

By the time he had the canopy open in the parking place, the ladder was up again. He jerked the throttles to cutoff and pulled his helmet from his head.

"Okay, now," Sideslip started, "whatinell do you . . ."

"Lookit, Captain," Jim Fowler's very earnest tone stopped Sideslip. "I didn't see that the right flap was up until you were taxiing away from me. I guess where I was standing on your left I just didn't get a good look at it . . . but I saw it as soon as you turned out onto the taxiway.

"Then, you know what?" Jim's face had a strange look. "I had a heck of a time finding a truck with a radio so I could call Maintenance Control and tell them to stop you. When I found a truck, we started after you, but we didn't catch up before you took off. While we chased you I told Control and they said they'd tell Base Ops ... and then they came back and said the Base Ops phone was busy and they couldn't get thru. They only had one number to call.

"You were already on the runway when I told them to call the tower, but the operator said it was a restricted number . . . it took a long time to explain to her about how split flaps is a real serious emergency."

Abbreviated IFR Departure Clearance Program

from the....

FEDERAL AVIATION AGENCY ★ UNITED STATES OF AMERICA ★

Military pilots operating from civilian fields may hear air carriers receiving a very abbreviated IFR clearance for the next few weeks. Phase I of a new program to simplify clearance delivery was implemented by FAA on 16 April. This test phase, which only includes air carrier operations, will last for approximately sixty days. At the end of Phase I all affected agencies will report their reactions and suggestions, the program will be evaluated, and hopefully, we military types will start receiving the abbreviated clearances before too much longer.

Briefly, the abbreviated clearances will consist of little more than the words "Cleared as filed, maintain (alt) ." A SID and transition may be specified in the clearance by ATC, and last minute changes in flight plan before clearance delivery can confuse things pretty effectively. There will probably be other rough spots where both pilots and controllers will have to be certain they understand what the other is doing.

Details, of course, will be published in FLIP publications before we're all involved. But it's good news to all of us who have stumbled over long, involved clearances . . . or waited to get on the radio while someone else did.

TAC TIPS

OUT OF ADJUSTMENT

A T-39 from another command was droning along at FL 290 when the main hydraulic system pressure went to zero. The pilots lowered the landing gear manually and landed without speed brakes using the auxiliary hydraulic system. When the aux pressure dropped to 1700 psi, they stopped the bird and had it towed to the ramp.

The maintenance types couldn't get the main hydraulic pump to work either until they tapped the switch. By jiggling the switch they started the pump operating and pressure built up to normal. The main hydraulic switch was adjusted, and the aircraft checked out okay.

ALMOST

A student C-130 pilot from another command was shooting touch and go landings when the number two engine rpm dropped to about 96 per cent. The IP in the right seat instructed the student to make a full stop landing. During landing roll, the instructor kept number two engine in flight idle. The big bird began to swerve to the right, and the IP took control of the aircraft and initiated a go-around. When the throttles were advanced, the number one engine stuck in ground idle range just prior to the flight idle gate; and the aircraft swerved left. The IP used full right aileron to keep the left wing up; the aircraft angled off to the left of the runway as it became airborne.

The stuck throttle was freed and advanced to normal power. Some time during the go-around the number two prop oversped and it was feathered. The IP accomplished a landing without further incident (whew!) only to find the left wing tip and aileron were scratched, bent, and buckled. The crew also received a briefing on the importance of feathering the prop when the engine rpm drops below 98 per cent.

T'AINT ALWAYS THE FIGHTERS FAULT

The mission was a night-refueling, round robin cross-country with a 5000 pound off-load. The F-100 driver made a good hook-up and moved up to his normal refueling position; however, before the pilot could transmit, "receiver contact" the boom operator raised the boom to the stowed position. A breakaway call was not transmitted and the pilot was momentarily confused, but he recovered the aircraft to the refueling pre-contact position and checked the damage to his probe. The probe was bent up approximately 50 degrees so the mission was aborted, and the Hundred type made an uneventful recovery at his home base.

The boom operator later confirmed he raised the refueling boom to the stowed position without calling for a breakaway because he thought the receiver aircraft was too close to the boom.

VOODOO VISDOM

As his Voodoo leaped into the air, the overseas One-O-Wonder raised the gear handle and felt his right 450 gallon drop tank jettison. During his preflight run-around-the-cockpit, that he performed with the check list, this Wonder had not noticed that the jettison switch was out of the center detent... in the right tank jettison position! Now, let's say something profound... like, a check list is no more than a reminder. Just sitting there reading it won't do a thing for you.

