

# Interceptor



FOR PILOTS ONLY . . . *see page 5*

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# Interceptor

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## spotlight

The truth hurts only if it should.

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### OUR COVER

As we peek over the pilot's shoulder in this unusual perspective, we capture the lonely environment in which only his judgment and skill can prevail over the external forces threatening to topple his perchhouse office.

Photo by Kenneth Mackman, AA/VS

# memo

from the **CHIEF OF SAFETY**

## "YOUR RESPONSIBILITY"

The "Introduction" to Flight Manuals, or Dash Ones if you will, contains some sound advice and guidance that ought not to be overlooked in light of recent events. Of the four major accidents ADC has experienced so far this year, accident board findings have made reference to the Dash One involving three of them. In two of these, a contributing cause is listed as supervisory factor in that the Dash One contained insufficient guidance relative to normal or emergency procedures. The remaining reference was a recommendation to change two steps of an emergency procedure to bold face type. The primary cause of all three of these accidents was material failure.

One of these three could definitely have been avoided through the exercise of good judgment. Even though there were no guidelines established in the book, the preface does make note of the fact that "The manual is a poor substitute for sound judgment." Lacking guidance, sound judgment must prevail. In this case a takeoff was rejected for lack of proper speed during the acceleration check, and without investigation of the cause of the problem, a second takeoff was attempted, and likewise aborted for the same reason. After the second abort, the right brake overheated and burst into flame, causing major damage to the aircraft. The cause of the erroneous airspeed reading was a crack in the pilot system.

Another accident involved Murphy's Law wherein multiple emergencies in a twin-engine aircraft during flight in night weather ended in disaster. It pointed up the need for additional education and guidance concerning the loss of an engine and the additional loss of electrical power. The blame must be shared by many, since the "Foreword" of the Flight Manual emphatically states that an error cannot be corrected unless the Flight Manual Manager is made aware of its existence. Crew members are responsible for recommending changes to the manual when the need becomes apparent.

Failure of the flight control system, or a component thereof, caused the last mishap of one of our fighters. We don't know as much about this accident as we'd like to at this writing, but again, attention has been focused on the ever-important Dash One. The recommendation to change several steps to critical items in the emergency procedures may or may not have affected the outcome of this mishap; however, it points out how heavily we lean on the "Pilot's Bible."

A look at the preface of a Flight Manual reveals an articulate plea under the self-explanatory title "Your Responsibility—To Let Us Know." In essence it states that comments, corrections, and questions regarding the manual are welcomed. It goes on to spell out the procedures to be used. AFH 60-9, Flight Manual Program, goes into more detail on the entire program and amplifies the responsibilities of flight crew members as they apply to the submission of recommended changes on AF Form 847, through channels to the appropriate Flight Manual Manager. In a word, where specific guidance is lacking, sound judgment must be exercised and, where guidance is necessary, a recommendation for change must be processed on a timely basis.

It's "Your Responsibility."

COL. H. C. GIBSON

# HOT LINE



**EGT AND JUDGMENT.** A Deuce pilot ran it up to full mil just before takeoff. The EGT peaked out at 646 degrees. He reduced the power to below 630 degrees and initiated takeoff. The EGT began a rapid increase late in the takeoff roll, reaching 677 degrees before it decreased. The mission was aborted and landing was accomplished using reduced power settings. The cause of the malfunction is believed to be fuel control failure. But that doesn't really matter. It could have been failure of the thermal annunciator in the gold-plated exhaust gas box in the vacuum packed fuel section system. The point is that during the engine ramp, a round dial was trying to tell the pilot that something was wrong. He launched anyway. Such courage and trust is worthy of a head massage in the form of a refresher on the purpose of operating limitations and/or the perils of rocket rides with nylon descent.

We'd like to have a back for every pilot and airplane lost because of refusal to believe the gauges. Nine out of ten may turn out to be false alarms, but like Russian Roulette, the loaded one can kill you. WHEN WILL THEY EVER LEARN?

**LIGHTNING STRIKES AGAIN.** Last year the cause of a major aircraft accident was attributed to a discharge of lightning which blinded the pilot during a critical phase of flight. Heavy weather, relatively low altitude, erratic pilot static instruments, degraded vision, and belief that the aircraft had exploded convinced the pilot that immediate ejection was necessary. Considering the inputs available to him, we can't quarrel with his decision to abandon the pit.

Recent experiments have shown (to no one's amazement) that temporary partial blindness results from being exposed to a bright flash. The minimum time required to regain sufficient vision to read instruments and recover aircraft control was found to be 11 seconds. Since it was estimated that in this accident the time from flash to ejection was from six to ten seconds, it was concluded that the pilot could not have had full vision of his instruments and that this may have been a factor in his decision to get out.

We view with skepticism the dissemination of this kind of information at face value. It could muddy the waters.

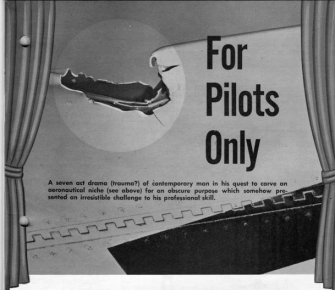
There aren't that many pilots around who have been zapped by lightning and it's difficult to predict what an individual's reaction will be. A great deal depends on the severity of the strike and its effects on the aircraft. With the right combination of circumstances, it's possible that one hour plus a stiff hooker wouldn't be enough to tie up loose nerve ends. So, an 11 second vision factor would play only a small part in the recovery episode. In that context, we think it highly dangerous to even intimate that pilots wait a specified period of time before making a decision, especially at low altitude. It's easy to lose track of time (and altitude) in an emergency situation. I'm sure as heck someone will slide a wounded duck into the ground waiting for the clock to strike twelve. We want the aircrew back.

## SCORCHED TAIL

Two incidents have occurred in which aircraft have received substantial damage to the vertical stabilizer. In both cases, the slot position was being flown in diamond formation and damage resulted from afterburner operation by the lead aircraft. There was no indication in the cockpit that this was happening. One pilot believed that he had adequate spacing in loose formation during afterburner operations. Never can tell, so be careful.

## CHIDLAW CHUMS.

We are elated over the tremendous response to our Teeth Anniversary issue. Its success was made possible only through the effort and cooperation of many people, not the least of whom were those solid, hard-working citizens of the Headquarters ADC Printing Plant. Their patience with our temperamental magazine staff, through the years, has been remarkable, and we appreciate that. Now, we'd like to extend our special thanks to the Printing Plant folks for the extra time, effort, and helpful guidance they willingly gave in order to assure the quality of the Anniversary issue.



# For Pilots Only

A seven act drama (trauma?) of contemporary man in his quest to carve an aeronautical niche (see above) for an obscure purpose which somehow presented an irresistible challenge to his professional skill.

## ACT I

### Base Ops

"How are you going to file, Fearless Fagan?"

"VFR. It's only a tad over a hundred miles, and stop calling me Fearless Fagan. I figure we can take an hour forty-five enroute and look over the countryside."

"That's OK with me as long as we get into the Q in time to suck up a hundred of those desert-y drinks before chow. I've heard it's a good Mexican joint that

serves outstanding Follicking Horn punches. I'm kinda sick of scotch and water."

"If I've told you once, I've told you a hazzert times, that hard stuff is no good for your stomach. Once an RO, always an RO."

"No need to get personal again. You throttle jockeys are always the world's greatest something or other. Now it's stomach experts. Besides, what else will keep me warm up in that frozen tundra we call a home?"

"Try getting married!"

"Funny, very funny. To what? A seal?"

"Seal it with a kiss!"

"And I gotta fly with you for an hour forty-five. Pilots. They're all the same. Give 'em a hazzana and they give you the skin-ny."

"Stop yakking and get your magic wheel out of the plastic bag. I need some rough fuel figures from here to the east, at ten thou."

"What for? We're going VFR, aren't we?"

"Yeah, but I hafta put something reasonable on this flight thing—uh, plan."

"A conscience yet. Will wonders never cease?"

"Say, if you talked as much during an intercept, I wouldn't keep wondering whether you were back there or not. Whatsamatter, been out of navigators' school too long?"

"OK, you know how to hurt a guy. How about 6500 pounds and 50 minutes to the patch?"

"What?"

"Just wanted to see if you were paying attention. Seventeen minutes and 2200 pounds. What you do after that is your own bag of tricks."

"That's more like it."

"I'll go out and load the junk and start the preflight. Don't forget to sign the flight plan."

"Scram!!!!" (Sometimes I wonder about that guy. He's a good egg, though.)

## ACT II

### Out on the Ramp

"See you found the beast! How was the preflight? Any leaks, loose panels, etc. O mighty Wizard?"

"Naps."

"I'll check, just to make sure. You climb in, back seat only, and see if there will be any delay from tower. Too hot to sit in the oven."

"Your humor's like an old shoe, it stinks."

"I've heard that one before."

"It still fits."

## ACT III

### Preflight Complete—In the Pit and Strapped In

"You on?"

"Yeah, I'm on."

"Got the clearance yet?"

"Yep. Right turn after takeoff, climb on course. Runway 13, you're on freq."

"Ready to crank?"

"Light 'em."

"Tower, Romeo Tango Eight-Eight, taxi."

"Romeo Tango Eight-Eight, taxi runway one three, winds light and variable, altimeter three zero-zero two."

"Rog, tower." "Ready, Wizard?"