AGAIN ?

During the climb the observer in the rear seat dropped his map. When he reached down to retrieve it he inadvertently raised the right handgrip.

The canopy smartly separated from the aircraft. The briefing that ensued was, admittedly, a bit late.

AP FLAP

During the final GCA of a local training mission, an F-84 pilot found himself high on the glide path. To add to his concern a civilian aircraft flew thru the GCA pattern. As the fighter pilot retarded the throttle for a full stop landing he heard the gear warning horn. The aircraft slid to a stop in the center of the runway on its external fuel tanks. All three gear were still up and locked.

In its report, the unit said it was studying the possibility of placing a switch on the flap actuator so the horn would ring any time the flaps were 60 per cent extended and the gear still retracted . . . regardless of throttle setting.

Now, let's see . . . in case the pilot forgets the flaps, you could run a wire to his head, with a switch at the . . .

INSURANCE

Almost every F-100 pilot has read the section of the flight manual that describes the correct way to grasp the drag chute handle. However, there appear to be some pilots who do not always grasp it with their palm up. At least the increase in inadvertent chute jettisoning during landing indicates the ranks of the palm-down deployers are swelling; or as the chute linkage becomes older and more worn, troops that have not been following the Dash One are being tripped up more frequently by their bad habits.

The normal position for drag chute jettison is reached when the handle is rotated 90 degrees counterclockwise, but drag chutes are being jettisoned after only 30 degrees of rotation as the rotation cams become worn. Thirty degrees rotation isn't very much considering your arm has a natural counterclockwise rotation when held close to the body, palm down, and moved aft in a drag chute deployment motion. If you are anxious and jerk the chute handle aft, you exaggerate the rotation.

Bad habits, anxiety, and worn cams all have a tendency to show up when you need them the least . . . during an emergency. The best insurance against inadvertently jettisoning the laundry appears to be a firm, steady pull, palm up just like the book says.

POW, ZAP, BAM, ZONK

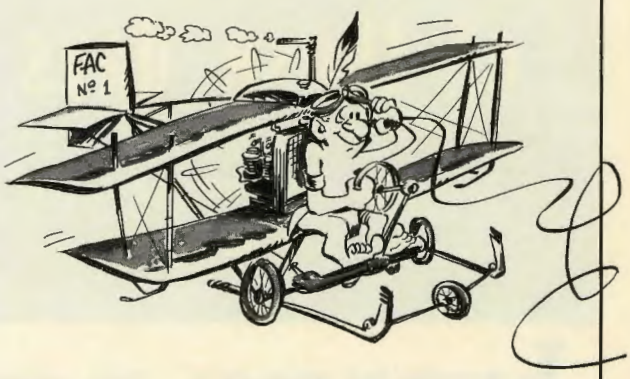
As an F-100 pilot drove along VFR waiting for his dart to reel out and lock, POW! he was ZAPPED by four bolts of lightning. When the fourth bolt hit, BAM! the ejector cartridges inadvertently fired and, ZONK! the tow rig jettisoned.

ONE AT A TIME

After successful ejection from a disabled fighter, the pilot was capped by members of his flight. After he took off his jacket and waved the orange lining to show he was uninjured, the pilot removed the URT-21 radio marker beacon from his parachute harness and hung it on a nearby tree.

He unpacked his survival kit, found his URC-10 emergency radio, and tried to call his buddies. Receiving no response, he gave up and built a fire.

He didn't realize that both his radios were transmitting on the same frequency . . . UHF Guard . . . and the URT-21 beacon was blocking his attempts to talk on the URC-10.



This is the last month that Captain Ted Giddings' name will appear on the masthead of TAC ATTACK. He is already on his way to the shooting war across the big water.

As we sit here and stare at his empty desk and the many unfilled pages of the next two issues, we realize what a large part of the load Ted was carrying. It's not enough to say that we'll miss his steadying hand on some of our more fanciful projects and the very thorough, accurate, and painstaking way he tackled each problem as it came up . . .

We still have an empty desk and at this writing, no one to fill it. We're not looking for an accomplished journalist. None of us pretend to be something like that. Our empty desk is waiting for another expert tactical pilot who wants to apply his experience to a tremendously challenging . . . and often frustrating . . . job.