"Roll 'em."

"Boy, this taxiway is bumpy!"

"Yeah, and the crystal ball won't come on the air. Must be the desert air drying out all the shorted circuits."

"Excuses, always excuses."

"Tower, Eight-Eight number one, pins, canopy, lanyard."

"Eight-Eight cleared for takeoff."

"You got all your stuff hooked up, Gomer?"

"Rog, my destiny is in your sweaty hands. Take me aloft."

"Tower, Eight-Eight rolling."

"OK, gear up—flaps—burners out. Looks OK. Boy, what a day to fly!"

"The radar is still out."

"So, what's new? Come out under the velvet hood and enjoy the view. This desert is something else. Nothin' but rocks and sand."

"Yeah, probably better than looking at a blank tube. Can't figure out what's wrong with it. Must be the IF strip. No images."

"Hmmm. Can't really see too much from up here. Let's drop down. We've got plenty of gas."

"How low are you gonna go?"

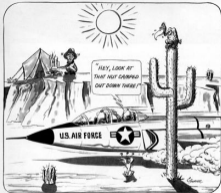
"Don't sweat it. I flew in TAC. We did it all the time."

"The lowest I've been is on those five hundred foot intercepts over the drink. But don't get too low."

"No sweat. I won't blow dust. We'll level here and I'll inch my way down."

"Boy, it's a different world down here. Not as flat as it looks up above. Look! There's a guy camped out over there. What a nut!"

"Yeah, this contour flying is the greatest. Sure get a feeling of speed. Sure is hot, too."



"Yeah, I noticed you were breathing heavy. Forpopping too."

"What d'you mean? I gotta get used to—what the hell was that?"

"I don't know. We just passed over some bushes or trees or somethin'. Better pull up. Maybe, we lost somethin'."

"The bird feels OK. I'll level here and check everything over. The gauges look good. Wonder what the heck that was?"

"Uh—oh. Look at the right wing."

"Kee-riped! How the hell did that happen?"

"You musta hit one of those bushes or trees back there."

"But I couldn't have. I had plenty of clearance I know."

"The left wing has a hole too. Not as big, but it's a hole. Better slow down. We don't want to make it any worse. Wonder if the wing could come off?"

"Naw, I don't think so, but there might be damage somewhere else. You don't feel much in these big beasts. How are we going to explain this?"

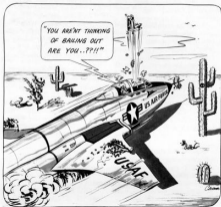
"What's this 'we' stuff? I don't have a magic wand back here. You told me you were a TAC pro. I go whither thou goest. I'm a Wizard, remember?"

"OK, OK, Wizard. Use your magical powers and help me come up with a good excuse for this one. You wanted to go low, too, you know."

"How about we thought we saw someone signalling for help and went down to investigate. Then while looking for this cat we accidentally hit the only tree in the desert."

"Very funny! Get serious or my career will go down the tube for sure. Want my kids to starve?"

"You got married, not me. But I can't think there's any way to cover up. Let's tell 'em the truth.



Honesty is the . . . ."

"No lectures, please. I guess you're right, though. What a stupid, dumb, no good, rotten mistake to make. Everything down the tubes for nothin'. Sometimes I wonder where I was when they passed the brains out."

"I've been trying to tell you that for . . . ."

"Lay off, you professional passenger. It's not funny! Say, where are we, anyway? I haven't been keeping track. Boy, that's a big hole in the right wing."

"Climb, man, climb! The TACAN won't pick up the station down here. What's the freq again?"

"Oh boy, here I got troubles and . . . Channel fifty-two."

"OK, she's in. There. Twenty starboard. Hm, forty miles. Might as well get it on the ground and

take your medicine. You aren't thinking of bailing out, are you?"

"Oh boy, you are a lulu! What d'ya think, I'm nuts? You could land in a snake's nest or worse."

"I didn't think of that."

"Yeah, that's obvious!"

"Do you think we should climb to fifteen thou or so and make a stall check with that bad wing and all?"

"Nope, she's alright. Besides, I don't want to wreck my nerves any more than what they are now."

"You mean you might not be able to land it OK?"

"I didn't say that. Only that I'm a little shook up about what I'm going to have to face when we land. That lousy, no good tree! You know, that signal idea you had is beginning to sound better and better. Maybe we could dress it



up a little more, you know, stick in a few extras to make it more believable."

"You gotta be kiddin'. It would never sell. Besides, don't clank now. We're only twenty miles out. What'll you be like, one out on final?"

"Listen, I'm in deep serious already. They ground guys in SEA for hitting trees on a napalm pass. And that's war, man. What d'ya think I'll get for having a look-see at cactus—a solid gold Well Done? The first question they'll ask you is why you didn't order me to climb, you being a major and all."

"What has that got to do with it?"

"Nothing. But that's what they'll ask. We gotta come up with sunken, I mean, something, or we'll be sunken, er, sunk. Suppose we say we were flying along at ten grand minding our own business, when all of a sudden you see something flashing at us, trying to get our attention like. Then, I see it, and we decide to go down because of all those survival stories. I make a pass over some bushes and trees where the signal seemed to come from. We don't see anything, so we make one more pass to be sure. I'm concentrating so hard on spotting a survivor, I don't realize how low I'm getting. Pow! We hit a tree or something. I pull up and head for the base because we don't know where the place was because in all the excitement we forgot to take fixes. How does that sound?"

"It'll never sell."

"You sound like a broken record. What d'ya say we give it a try. Things can't be any worse. How about it, old pal? Think positive?"

"I don't know. Sounds very shaky to me. But I suppose it's our word against the snakes . . . . I'll go along on one condition."

"What's that?"

"That you don't beef, no, ham it up without me knowing it."

"It's a deal, old pal."

"What happened to Wizard?"

"I'll never call you that again, old pal. Let's call for landing instructions." "Oasis Tower, Romeo Tango Eight-Eight, fifteen north, land one."

"Eight-Eight, Oasis Tower, land runway zero nine. Wind light and variable. Altimeter three zero - zero four. Call initial."

"Rog, Tower, you won't have to wait for old Eight-Eight." "Hey, old pal, read me the list. Got the runway in sight. We're going down."

"Lanyard."

"Is that all?"

"I've got my hands on the handles. Don't bug me."

"Tower, Eight-Eight initial, five out."

"Eight-Eight, Oasis Tower, don't have you in sight. Oh, you're on initial for two seven. Continue approach, left traffic, winds light and variable. No conflicting traffic."

"Heh, thanks, Tower. Sorry about that!"

"Say, are you alright up there?"

"No sweat. I'll carry fifteen extra for the holes." "Tower, Eight-Eight turning final. Three legs and pressure."

"Cleared to land."

"How's that for a smooth landing, old pal?"

"Not bad, but my knuckles are still white."

"Let go of the handles then."

"Eight-Eight from Tower. Looks like you have something wrong with your right wing."

"Rog, thanks, Tower."

"Eight-Eight from Mobile. You have damage to your right wing."

"Roger, Mobile, going to ground freq." "Tower, Eight-Eight on ground."

"Roger Eight-Eight, did you get

the message?"

"Rog, Tower, I got the message."

"Eight-Eight, this is Ops One. Do you know you have a hole in your right wing?"

"Rog, Ops One, I know, thank you." "Why don't they print a special edition, for crying out loud."

"Better watch that 'follow-me' truck or we might end up with some more publicity."

"Verry fun-ny, old pal. Put your pins in while I park this thing. See you on the ground."

"Sir, Sir! You have a big hole in your left wing and small one in the right."

"It's just the opposite, Chief. Don't get excited, we just ran into a couple of wooden figs, er, Migs."

"With leaves on?"

"Yeah, ask my old pal here if you don't believe me. Darndest thing you ever saw! Camouflaged, they were!"



"Yes, sir, whatever you say's right. When did you plan on leaving?"

"Right now. This bird is going to be put in the honeyard here."

"Oh, OK, sir, have a safe trip home!"

"Yeah, thanks." (The whole world's a wise guy.)

#### ACT IV

#### Home Drama—Squadron CO's Office

"And that's the whole story, sir, that's how it happened. Right, old pal?"

"Yes, sir. That's the way it was, just as Captain Waylow said."

"In other words, he lies and you swear to it. Who do you guys think you're kidding? I had a full report of the incident in my hands within forty-eight hours after you hit those trees. Seems there was an old prep-pector eating lunch in that west area. You knocked bugs and birds





to his last pan of beans and sour-  
ough. Made him so mad he  
jumped in his jeep and raced to the  
nearest phone to report those low-  
flying fools. Gave a good descrip-  
tion of the aircraft, too. I was  
hoping you would come clean and  
admit a buzz job. Now, I've really  
got to hammer you for trying to  
snivel out of it with the bull story  
about signals."

"But sir, I had to come up with  
something, I had to give it a try.  
I've been a good jack, keeping my  
nose clean, doing my job. I made a  
bad mistake, but I just couldn't  
throw everything away without a  
fight. I've worked too hard. The  
phony story was all my idea and I  
wish I hadn't thought of it. I've got  
no choice but to take my lumps  
and I guess I deserve them."

"Waylow, your words are touch-  
ing. I don't have to see the old man  
for a day or so. I'll think about  
it but to say to him. In the mean-  
time, keep out of sight and trouble.  
Both of you, I'll let you know the  
outcome as quick as I can."

#### ACT V

##### Division CO's Office

"Chief, I've talked to those two  
clowns about the incident and they  
came clean. I've given it a lot of  
thought and I'm satisfied that it  
was an honest mistake. Waylow is  
a good pilot with a lot of potential.  
Hopalong is a steady BO type and  
a good officer. Does his homework  
and can be relied on as far as addi-  
tional duties go. I think the Air  
Force can use both of them. I'm  
inclined to allow as how this was a  
one-time lapse of good judgment.  
Although it's easier to say looking  
back, I'm probably partly to blame  
for not recognizing overenthusiasm  
and pulling in the reins a little.  
That won't happen again. So, I  
strongly recommend leniency. I

don't think we'll regret it."

"Colonel, your words are touch-  
ing. But you know how much pres-  
sure we get when someone even  
scratches aluminum. In this case, I  
think I can persuade the old man  
to drop the matter. You are closer  
to the problem than I am and I  
can appreciate your position and  
accept your judgment. If I couldn't,  
I'd fire you. Besides, this reminds  
me of the time I took out some  
Bell Tel wires with a P-30. Never  
thought I'd survive that one. So  
that's the way we'll go. Tell those  
clowns I'll personally skin 'em alive  
if they so much as come to work  
late. What else have you got?"

#### ACT VI

##### Squadron CO's Office

"... and if you clovers so much  
as come to work late, the old man  
will personally skin you alive. Then,  
you're mine. Now get out of here  
and lay off the kid stuff. Have  
those RBIs in my office bright and  
early tomorrow."

"Yes, sir. Thank you, sir."

#### ACT VII

##### Squadron Snack Bar

"Wizard, old pal, what did I tell  
you? Didn't I say we'd come out  
smelling like a rose? Stick with me,  
old pal, and we'll go places."

"Sure!" (Oh brother, here we go  
again!)



# be prepared to D I V E

By: LT. COL. W. G. PLUNK  
Diving Flight/Tyndall/Tybee Club



**B**ack in May 1968, a young Air Force dependent from Tyndall AFB was presented a certificate at Morrison Springs near Force de Leon, Florida. This certificate signified completion of the two week course of instruction conducted by the Tyndall Diving Club enabling the young man to enjoy full privileges of the club as a qualified diver. He was only one of approximately 20 students, military personnel and dependents, enrolled in the course which is held twice yearly, usually in May and September.

The course does not teach a potential scuba diver to stalk and spear fish, how to collect rare shells, find treasure nor snap a prize-winning underwater photograph. What we do teach is safety, pure and simple common sense safety — the kind that allows a diver to fully enjoy the wonders below in confidence. When he has acquired this confidence, then and only then, will he be able to stalk the fish, pick up the shells, or snap the photo knowing that he is properly prepared, both mentally and physically to pursue the enjoyment of sport diving, skin and scuba.

The Tyndall Diving Course consists of three phases: classroom, pool, and open water dive.

The classroom phase teaches the student three basic subjects—physiological aspects of diving, equipment, and underwater hazards. The first subject is presented by a member of the physiological training flight at Tyndall and explains in detail the diving diseases that a diver could be subjected to such as bends, nitrogen narcosis, oxygen poisoning, air embolism, fatigue, heat loss, etc.; naturally, how to avoid these maladies is the main theme of the lecture. The equipment lecture is held, if possible, at a local dive shop where all types

of equipment are readily available as training aids. The student is told and shown the minimum diving equipment required to safely configure himself for a venture into the depths. He is also shown items which are either unsafe or unnecessary that are commonly for sale on the market. The underwater hazard lecture deals with dangerous marine life, their habits, habitats and how to avoid unpleasant encounters with same. Also discussed are water conditions and areas to avoid.

The pool session, conducted at the base swimming pool, starts with the techniques of skin diving using mask fit and snorkel. This is after the student has demonstrated to the instructor's satisfaction that he is a good safe swimmer. Next comes scuba instruction which starts in very shallow water so that the student may become accustomed to breathing through the regulator and maneuvering with a tank strapped to his back. Required skills to be demonstrated by the student during this phase are buddy breathing (using one regulator between two students), ditch and don in the deep end of the pool (consists of removing all equipment on the bottom, surfacing, return to the bottom and struggle back into the gear), and rescue tow (retrieving a fully equipped diver from the pool bottom, surface and tow him to the far side of the pool).

Final phase of the course is the open water dive conducted preferably in fresh water that offers a depth of at least 50 feet. Here the student, accompanied by his instructor, demonstrates that he can descend to 50 feet, buddy breathe with his instructor at that depth and perform a free ascent from at least 40 feet (without regulator) all without any signs of panic.

Finally, a 1000 yard swim in open water with mask, fins and snorkel, and a salt water dive with instructor, and the student is a qualified sport diver in the eyes of the Tyndall Diving Club. The club is sanctioned by the Air Defense Weapons Center Safety Office and by the National Association of Skin Diver Stores.

Tyndall divers are not professional divers, they dive for the enjoyment of the sport. Club activities include a year long spear fishing contest with trophies presented annually during January; organized and impromptu trips to various diving spots throughout Florida. We, in the Club, are proud of the professional approach that is used in our diving activities.

Club members have occasionally participated in search and recovery operations, such as the search operation conducted 20 miles off Cape San Blas in 95 feet depth for an F-103 wreckage in 1960, and the more recent recovery of an F-106 wreckage off the eastern end of Mexico Beach in which Tyndall divers worked with Navy divers to effect almost total recovery from 30 feet of murky water.

By completing a recognized course of instruction in scuba diving and by continually observing some basic rules of diving which are listed, diving can be a safe, rewarding hobby with every dive ending happily, such as the one cited at the beginning of the article, instead of the very unfortunate end of an Army officer's dive in a Florida spring recently. His body was recovered by professional Navy divers in a dark cave at a depth of 190 feet with two empty air tanks. Or the dive of two Air Force men earlier this year. They too swam to a watery grave in the cave of another Florida spring.

1. Never dive alone.
2. Do not dive if tired or not feeling well.
3. Stay within no-decompression limits, use watch and depth gauge on deep dives.
4. Carry a sharp knife.
5. Use scuba and weight belt harness with quick-release features.
6. Never hold your breath ascending while scuba diving.
7. Ascend at a rate equal or less than your exhaust bubbles.
8. Use an inflatable type flotation device.
9. Always carry a snorkel when scuba or skin diving.
10. Fly a diver's flag when diving in open water.



Instructions on Equipment



Scuba diving techniques in the lease pool.

# There's No "U" in Flying Safety?



The sign reads . . . DON'T LEAVE THE "U" OUT OF FLYING SAFETY. Expressing agreement are Colonel Kenneth E. Nordling, 124th Fighter Group Commander (right), and Captain Bill Goodwin, Flying Safety Officer for the Idaho Air National Guard. The sign appears above a stairway used by pilots as they walk from Operations down to the flight line.

This is the first winner in a series of safety slogans to be submitted monthly by Idaho Air Guard pilots in an effort to continue to focus

attention on the importance of flying safety. The monthly winner and his wife are awarded a free steak dinner by the Group Commander.

Safety is taken seriously by every member of the Idaho Air Guard as evidenced by the fact that they have just completed nineteen months of accident-free flying. This becomes even more significant when you consider that the unit's flying time last year included nearly forty-five hundred hours in F-102 Delta Doggers, and that they were hampered by icy runways and inclement weather nearly five months out of the year.

*In flying safety, there is a U! . . . and there is a me! . . .*

*and there is a them, and there's an us!!!*

# history of

# ILS

by **MSGT BOBBIE L. MASHBURN** / *NCOC, Test Flight Section • 4800 Cam Sq, Peterson Field*

During the early years of aviation, solutions to problems such as determining airspeed, altitude, and range were considered the basic needs to the operation of aircraft. Only as technology advanced did aeronautical organizations begin to envision a method with which to safely land the aircraft when visibility became restricted.

The problem was to develop equipment which would present the same information to the pilot as he would observe under visual flight conditions. Visual references gave the pilot his position in a three-dimensional space, therefore the landing method would need to include these same dimensional elements of information. Since reliability would be the key to establishing pilot's confidence, the method would have to be operable at all times of day and night, during any weather conditions.

It was during the late 1920s that the Bureau of Standards designed the first instrument landing system. Development of this method proved to be a major breakthrough in the estimation of weather as the largest single factor that had limited the

expansion of aviation. Although the equipment has become sophisticated, the basic principles of this first system were sound enough to serve as a model for most developments to this day. Even the contemporary terms Localizer and Glide Path were coined to describe components of this early technique.

The localizer transmitted at a frequency of 278 kilocycles, the radiated signal consisting of 65 and 86.7 cycles per second (cps). The transmitter location was at the stop end of a runway so that its signal extended directly down the middle, with a predominance of either the 65 cps or 86.7 cps forming sideband patterns to the left and right sides of the runway center line. The airborne receiver operated two vibrating reed indicators, one would respond to 65 cps and the other would be resonant at 86.7 cps. The relative amplitudes of vibrations of the reeds indicated the amount of sideband signal and therefore the location of the aircraft with respect to the desired runway course. To land on the course centerline, the pilot positioned his aircraft so that equal amplitudes of vibrations were

produced by the two reeds.