It won't be easy to fill the gap that Ted left in this part of TAC's attack on needless accidents, but the gauntlet is down . . . the challenge is out.

Any takers?

just one of those days - when an initial error doubles your trouble.

The Hercules had landed for a brief unloading stop, and during the shutdown check the flight engineer noticed that the nose gear groundlock had not been installed. Actually, this flight engineer was observing on another NCO who was under training. Later, the new man recalled his oversight, returned, and inserted the groundlock.

The unloading finished, the aircraft was prepared for flight. During the start the under-training NCO was acting as ground crewman outside the aircraft; but since the external headset cord was unserviceable, he was unable to confirm the groundlock had been removed. Because of his second oversight, it was forgotten. The aircraft took off and as the gear was retracted there was a loud metallic crunch when the nose gear jammed, followed by a continued thumping noise that prompted the flight engineer to investigate. While the flight engineer was depressurizing the aircraft prior to opening the wheel-well panel, the overly-enthusiastic man under training removed the panel . . . before depressurizing was completed; his eye glasses and flashlight were sucked into the well. The thumping noise was the groundlock's streamer flapping in the airstream beneath the aircraft.

Next, the utility suction pump low pressure light came on. The system reservoir was empty. The crew added eight quarts of hydraulic fluid to the system to refill the reservoir, which naturally enough began to drain out. By now, at destination, the crew concluded that the gear would have to be extended manually. The pilot, by deciding to continue the flight without immediately attempting to confirm that the gear would come down, had unwittingly necessitated this emergency lowering of the undercarriage. The starboard came down with no trouble but the port wheel could not be moved. The crew decided to give the hydraulic system another try, this time with the speed selector in high torque. The flight engineer put his last three quarts of hydraulic fluid into the system bringing the reservoir to one-third full. The nosewheel went down and locked but the left main stopped nine inches short of full-down as the hydraulic system ran dry. The hand crank was still jammed, so in a last ditch effort three quarts of prop oil were added. This time the gear came full down. The pilot made a flap landing using full reverse thrust and made minimum use of the emergency brake system. He expected to have no nosewheel steering, but during the latter portion of the landing run a severe nosewheel shimmy left a tell-tale wavy rubber line on the runway.

The nose gear groundlock, which ironically had been incorrectly installed, was forced out of position when the gear retracted after takeoff and had been squeezed against the nose gear selector valve where it broke the casting and caused the hydraulic leak.

The whole story contains several ironic twists not the least of which is the commendable resourcefulness of the highly experienced flight engineer whose failure to complete a check list caused the emergency in the first place.

Recognition

MAINTENANCE MAN OF THE MONTH

Staff Sergeant Johnny R. Garcia of the 4515th Munitions Maintenance Squadron, Luke Air Force Base, Arizona, has been selected as a Tactical Air Command Maintenance Man of the Month. Sergeant Garcia will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.

CREW CHIEF OF THE MONTH

Technical Sergeant Max H. Koenig of the 479th Tactical Fighter Wing, George Air Force Base, California, has been selected as a Tactical Air Command Crew Chief of the Month. Sergeant Koenig will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.

PILOT OF DISTINCTION

Captain Stephen C. Marcinko of the 4405th Air Base Group, James Connally AFB, Texas has been selected as a Tactical Air Command Pilot of Distinction.

Captain Marcinko was flying a T-33 at FL 260 above an overcast when the engine flamed out. An immediate airstart attempt was unsuccessful, so he turned his IFF to emergency, went to guard channel and requested a vector to the nearest suitable landing field. A civilian control tower 35 miles away responded with a DF steer. Captain Marcinko reduced the electrical load, established a 180-knot glide, and attempted several airstarts during the descent. Concerned that he could not locate populated areas beneath him, Captain Marcinko decided to descend through the undercast so he could steer the aircraft toward unpopulated terrain should he have to eject. He broke out of the clouds at 2500 feet after increasing his airspeed to 230 knots to give himself additional time before bailout. When Captain Marcinko described the surrounding terrain to the tower, he learned he was approximately six miles from the field. He sighted the field at four miles as he passed 2000 feet altitude and by precise gear and flap management he reached the overrun at 500 feet and 130 knots. Captain Marcinko landed 1000 feet down the runway and stopped without further incident.

Captain Marcinko's calm and correct application of procedures, and thorough knowledge of his airplane averted the loss of an aircraft and qualify him as a Tactical Air Command Pilot of Distinction.

letters....