The glide path was radiated from a directive antenna array which was excited at 93.7 mc by a 500 watt transmitter. The signal pattern consisted of an infinite series of points where the transmitter produced signals of equal field strength. The aircraft receiver operated a field strength indicator. The pilot selected any initial value of field strength as a reference and by maintaining a constant reading, the aircraft would descend on the selected path to a landing.

A fan marker indicated by an aural tone the edge of the runway. This transmitter operated on the same frequency as the localizer, therefore no additional receiving equipment was required.

Later developments resulted in the separation of the 65 cps and 86.7 cps localizer sideband patterns. This achievement provided a technique of applying their respective outputs to a zero-center differential indicator. This meter movement was incorporated with the glide path to provide one common indicator which has evolved into the standard cross-pointer instrument used today. ★



**OPERATIONAL  
READINESS  
INSPECTION TEAM  
HQ, ADC**

## "HARPING ON HRP"

Inspectors have discovered many problems in the Human Reliability Program (HRP) during the past year. As you know, problems in HRP mean unfavorable write-ups in inspection reports. Corrective action must be taken by operating unit personnel, and, usually, this is done after an individual "catches hell" for not doing the job properly in the first place. We hate to spend time writing unsatisfactory inspection reports or, for that matter, writing at all. So let's look at the more common HRP problems and discuss ways of preventing or curing them at your unit.

**Problem #1.** "Security badges had been issued to individuals for areas containing nuclear weapons before the commander accepted them under HRP." Since March 1968, there have been two limiting factors and six major deficiencies for violations of this nature. This problem could be solved by implementing strict local management procedures. For example, the badge request form and the HRP certificate could both be signed by the commander at the time the commander accepts the individual under HRP (the final step in HRP processing). The security police pass and identification section must not issue badges until notified that the individual has been accepted under HRP (remark on AF Form 47c). Some helpful hints: Place emphasis upon the completion dates of processing steps under HRP. Don't predate the block for the commander's signature on the HRP certificate. Insure the commander accepts the individual and signs the

HRP certificate before the badge request is signed. Take your HRP roster to pass and ID and compare the date of initial accession for the individual on the HRP with the date that the badge was issued. If badges were issued first, best take some corrective action, such as reaccessing the individual.

**Problem #2.** "Personnel were not properly screened, because required steps were performed out of sequence." In several cases, the Flight Medical Officer reviewed medical records after the commander accepted the individual under HRP. In other cases, the individual signed the HRP certificate after the commander accepted him under the program. The accession steps in AFM 35-99 must be religiously followed.

**Problem #3.** "All required personnel were not cleared under HRP." This problem has cropped up with augmentation. Are your augmentation leaders and security policemen cleared under HRP? It will be very simple to check by comparing the list of augmentees with the HRP roster. Do their names appear on the roster?

**Problem #4.** "Many administrative errors were noted in HRP paperwork." For example, signatures and dates were missing from HRP certificates and entries in medical records; also, blocks on HRP certificates were not checked as to whether it was an initial accession or reaccessing. Sometimes HRP certificate blocks were not checked as to whether the individual had been medically interviewed or his health records



"We don't think you're unreliable or inhuman, it's just that your 284 is . . ."

had been assessed. Occasionally, security clearance and investigation blocks were not completed or were incorrectly completed on HRP certificates, and security clearance and investigation dates were not the same on AF Forms 7, 11, and 47. A thorough self-inspection would eliminate many of these errors.

The HRP rosters are a constant source of errors. Many errors are repeated month-after-month. Close coordination between the unit and CBPO is necessary to eliminate these goods. Don't forget to notify the CBPO on any changes you make concerning HRP because they have the source documents on file.

Problem #5. "Security police are responsible for HRP." This will quickly raise the ire of our security types who inspect HRP. Security has a very important role in HRP, but PERSONNEL is the OPB for the program. We have heard commanders chewing-out

the security police for bad HRP write-ups at some units, even when the security police program was excellent. More HRP monitors from the CBPO should take a more active role in the program. Some HRP monitors incorrectly think that all they have to do is insure personnel records are accurate. They should provide more advice and guidance to the working people at unit level and make staff visits to the units.

We hope the above are beneficial to you in conducting your Human Reliability Program. If these common problems can be eliminated at your units, it will enable us to give more "outstanding" ratings in inspection reports.

BILL NORRIS, Colonel, USAF  
Team Captain, ADC ORI Team

# PERRIN: PATH TO PROFICIENCY



by COLONEL HOWARD C. JOHNSON/  
Deputy Commander, Operations & Training, 4780 Air Defense Wing, Perrin AFB, Texas

"Welcome to Perrin Air Force Base" is the sign that greets transient aviators as they park in front of Base Operations.

If you have been a pilot in ADC for any length of time, you are probably well acquainted with this northeast Texas base located on the shores of Lake Texoma. The "Deuce" and "Dog" are familiar sounding names to many of us and may bring back some fond memories as we relate the mission of this Aerospace Defense Command combat crew training base.

Perrin is the only F-102 combat crew training base in the Air Force. It is directly under the supervision of Tenth Air Force Headquarters at Richards-Gebaur Air Force Base, Missouri.

Initially named Grayson County

Basic Flying School, the base was opened in 1941 and renamed in 1942 in memory of Lieutenant Colonel Elmer Perrin, a native Texan who was killed while testing an Army medium bomber. Except for a two-year period of deactivation (1946-1948), Perrin has been a training base; first of basic cadets, then transition training in a number of different aircraft, leading finally to the F-102.

The primary unit at Perrin today is the 4780th Air Defense Wing. Its mission is to train jet-qualified pilots to operate fighter interceptor aircraft as combat weapons. Accordingly, the Wing, with its highly experienced permanent party-aircrews, stands ready to augment ADC in the event of hostilities. Life support training of

ADC aircrews is another vital mission performed at Perrin. Emphasis is placed on water survival in this one-week school.

The anniversary date of 13 January 1969 marked Perrin's contribution of two consecutive years without a major accident to ADC's flying safety record. During these two years, the wing and its helicopter support group recorded more than 81,500 flying hours. The 385th Flying Squadron (ATC training unit) logged 23,500 hours in T-37 jet trainers. The almost astronomical total of 105,000 hours represents nearly twelve years of around the clock flying by a single aircraft. It would take the average ADC fighter unit over sixteen years to accomplish the record Perrin, in two years.



A very important part of the 48th Air Defense Wing is the two combat crew training squadrons. The 4781st and 4782nd Combat Crew Training Squadrons produce combat-ready F-102 pilots; however, the types of flying courses conducted are many and varied.

Air National Guard pilots are trained to use the F-102 as an air defense weapon and are combat-ready when they reach their units. F-102 pilots are trained and sent to squadrons in Southeast Asia, Europe, Iceland, and Alaska. In addition, UPT graduates and F-4 backseaters are given flying experience in the F-102 prior to being sent to Tyndall for further training in the F-101 or F-106.

SAC crews, who will ultimately fly the B-58, are sent to Peñon for a special transition course in the F-102 to learn the landing characteristics of delta wing aircraft.

Allied officers from several countries are receiving F-102 academic and flying training. The purpose is to provide a cadre of F-102 instructor pilots for their respective air forces.

Each combat crew training squadron has its own instrument training section. When the new student pilot arrives, he is entered in an intensive T-33 instrument training program. Upon completion of this training, he enters an F-102 course that is best suited for his experience level, depending on where his future assignment will be. He progresses through ground school, simulator, and then moves into the flying phase where he will learn formation flying, instruments, aerobatics, and radar intercept techniques.

In addition, each squadron has IFs who maintain qualification in in-flight refueling. They are frequently called upon to train aircrews in refueling for ferry mis-



A Diamond of Deuces over Peñon



Training aircrews for in-flight refueling, another mission performed at Peñon.



An Aardvark (T-102) on the landing roll. One of the nearly 200 landings that occur each day at Peñon AFB.



A Personnel aide completes the training for a Life Support School student.

sions to SEA, and other parts of the world.

The instructors are all experienced ADC aircrews who have served tours in operational units in all parts of the world. The average F-102 time of the instructors is 1200 hours.

Our ground control intercept unit, the 4780th Air Defense Squadron, informally known as "Andy Gump" has a mission of providing the ground intercept control training necessary to qualify pilots in current ADC tactics and techniques. The unit is unique in that it plays a direct part in the base flying program and has no active air defense role. The sole function of Perrin's GCI unit is to provide training support to the wing's combat crew training squadrons. The unit claims to provide "the finest intercept control service within the Air Force" in keeping with its motto "Second to None."

A citation hanging inside Perrin's Base Operations states that our transient alert crew was awarded the Rex Riley Transient Services Award in January, 1964. What it doesn't say is that this dedicated

group of outstanding men has retained a place on the honor list every month since then.

Visiting fliers indicate that Perrin has one of the fastest and safest tarrarounds going. We average 250 satisfied customers per month.

Detachment 13 of the Central Aerospace Rescue and Recovery Center has won the MAC Flying Safety Award for each year since 1962, thus adding to the safety accomplishments of Perrin AFB. In January 1968, Det 13 was the first recipient of the Central ARRC's Commander's Trophy. The detachment provides rescue coverage for all flying activities at Perrin.

Since its arrival at Perrin AFB in June 1967, the 3251st Flying Training Squadron (ATC) has flown 23,500 accident-free hours as stated above conducting its primary mission—Pilot Instructor Training (PIT). The squadron trains all primary instructors for Air Training Command in the Cosmos T-37. To date, 418 USAF pilots and nine allied officers have successfully completed the program.

Our ADC Life Support School, located on nearby Lake Texoma,

conducts life support training aboard flying ADC aircraft and Air National Guard units supporting the ADC mission. It provides a comprehensive course in pre and post ejection bailout procedures, personal and survival equipment operation, and rescue procedures.

Since the school's implementation in October 1964, the number of aircrew fatalities resulting from ejections has decreased considerably within ADC. During the years 1959-1964, ADC had a twenty-two percent aircrew fatality rate resulting from ejections. In 1965-1968, the rate dropped to seven percent, dramatic proof of the effectiveness of life support training.

Last year, our survival school trained 1,210 aircrew members, twice as many as in 1967. In January of this year, the school graduated its 10,000th student.

A small base with a big job—Perrin, with its crew of dedicated troops, continues to accomplish its training mission. The competitive spirit which prevails throughout the base adds to the end product. This is tempered with the judgment required to maintain the outstanding safety record that we have achieved. We are proud of Perrin, its record, and its people. ★

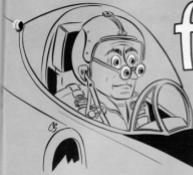
#### ABOUT THE AUTHOR

Colonel Howard C. Johnson has been Deputy Commander for Operations and Training for the 4780th Air Defense Wing at Perrin AFB, Texas, since September 1964. A native Texan, he was educated in Louisville, Kentucky, and has been in the service since 1942.

Colonel Johnson flew combat missions both in Korea and Vietnam. He established the world's altitude record in the F-102, 91,740 feet, in April of 1958.

He participated in the nonstop flight of over 6,000 miles in 71 hours from Chicago AFB, California to Mexico, Spain in January of 1964. With over 4,200 flying hours to his credit, he has flown thirteen different types of aircraft.





# four Eyed Pilot

by DR. RON WALKER, USAF MC / Office of the Command Surgeon, Hq ADC

A recent major aircraft accident again emphasized the necessity to wear regulation spectacles at all times.

The following is a brief summary of the investigative findings: The pilot broke his regulation flying glasses just prior to flight. Instead of cancelling or taking mobile control he flew with a pair of commercially obtained glasses. The lens of these glasses, however, were tinted and reduced light transmission by 17%. Also the frames did not fit his oxygen mask and helmet and thus "ride high." This resulted in the pilot looking through the lower part (the near vision portion) of his bifocal prescriptions. Upon returning to base the pilot landed short. Luckily he was not injured but a million dollar aircraft was destroyed. Other factors contributed to this accident of course but the fact remains that a definite contributing cause to this accident was the visual problems resulting from the wearing of com-

mercially obtained spectacles.

AFB 167-3 is very specific in the statement of policy on the use of aircrew spectacles. Paragraph 10b states only spectacles authorized by this regulation will be prescribed and issued to aircrew members.

Your flying spectacles are designed by experts at the School of Aerospace Medicine to be an integral part of your helmet-oxygen mask combination assuring a correct and comfortable fit. They are coated with a substance that reduces glare and makes them ideal for night flying.

As you are all well aware your vision is tested during each annual physical examination. There is a reason for this; beginning about age 35-40 your eye lenses lose some of their elasticity and subsequently you become unable to correctly focus your eyes on objects. This change in lens elasticity is not a static thing but progresses with age, so although your vision may

be corrected one year with one prescription, the next year you may require more correction.

It is entirely possible that your vision may deteriorate so fast that you would require several different prescriptions in the space of one year. So don't wait to see the optometrist until your annual examination if you feel your vision has changed before time for your physical.

Each time you sign a 1042 (AF Form 1042, Medical Recommendation for Flying Duty) you are required to initial item 20 if appropriate. This is your acknowledgment that you are aware of and accept your responsibility to wear spectacles while performing duties requiring corrected visual acuity. It is your responsibility to yourself and to the Air Force to fly in your safest configuration. **Wear your spectacles, wear the proper spectacles!** The life you save may be your own. ■

*the name of the game is*

# “MAXIMUM PERFORMANCE”

by MAJOR L. D. HAIGHT • DCS/Operations (ADOTT), HQ ADC

*Major L. D. Haight has been flying the F-106 since 1969 and has been directly involved as an instructor in the ACT training program since its advent in ADC in 1967. His personal views on the ACT training program are expressed in this article to stimulate an interest in those about to undergo ACT training and to enlighten others about the intent of the program. Major Haight is currently assigned to Headquarters ADC as a Tactics Officer in the Interceptor Division.*

All F-106 squadrons are going to be trained in Aerial Combat Tactics. This training, along with in-flight schooling, is the major item in preparing the F-106 units to support the global air defense mission.

Since 1967, ACT has been an established program in some F-106 units. It is a proved program. Just what is it? First of all it is the most comprehensive training program in basic fighter maneuvers and flight tactics in existence in the USAF today. ADC put this program together after studying similar programs from other commands. They were able to extract the best from each of them, consolidate them into a 12 week qualification course and then maintain

that course without watering down its instruction.

What is the end result of this program? You get a team capable of operating in a hostile fighter environment, but first and foremost, it produces a pilot who has the confidence and ability to handle his aircraft throughout its entire maneuvering envelope. What does that mean? It means you don't have a pilot that breaks off a high altitude snap-up and throws a/cren into the turn and himself into a spin. You say, "No one would do that"—wrong! I can cite you four known examples where the jocks pulled the bird into a spin because they weren't fully aware of the proper control techniques with a high angle of attack and low air-speed.

The ACT program is designed to insure that the pilot fully understands how to maneuver his machine throughout its envelope and particularly when he is approaching its performance limits. In fact, maximum performance is the name of the game. Maximum performance flying is the ability of the pilot to utilize his skill in safely getting the best out of his aircraft. Ask yourself—do you know what the maximum performance capabilities of your aircraft are and can

you safely approach them? I seriously doubt it, unless you've been exposed to them in a planned and supervised manner—which is just what one aspect of the ACT program is designed to do. You say "SO WHAT! Who wants the pilot to fly at maximum performance? What requires it? We don't need it to perform our mission." That used to be true. The classic mission for CONUS defense didn't require maximum performance out of the F-106. It was approached occasionally when breaking off a special weapons pass but it's also a fact that not all pilots know how to keep the bird under control in that instance!

ADC has a new mission now as well as the classic air defense role and that mission—global air defense—requires that pilots know and are able to recognize the maximum performance limits of the aircraft and develop the ability to approach those limits with confidence. You still say, "No requirement for maximum performance." Think again, we have F-106s in Korea right now and the threat they face is hostile fighters. I don't care how good you think you are, if you don't understand the basic fighter maneuvers and the maximum performance characteristics

**I**f your aircraft, then you're a sitting duck for the opposition. It's not only Korea, almost any place the skies might be deployed, they face a hostile fighter threat. We know from first hand experience that the opposition has good machines and they know how to employ them. Our most effective counter to that threat is the best possible training in ACT.

Well, I got off the track and wavered my flag a bit. I was talking about what the ACT program produces. Basically, it produces a pilot who is better prepared to handle his machine because he understands its performance characteristics. Example—the approach to landing, and that is a classic high angle of attack, low airspeed situation that pilots face every day. Pilots who have gone through the ACT program understand and are better able to cope with the possibilities of adverse yaw in the traffic pattern and better prepared to set the bird down where they want it at the proper airspeed. The ACT program has shown us much about the need for effective use of rudder control in all low airspeed and high angle of attack situations and, frankly, the modern jet age has drifted away from stressing its value. So much for a pilot better prepared to handle his machine.

Some of you are saying "Well and good, but pulling all those 'Go' tones up the radar set and the bird isn't good for any mission." That is not true. The overall objective of all our training is to bring armament to bear on an enemy. The ACT program demands that a compatible mix between radar and basic fighter maneuvers be accomplished. You can be the best stick in town, but if you can't lock-on and fire you might as well be home milking the cows. About that G pulling tear-

ing up the radar set. That cry has been put out by two years of experience, it just ain't so.

Effective employment in a fighter-to-fighter environment of a bird that only fires missiles presents some unique problems. When you produce a pilot who can lock-on in a maneuvering fight and put a missile on the target you've got a pilot who is certainly able to cope with the front stern scotchk.

All this about ACT training and maximum performance and some of you are asking "What is the program?" It's all outlined in AIDCM 53-100, Vol III. The program is run by the best qualified IPs available. It is closely monitored and supervised so it doesn't degenerate into a slow speed flying contest or an unplanned rat race. Each mission has specific objectives and you don't take side tracks, but press from one to another to accomplish the desired training. Air discipline is a specific product that is derived from the training. Basically, it takes a pilot step by step through confidence maneuvers designed to show him the maximum performance limits of his aircraft—how to recognize the approach to them and the proper control techniques to operate safely within these limits.

Then a mastery of the basic fighter maneuvers. They haven't changed any since the "Spad," they're just defined now in a clear cut manner and taught as separate maneuvers. Each pilot learns how to perform them and their application in a maneuvering engagement.

Then tactical formation, teamwork and employment principles are brought in. The basics are put together and the fight is on! You've been given the tools. You must be aggressive and willing to pull your guts out—the only way you'll convince yourself of this is to know

your aircraft, then use it. The basic confidence maneuvers are well named because they are just that. Only if you have complete confidence in them and your ability to perform them will you consistently be able to call tracking from six o'clock home.