To the Editor

On the inside back cover of the March issue of TAC ATTACK, in the feature "TAC Tally," you note the 121TFW as having an accident-free record of six months.

The 156TFG, Puerto Rico Air National Guard, is now on its 13th accident-free month. Our last accident was on 28 March 1965.

Should we not replace our illustrious colleagues of the 121TFW on your scoreboard?

Captain Gabriel I. Penagaricano
Safety Officer, 156TFG (PRANG)
San Juan, Puerto Rico

This is one of the unfortunate factors of a tabular listing such as our TAC TALLY. To be meaningful, the tabulation must consist of similar units, and PRANG (if you'll pardon the expression) is the only tac fighter unit in the ANG that reports direct to its gaining air division without a parent wing.

We would like to give deserved credit to the 156th and to the Air Commando Groups gained by TAC who have equally impressive accident-free records. But we recognize regular units at wing level because the flying support activities that are so important to accident prevention are not a part of the tactical squadrons. In the interest of fairness, we don't feel it would be right to compare wing-sized accident exposure to group or squadron-sized exposure.

Please take this as partial recognition. We are certainly not trying to ignore you.

Really, we're proud as punch of you!

To the Editor

Regarding "What's Your Decision" in the March issue of TAC ATTACK . . . very interesting reading until the final paragraph. Personal experience has made me a non-believer in the "place my life in the controller's hands" theory. Granted, it has been done before. However, I still vividly recall four instances wherein adherence to this theory would have, almost certainly, resulted in fatal crashes to myself and my wingmen. One occurred while leading a flight of two F-100s. After hearing the call "on glide slope, on centerline precision minimum altitude," I looked up and viewed a rocky beach. Fortunately the ceiling was almost 300 feet so an uneventful modified circling approach was executed. Less than ten days later, in the same two airplanes, the final controller at a base in France uttered the same comforting words about centerline and glide slope. This time I was jolted by the not-so-flat terrain adjacent to the airport. Again, the ceiling was in our favor and another unorthodox circling approach was completed. Slightly more than two years later my first peek at GCA minimums revealed a neat row of F-100s along the ramp on a base in Japan. Needless to say, the controller was advised of this error during the missed approach. Compensation was made by the controller for the ensuing approach. In fact, his compensation lined us up with the civil air terminal facilities on the opposite side of the runway. This time the wingman would be on the outside of the final turn so the unorthodox approach was again employed.

Granted, there was no emergency associated with any of the approaches described above nor was the weather below minimums, although in each case it was lower than forecast. The point is that on any one of these approaches, had the weather been below minimums, "placing my life in the controller's hands" would have been disastrous.

The unanswered question in my mind is: How would the author of "What's Your Decision" determine whether an approach is good or bad at minimums if weather obscures the ground?

Capt Herbert F. Brightwell
Operations Officer
Det 1, 831AD, Edwards AFB

Until he breaks out of the weather, the guy in the cockpit can only judge the good or bad of an approach by what the controller is telling him. In other words, the pilot's only reference is to the glide slope and centerline THAT THE CONTROLLER IS TALKING ABOUT. If they are not where the pilot expects them, he won't know it until he breaks out, and he won't think about it until he breaks out unless he decides to go below minimums. Then it becomes a very real and major consideration! The author made his decision based on all the "good" approaches he has received. You made yours on four very unpleasant ones . . . and we have all been there, too! No argument, both choices are valid . . . when we're talking about it on the ground. The final decision in each case will be controlled by a long list of variables that can only be resolved by some rapid soul-searching in the cockpit.

NEWS release

THE UNITED STATES AIR FORCE *Thunderbirds*

The USAF Thunderbirds begin accepting applications this month for three demonstration pilots. The projected vacancies will become open in January 1967.

Company-grade officers with total active federal commissioned service dates later than December 31, 1957, fighter or trainer experience, and over 1,000 hours jet time are eligible. For detailed eligibility criteria and application procedures see TAC Supplement 1 to AFR 20-25, or write or phone the Administrative Officer, USAF Thunderbirds, Nellis AFB, Nevada. Phone extension is 22495.

Interested pilots should start the wheels turning now . . . all applications must be in by 31 August.