I don't mean to imply that a ham-handed brute wins in this game. Maximum performance is the key, not yank and bank. Maximum performance, a thorough knowledge of basic fighter maneuvers, their counter plus aggressiveness and judgment.

There's a few of you who have been saying to yourselves:

*I'm half horse and half alligator and the rest of me is real hot snapping turtle!*

*I've a head like a bombshell!*

*Four rows of saw teeth and holes punched for nose.*

*Steel ribs and an iron back-bone, A bushed wire tail and I don't give a damn where I drag it.*

*I'm the toughest bird in the sky!*

*I can whip my weight in weight!*  
*The further up the creek you go the tougher they get and I come from the head of it!*

#### WH-O-O-O-OOP-EE

Well, you nip-tailed maver are going to get your chance to put your money where your mouth is! But, just remember — there's always someone just a little better than you and the only way you can keep from finding him too soon is to know your bird and how to use it and keep a cool head.

Like all the other flying we do, one thing is still the same. Safety is paramount! It cannot be stressed enough. Know the safety rules and your limitations, every pilot must know the spin and post stall situation recovery like his serial number. We've got a real live mission in ACT and a good one. Let's stay on top of it right from the start.★

# ✓ POINTS

We would sincerely appreciate your inputs mailed directly to:  
The Editor, INTERCEPTOR, Box 46, Ent AFB, Colorado 80912.

✓ F-101 Drivers: In the past we have experienced mystifying rapid losses of fuel from the F-101. Some of these rapid fuel losses have resulted in aircraft being lost. A plausible explanation which appears technically correct has now been discovered. If the battery is dead and if the pilot has neglected to select the battery switch to the "ON" position, then two dissociated means of losing fuel can occur. First, upon selecting afterburners "OFF" the afterburners will not terminate unless the throttle levers are retarded to below the afterburner emergency cutoff position (85%). The pilot would normally detect that the afterburner did not terminate; however, at extremely high altitudes it is possible that this condition may go undetected for some time, thus permitting a rapid depletion of fuel. Stranger things have happened. The second possible means of losing fuel is through the wing tank vent. If, after fuel transferring from wing to fuselage tanks has been started, the battery goes dead and the battery switch is off, then the motor operated fuel shut-off valve will not close when the fuselage switch is selected from "gravity" to "normal."

Thus the fuel pressure (16-24 PSI) will overcome the wing tank air pressure (11-15 PSI) allowing fuel to feed back into the wing tank and eventually overboard through the vent. There is a way to avoid either of the foregoing situations. That is to insure that the battery switch is "ON". Appropriate amendments to the Dash One and the checklists are forthcoming. (ADCSA)

✓ A recent fatal accident occurred when a T-33 lost power immediately after take-off. The pilot attempted to regain power; when he found this to be impossible, he elected to eject. He did not get out of the aircraft. In reviewing the accident, it was discovered that the aircraft nosed down violently shortly after the pilot advised that he was going to eject. This nose-down movement can be attributed to three possibilities. Either the aircraft stalled or the trim was still set at neutral or a combination of these two. It is difficult for us to do anything about stalling of the aircraft except to remind pilots that the envelope for the "O" altitude ejection seat in the T-33 also includes

120 KIAS minimum with no sink rate. However, regarding the neutral trim position, all T-33 pilots should be aware that with the trim "in the green," at low speeds the nose will tend to drop. With the trim in this position, if a pilot takes his hands off the controls and reaches for the ejection handles, it is possible that the nose will drop rapidly with the resultant loss of safety margin for ejection. It is therefore recommended that all T-33 pilots review their own technique concerning use of trim immediately after takeoff with a view to removing the nose-down trim as soon as is practical after airborne. (ADCSA)

The time is approaching when we must again share the sky with our feathered friends. Unfortunately, it is not conducive to aircraft longevity to share the exact airspace. Incident reports of bird strikes are on the increase in the southern areas and the northern units will be joining us soon. It is an old song, but it's necessary to sing it again. Aircrews should review local bird concentrations and be aware of migratory routes when cross-country. It's a little extra effort, but it may keep your own "feathers" intact. Don't let ignorance of a problem "fowl" up your whole day. (ADCSA)

Who would think that a simple job like installing an access panel could contribute to a major aircraft accident? Would you believe that it is possible to have a breakdown in communications between the shops, maintenance control, and the flight line personnel, which permitted premature installation of an access panel? It happened and was

listed as a contributing factor to a major aircraft accident which occurred recently within this Command. Sometimes it is the simple routine jobs that lead us down the garden path. We tend to get so involved with the bigger tasks that we forget the importance of the simple ones. In this particular accident it is felt that the panel was installed prior to job completion. It is evident that the simple tasks must be treated in the same professional manner as are the major jobs. (ADCSA)

It has come to our attention that the WARNING on Page 4-11 in the T-33 Dash One, concerning the consequences when the TACAN circuit breaker pops out, is not widely known. It is strongly recommended that all T-33 pilots familiarize themselves with this WARNING. (ADCSA)

## BLUE ZOO



"You may wonder why I've called this meeting."

# DOWN and out

## T-33 CRASH ON FINAL

The mission started partly as a navigational proficiency flight for the front seat pilot, and partly as transportation of the back seat pilot to another base for physiological training. The flight to destination was uneventful. So was the RON.

At noon on the following day, the rear seat pilot joined the other pilot at base operations after the physiological training had been completed. Weather at home plate was briefed as 800 broken, 2,000 broken, 8,000 overcast with 3 miles in light rain and fog. Intermittent conditions would be 800 overcast with 1 mile in rainshowers. After some discussion, the pilot in command decided to file for home since the alternate airport was en-route. Takeoff, climbout, and level-off were normal and the flight proceeded toward destination. Several times the front seat pilot requested and received weather from the air traffic control center. Approaching destination, he made the decision to land at the alternate airport so as to have more fuel available for approaches to home base where the weather had been deteriorating.

After reaching an 800 foot ceil-

ing at the alternate, the aircraft was topped off with fuel. Weather for destination was then given as 800 broken, 800 overcast with 2 miles in light rain and fog. Intermittent conditions of 300 broken and 1 mile in rainshowers were forecast for arrival. An IFR flight plan was filed with an estimated arrival time of 1814; conditions of darkness would exist. Takeoff and climb to FL 240 were normal.

Approximately 70 miles from destination fix, the pilot was cleared to descend to 5,000 feet. Before doing so, he asked for and received current weather from both the air traffic control center and the airport tower. He then began his descent. Fuel was about 570 gallons at this point. Descent and handoff to approach control was normal. Again the pilot asked for and received existing weather conditions. After handoff to GCA, the rear seat pilot was asked to call out altitudes of 400, 300, and 200 feet on final. GCA advised that existing weather conditions were now 200 overcast with 1 mile in light rain.

Aircraft landing gear and partial flaps were extended and checked. Full flaps were extended upon notification to begin descent for landing by the GCA Final Control-

ler. The aircraft remained on a center line but was slightly high on the glide slope until reaching 600 feet at which time the pilot was advised that he was on centerline and glide path. The aircraft continued on centerline and glide path until 400 feet when the rear seat pilot called out the altitude as requested. According to the rear seat pilot, the aircraft began to level off at 400 feet, but to his knowledge, the other pilot did not advance power beyond that which had been used to maintain a final approach speed of 130 knots. The GCA controller noticed the level-off and instructed a go-around. The front seat pilot called, "We have to get out of here. We have to get out of here." The rear seat pilot understood this to mean that they would make a go-around and either attempt another approach or go to the alternate. Shortly after the level-off maneuver, the rear seat pilot noted a rather nose-high attitude and an airspeed below 100 knots. As the aircraft began to shudder, the front seat pilot called, "We have to get out!" At that point, the rear seat pilot was ejected out of the aircraft by the pilot in the front. He tumbled backward, separated from the seat, and after the parachute opened, floated down for about 3-5 seconds before he landed on his feet approximately 50 feet from the aircraft impact point. The front seat pilot didn't make it and was found with a partially opened parachute some 450 feet from the aircraft impact point. The aircraft hit with no forward movement, within 10 degrees of vertical, with a wing low attitude, approximately 500 yards from and to the side of the landing runway. Landing gear was down and locked and the landing flaps were fully extended.





The primary cause of the accident was determined to be operator error in that the pilot failed to maintain control of the aircraft, allowed it to stall and crash into the ground.

To drop the matter here would be to leave the very important question "Why?" unanswered. Why did the pilot begin to level off at 400 feet and from all indications not advance aircraft power? Since the pilot is no longer with us, we can only make an educated guess based on available information.

The front seat pilot was considered to be the conscientious type. His supervisors were impressed by his flight planning and flight management ability during the 10 months in which he was assigned to the unit. Although on this mission he violated a local unit regulation by not reporting a flight deviation due to weather, it nevertheless had no bearing on his final approach actions. His total pilot time was just over 1900 hours, of which 287 hours were in jets and 150 hours of this in the T-33. Two days prior to the accident, he completed 5 approaches in low ceiling conditions and monitored at least 5 more precision approaches by a pilot who was in the rear seat. He had flown a total of 7 hours in the T-33 during the previous 30 days.

He was an airline pilot who was probably the reason behind his request for readout of altitudes during descent and on final approach.