ANALYSIS OF TAC ACCIDENT EXPERIENCE

TAC TALLY

for march 1966

ACCIDENT FREE

ACTIVE	MONTHS		ANG/RES
15 TFW 23 TFW	4	7	131 TFW
67 TRW	3	6	140 TFW
479 TFW	2	5	122 TFW 102 TFW
4500 ABW	57	112	434 TCW
4442 CCTW	40	73	435 TCW
516 TCW	19	68	349 TCW

HU-16

2 FATAL - Right prop reversed unexpectedly during lo-level. Crashed in open field.

F-100

[illegible]OR - Flameout on initial, airstart unsuccessful, ejected successfully.

MAJOR - Compressor stall & flameout at high altitude. Two airstarts unsuccessful, ejected successfully.

MAJOR - Flameout in formation. Six unsuccessful airstarts, ejected successfully.

FATAL - Crashed short of target on simulated dive bomb run. No ejection.

F-101

FATAL - Struck mountain on low level nav. No ejection.

F-104

MAJOR - Flameout at 18,000', successful airstart and second flameout. Further airstarts unsuccessful, ejected successfully.

F-105

MAJOR - Tail hook extended in flight, unintentional approach end BAK-9 engagement. Damaged fwd and aft fuselage, rt main gear door, and nose wheel.

[illegible]TAL - Crashed twelve o'clock to target. No ejection.

C-123

MINOR - Brake piston ruptured after full stop landing, fire caused damage to rt wheel well.

C-130

7 FATAL - Struck ridge during instrument approach.

MAR TALLY

UNIT	MAJOR	MINOR
31 TFW	1	
27 TFW	1	
354 TFW	1	
363 TRW	1	
313 TCW	1	
4410 CCTW		1
4510 CCTW	2	
4520 CCTW	2	
143 ACG	1	

MAJOR ACCIDENT RATE

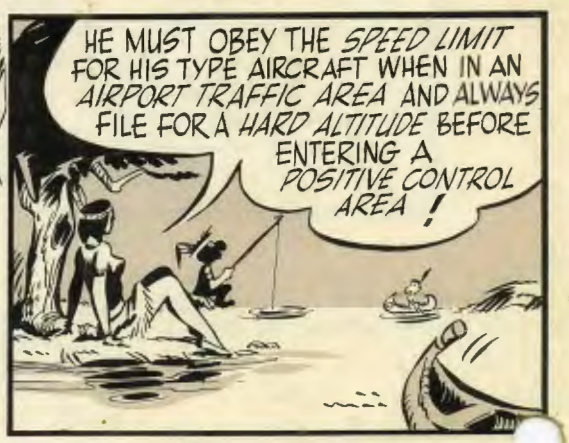
TYPE	TAC	* ANG	AFRES
ALL	9.6 / 8.9	9.1 / 13.2	7.2 / 1.7
A-1	0 / 15.7		
F-84	– / 0	0 / 15.8	
F-86	148.4 / 121.6	0 / 31.1	
F-100	21.0 / 14.4	20.6 / 17.0	
F-101	35.8 / 0	80.6 / 0	
F-104	26.0 / 23.3		
F-105	26.4 / 22.3	0 / 46.5	
F-4	8.1 / 10.5		
B-57		0 / 12.3	
C-47	0 / 0	0 / 0	0 / 0
C-97		0 / 6.6	
C-119		0 / 0	9.3 / 1.3
C-123	0 / 0		– / 11.0
C-130	2.1 * / 1.8		
T-29	0 / 0		
T-33	0 / 0	0 / 5.3	
T-39	0 / 0		

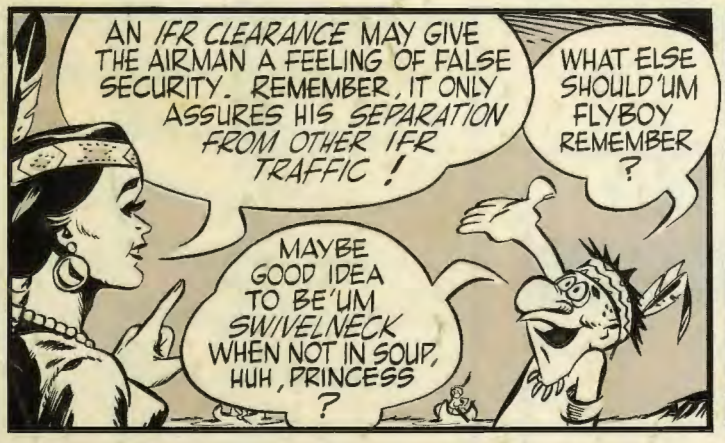
* estimated due to non-receipt of ANG rates at presstime.