Based on the facts available, the answer as to why he leveled off at 400 feet most probably lies somewhere between lack of instrument proficiency in the T-33 and spatial disorientation. It's possible that when the rear seat pilot called out 400 feet, the front seat pilot took

his eyes from the gauges to look for the runway and not being able to see it, returned to the gauges. But because of disorientation or some other upsetting factor, he couldn't reestablish his concentration. Realizing this could have prompted him to call, "We have to get out of here," and to take action accordingly.

Whether or not this explanation is plausible, and it won't be to some, it does present an opportunity to re-emphasize the point that, when a pilot is making an approach in low weather conditions, he's crazy if he takes his eyes from the gauges before hitting minimums. It's just not good instrument procedure. Normally, the GIB flies the gauges and the GIF looks for the runway, but in this case the GIB wasn't checked out in the bird.

Only one nagging question remains. If the pilot intended to make a go-around or if he was disoriented to some extent, how come he didn't advance power as he brought the nose up? Going full Mower is a second nature action by a pilot in those circumstances, regardless of how proficient he is or isn't. Apparently, he didn't even do it when the aircraft began to shudder as it approached the stall. It doesn't make sense. Could it be that he experienced one of those odd-ball partial fuel control failures, the kind that occur in the air and can't be duplicated on the ground? If so, he could have been grabbing for some sky before ejection, and the warning he gave the back-seater would fit in a little better. We'll never know for sure, but it's something to think about. Filing into an airframe with clouds on the deck and instrument proficiency at low tide is also worthy of serious consideration.

## FIELD REPORTS

**T-33A, SMOKE IN COCKPIT.** When gear handle was placed down prior to SFO high key, smoke entered the cockpit. Appeared to be coming from the left side of the rear cockpit instrument panel. Uneventful precautionary landing was made out of SFO pattern. Investigation revealed a badly burned landing gear warning horn. No other electrical defects were noted.

**F-106B, AC/DC FAILURE.** While flying at 45,000 feet, 1.1 mach, the AC/DC power flashed on and off rapidly twenty or more times in the space of approximately 60 seconds. Power was reduced and descent was started at which time the flashing ceased and AC/DC power remained normal until landing. The radio also failed but came back on the line approximately 10 minutes later. Investigation revealed that the electrical control panel was corroded and dirty. The panel and electrical connections were cleaned and tightened. The aircraft flew without a recurring writeup.

**F-102A, SMOKE AND FUMES IN COCKPIT.** Pilot declared emergency immediately after takeoff for electrical fumes in the cockpit. Uneventful landing was performed. Investigation revealed a broken bracket on a cockpit floodlight, allowing the bulb to lie against the rubber light shield causing fumes in the cockpit. A new bracket was installed and adequate clearance between the bulb and shield obtained.

**F-102, OXYGEN PRESSURE.** During flight at Ft. 360, oxygen pressure became so extreme that pilot could not exhale. Recovery made using bailout bottle after aircraft system depleted. Defective oxygen regulator.

**T-33A, ENGINE VIBRATION.** Transition was being flown with a pilot for recurrency in the T-33. After go-around from a low approach a vibration was both heard and felt. The IP declared an emergency and an uneventful landing was performed. After landing, the nose wheel curtain was found hanging loose below the gear doors. The upper portion had come loose and the curtain was held by the lower retaining straps. The nose wheel had an ice grip tire mounted and there were marks on the curtain where the wheel had rubbed. Suspect that the curtain was torn loose upon gear retraction and that it fell into the slipstream on the first gear extension, causing the vibration.

**TF-102A, HIGH OIL PRESSURE.** While at 20,000 feet approximately "O" G, the oil pressure light illuminated on the telltale panel. Oil pressure gauge read 70 psi. RTB was requested and a precautionary landing was performed. Maintenance personnel discovered the electrical leads to the oil pressure indicator reversed. The leads were properly installed and pressure transmitter adjusted. The engine was run up with a direct reading gauge installed and found to be OK.

**F-101B, FLUCTUATING FUEL FLOW.** While cruising at 35,000 feet, the throttles were advanced to the full military position. A fuel flow fluctuation of 800 to 1100 PPH was noted with an accompanying EPR fluctuation of 2.3 to 2.9. The #1 EGT was also consistently 80°C lower than #2. Power was reduced and descent to lower altitude commenced. Emergency fuel control on #1 engine was selected and fluctuations ceased. Uneventful precautionary landing was accomplished at home base. Investigation revealed internal failure of the main fuel control.

**F-102A, PRECAUTIONARY LANDING.** This aircraft suffered from a most unusual complete DC electrical failure. The pilot first noted dampers popping off and a very slow trim. He headed home thinking he had flight control malfunctions and at this point his UHF radio began cycling. Soon his nav aids failed. On lowering the gear, normal means, he got no visual indication or physical feeling of the gear going down. His wingman confirmed "no gear down." The emergency gear lowering system was used and the gear went down, still with absolutely no cockpit indications. The landing was uneventful. The DC generator shaft had failed. However, there was no cockpit indication. The generator fail light relay had failed. When this failed it did not kick the nonessential DC bus off the line and did not light the DC Gen Fail Light, thus no caution lights in the cockpit to warn the pilot. Couple this with a bright sunlit morning on 40,000 feet and the pilot with no cockpit indications of trouble hit his battery run down. His TR Unit worked to re-retain his AC generator and his emergency DC bus throughout.

**F-102 WINDSCREEN.** Aircraft experienced cracked right windshield. NESA wiring was observed to be rubbing in the forward lower corner of the pane. Aircraft slowed down and landed okay. Cause: Short in NESA panel caused windshield to crack.

**F-101B, WOM!** A functional check flight was being flown after an engine change. After takeoff, the gear would not retract and the steady fire warning light illuminated for the right engine. The right engine throttle was retarded from the afterburner range directly to the off position, and the fire warning light went out. The landing gear circuit breaker and the rudder and flap circuit breaker were found to be popped. The landing gear circuit breaker was reset and the gear retracted. The rudder and flap circuit breaker could not be reset. The single engine landing was made without incident. With the installation of the new engine, the mating of the engine portion with the aircraft portion of the 16th stage bleed air duct assembly was not complete when the locking clamp was installed over the coupling.

**F-106, CONTROL STICK.** Stick "bound up" momentarily during landing approach. Landing completed without incident. Cause: An extra bolt of the type used to secure the stick assembly to the aircraft was found under the stick linkage.

**F-102A, FLIGHT CONTROLS.** While descending through 18,000, 400 KIAS, aircraft went into an abrupt right hand, half ball yaw. Yaw increased in severity with the application of power and decreased with decreasing power. No rudder pedal movement noted. Yaw and pitch dampers remained engaged. Yaw ceased upon disengagement of dampers. Rudder trim toggle switch worked normally. Pilot reengaged dampers and flew home. Unable to tell if malfunction persisted after reengagement of dampers. Investigation revealed the elevator amplifier engage transit was approximately 1/2 inch low.

**F-106B, TURBINE COOLER FAILURE.** Aircraft was in pull up for a front snap-up attack when the pilot heard a loud noise followed by smoke and dust entering the cockpit. The cockpit temperature was inoperative thereafter. The aircraft was returned to home base where a successful landing was made. Investigation revealed internal failure of the turbine cooler.

**F-101B, RUDDER MALFUNCTION.** After takeoff at 200 KIAS the rudder went full right. The stab aug was turned off. At 25,000 feet the AFCS was selected and again the rudder went full right. The AFCS was turned off. An uneventful landing was made at homeplate. Corrective action was to replace the 1A25 module on the calibrator in the aileron and rudder summing network.

**F-102, INSTRUMENT MALFUNCTION.** Aircraft was being flown on an FCP. After being airborne for a short period of time, pilot reported he had lost all of his static and pressure instruments. A join-up was effected with another F-102 and a formation approach was flown. Cause: The set knob for the airspeed indicator index had been sheared and it fell off during this flight. This allowed the cockpit pressurization to leak into the static system. Air speed indicator was removed and replaced. Static system checked ok.

**F-106B, HEAVY STICK FORCES.** The pilot noted heavy flight control stick forces during takeoff. Additional pressure was required to control pitch as airspeed increased. At final approach speed aircraft control was normal, but nose was heavy during roundout for a precautionary landing. Investigation revealed an internal air leak in the artificial feel force regulator.

## FIELD REPORTS

**F-102A, ENGINE MALFUNCTION.** During second intercept pass an AC power failure occurred which could not be brought back on the line. While 39 miles from home during RTB, oil pressure light came on accompanied by complete loss of oil pressure. Power setting was set at 89%. A successful SPO from 18,000 feet was accomplished. Pilot stated that aircraft was shaking so badly during SPO he could hardly read the airspeed indicator. Angle gear adapter oil pressure fitting failed due to overtorquing or improper installation of fitting.

**F-102 RAM AIR TURBINE.** The aircraft experienced a hydraulic oil hot light five minutes after take-off. Airspeed was reduced to 320-340 KIAS and uneventful straight-in landing accomplished. After landing it was discovered that the RAT had extended in flight. The pilot stated that he did not hear a click when he closed the RAT on preflight, but the door remained closed and appeared secure when the 80-pound pull was applied. Corrective action: RAT door and latch adjusted to correct specifications.

**F-33A, BROKEN BUCKETS.** On a post-flight inspection the tips of three turbine venter blades were found to be broken off. There had been no unusual indications during the previous flight. Investigation revealed a mismatch of turbine buckets by another organization during overhaul and inspection. Corrective action: Re-installed six waspally buckets to replace S-816 buckets.