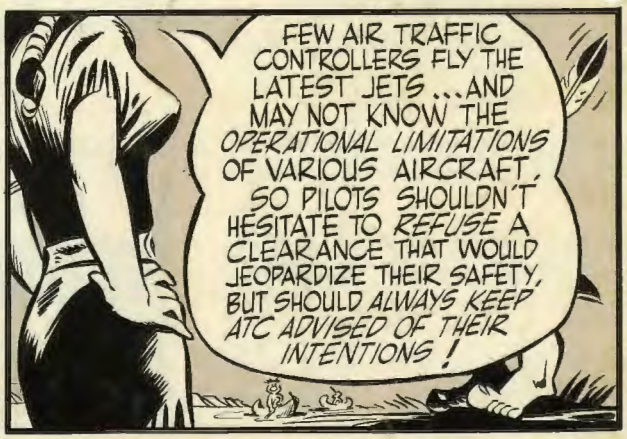
thru Mar 66 / 1965

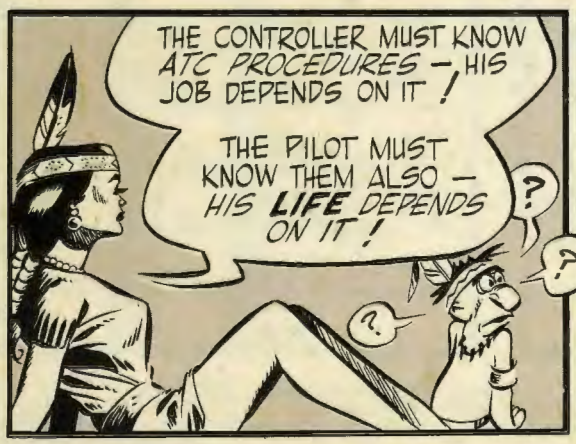

PRINCESS ANN
HOW ONE FLYBOY KEEP 'UM FROM RUNNING INTO OTHER FLYBOYS IN THE SKY ?
EVERY AIRMAN ECCEPTS CERTAIN RESPONSIBILITIES WHEN FLYING ...
CERTAIN RULES AND PROCEDURES HAVE BEEN ESTABLISHED TO INSURE AN ORDERLY FLOW OF AIR TRAFFIC!
MSGT HIRSCH


... SUCH AS CONTROLLING HIS AIRCRAFT TO AVOID OTHERS USING THE SAME ROUTE !
THE BASIC RULES ARE COVERED IN FLIP PUBS AND AFR 60-16 !
ME THINK FLYBOY BETTER SAVVY AND FOLLOW RULE BOOK HEAP GOOD !


HE MUST OBEY THE SPEED LIMIT FOR HIS TYPE AIRCRAFT WHEN IN AN AIRPORT TRAFFIC AREA AND ALWAYS FILE FOR A HARD ALTITUDE BEFORE ENTERING A POSITIVE CONTROL AREA !


AN IFR CLEARANCE MAY GIVE THE AIRMAN A FEELING OF FALSE SECURITY. REMEMBER, IT ONLY ASSURES HIS SEPARATION FROM OTHER IFR TRAFFIC !
WHAT ELSE SHOULD 'UM FLYBOY REMEMBER ?
MAYBE GOOD IDEA TO BE 'UM SWIVELNECK WHEN NOT IN SOUP, HUH, PRINCESS ?


FEW AIR TRAFFIC CONTROLLERS FLY THE LATEST JETS ...AND MAY NOT KNOW THE OPERATIONAL LIMITATIONS OF VARIOUS AIRCRAFT, SO PILOTS SHOULDN'T HESITATE TO REFUSE A CLEARANCE THAT WOULD JEOPARDIZE THEIR SAFETY, BUT SHOULD ALWAYS KEEP ATC ADVISED OF THEIR INTENTIONS !


THE CONTROLLER MUST KNOW ATC PROCEDURES — HIS JOB DEPENDS ON IT !
THE PILOT MUST KNOW THEM ALSO — HIS LIFE DEPENDS ON IT !
?
?
?


LOOKS LIKE WE NEED 'UM SOME THAT TRAFFIC CONTROL RIGHT HERE, PRINCESS
!!!