**F-101B, COCKPIT SMOKE.** During climbout, the RIO noticed a heat buildup in the rear cockpit and shortly thereafter noticed blue smoke within cockpit. Approximately 30 seconds later, pilot noticed smoke from left rear area of front cockpit. Defrosters were turned off and temperature turned down. Ram and dump was selected. Straight in landing accomplished. Maintenance personnel found small hydraulic leak in line to #1 engine primary hydraulic pump. Line retroqued.

**F-101B FUEL PROBLEM.** The flight was air abort when fuel in cell two was 1800 pounds and neither normal or all pumps selection on fuselage fuel transfer would increase quantity. Fuel continued to transfer from the external tank and the wings. Aircraft landed ASAP. The aircraft was refueled after landing and the malfunction was not present. After considerable trouble-shooting, the malfunction appeared when both the external and wing tank had fed out. The transfer pumps ran when normal or all pumps was selected; however, cell two was locked out (fuel flow stopped) and would receive fuel only by gravity. The fuel control relay panel was checked and two contacts on relay 15 were inoperative.

**F-33A, RUNAWAY TRIM.** Elevator trim went to full nose down as pilot started go-around during an SPO. Trim override was engaged. Go-around and subsequent landing were completed without further difficulty. Investigation revealed the nose trim down selector relay was stuck in the nose down position and a wire under the left forward console of rear cockpit had an electrical short.

**F-106A, DRAG CHUTE.** No drag chute on land. There was no drag chute in the canister on post-flight inspection. "Drag Chute Deployed" write-up in Form 781 had been signed off from previous flight. Speed brakes were closed during preflight so pilot didn't visually check chute installed. There was no noticeable reaction when drag chute handle was pulled and no drag chute was found on or in the vicinity of the runway. Drag chute deployments since have been normal. Exact cause of malfunction undetermined.

**F-101B, ENGINE VIBRATIONS.** The number two engine vibrated between 30 and 40 percent rpm during start and shutdowns. Vibrations were checked and determined to be within limits. On an intercept training mission during a snap-up the afterburner blew out. On a second intercept the engine lost power. EGT was fluctuating between 180 and 200° C, and rpm was low. Throttle position was near military. An emergency was declared, the number two engine placed at idle power and an uneventful landing accomplished. On final it was noted that the number two engine responded normally. Cause factors: The pop-open nozzles were found out of adjustment; turbine wheel, 3rd stage nozzle guide vanes damaged; C bushings were found loose.

THE WAY THE BALL

# Bounces

## ACCIDENT RATE

1 JAN 1968 31 MARCH 1969

ADC ANG

Thru March 1969

4.7

14.9

MAJOR - ALL AIRCRAFT

## ON TOP OF THE HEAP

MO	ADC	MO	ADC	MO	ANG
59	48 F15	24	4758 D5ES	74	143 Ftr Gp
34	4603 AB Gp	23	351 AEW&C	72	112 Ftr Gp
28	1 Ftr Wg	20	343 Ftr Gp	62	141 Ftr Gp
26	75 F15	19	52 Ftr Gp	53	148 Ftr Gp

**ACCIDENT FREE**

## BOX SCORE

ACCIDENTS FOR	1st AF	4th AF	10th AF	ADW/C	4600	ANG

CONV						
T-33		1				3
F-100						
F-101						
F TF-102					1	1
F-104			1	1		
F-106						
B-57	1	1	1			
F-89						
EC-121						

MINOR ACCIDENTS THIS PERIOD — 0  
MINOR ACCIDENTS CUMULATIVE — 3

## CUMULATIVE RATE

1 JAN 1968 31 MARCH 1969

ADC ANG

JET	6.5	16.9
CONVENTIONAL	0.0	0.0

BY AIRCRAFT	T-33	4.4	46.3
	F-89		0
	F-100	0	
	F-101	0	
	F TF-102	0	8.6
	F-104	0	
	F-106	6.9	
	B-57	42.5	
	EC-121	0	

SAFE - MAJOR ACCIDENTS PER 100,000 FLIGHT HOURS

# we point with



Captain Bruce W. Sweet  
47th Flying Training Squadron  
Tyndall AFB, Florida

# PRIDE

## T-33, FLAMEOUT LANDING

Captain Sweet, flying a T-33 aircraft, departed Barksdale AFB, Louisiana, early in the morning on a parts pickup mission. Climb, level-off at FL 200, and initial cruise were uneventful. At a point approximately forty miles west of Columbus, Georgia, the pilot heard two consecutive bangs, accompanied by engine vibration. In a fraction of a second the engine began to whine and accelerated from 945 to 1000 RPM. The throttle was immediately retarded without effect on engine RPM.

Smoke and flames began filling the cockpit and the throttle was stopcocked. Noting the RPM increasing towards 1050 and the


EGT approaching 1000 degrees, Captain Sweet activated the main fuel shut-off switch. The smoke began to clear and the RPM and EGT were observed at stabilized "flameout" conditions.

An emergency was declared with Atlanta Center and vectors were immediately given to Lawson AAF, Georgia. Descending through 15,000 feet, Captain Sweet realized that he would be below optimum altitude on arrival at Lawson AAF. Hoping to extend his range, he attempted an airstart. The attempt resulted in another overspeed and overtemp condition and the main fuel shut-off switch was again placed in the closed position. Climb was continued to Lawson AAF where a flameout pattern was

entered from a modified low key position. Landing gear and flaps were lowered using normal procedures and a landing accomplished with no damage to the aircraft.

Investigation revealed that the solenoid operated by-pass valve on the emergency fuel control had broken loose resulting in simultaneous operation of the main and emergency fuel controls, with both systems supplying fuel to the engine.

Captain Sweet, through his superior flying skill and calm management of a critical emergency situation, averted the loss of an aircraft and possible injury to himself and others, and made himself worthy of the ADC "We Point with Pride" award.



# AFTER BURNING

Address your letters to The Editor, INTERCEPTOR, 645 ADE (ADCEAR) Box 478 CD 80712  
To be published, your letters must be signed,  
but names will be withheld upon request.

## A NEW AIM (?)

May I be among the many to congratulate you for your superb 10th Anniversary issue of INTERCEPTOR. It represents a wonderful synthesis of historic developments in air defense and fighter-interceptor operations.

However, it is with regret that I must point out your omission of the leading candidate for the AIM (which is even further suited for its role than the F2-87, portrayed on page 24 as the possible AIM). This weapon system has proved itself in all Air Force environments, and has performed the same combat missions as every other aerial participant in the AIM. It is, in short, the answer to a multi-mission, multi-mission capability for intercept-quick defense—the Q-18.

After extensive field trials in SEA, extreme capabilities of the Q-18 in the field of air defense can be revealed. The pilot possesses options of the stabilizing maneuvering, hand-held ballistic guidance, and forward-looking ECM-proof phosphor-coated radars (digitally controlled by the Mark VII computer). Exploiting the two-man concept, the rear seat crewmember handles the low-altitude threat the EOC (Environmental Ground Observer), using cloth panels and colored smoke to decrease the phase shift, positions the Q-18 ahead of the target track, the weapon system operator then discharges hundreds of No. 7 boosters from each gun window, filling the ether with clouds of free-falling FOD.

The Q-18, like another spectacular interceptor, has simplified the problems of weapon system control in that it, too, is employed at one speed and altitude. Details of combat performance are classified, of course, but a reproduction of its SAGE program performance correction card in the Interceptor Weapons Newsletter (Winter, 1968) is available for personal and/or copying.

Major Jonathan Meyer  
4787 Air Defense Sq (HWS)  
Tyndall AFB, Florida

Yours always looking for a better mess.

## WINGS TO CAPT BILLY BISHOP

I read with pleasure your Tenth Anniversary issue of the INTERCEPTOR. I would like to add, to what I am sure is already many, my congratulations for an excellent issue.

I have always been a student of WWI planes and pilots, and consider their feats fantastic considering their aircraft compared with what we piloted in WWII and today.

I realize that it would have been impossible to cover all the WWI Aces; however, one was not included that I, as well as many others, consider the Allied Ace of Aces, Captain Billy Bishop of Canada. If my memory is correct, he had 52 creditable kills and a total of 123 including those that were credited.

Thanks again for the reading pleasure you provided.

11 Col James H. Wham  
Chief of Supply  
Lowry AFB, Colorado

"Our WWI report was well aware of the exploits of Billy Bishop and had intended to include him in the text. However, occupied and groggy from reading stacks of research material, he inadvertently omitted the Canadian Ace. Our apologies for a gross oversight and our thanks for your kind remarks.

## AGAIN CAPTAIN BISHOP

I picked up a copy of the Tenth Anniversary issue at the Fighter Pilots dinner in Houston (AF Association Convention) recently. Enjoyed very much the stories and pictures of planes of WWI, especially as I happened to have been reading about the ace (Jr. Over to the General from 1915 to 1918) supplying the British; they could never decide if I was really on their side.

Although I did not know personally too many of the pilots named in your story, I did know about them and their exploits at the time, and witnessed quite a few. What I did not understand was your omission of any mention of the Canadian Ace Billy

Bishop (late Air Marshal Bishop of Canada). We had always considered him the No. 1 Allied Ace of WWI even outstriking Rene Fonck. Was there some reason for overlooking Bishop?? Would appreciate very much some explanation. Many thanks.

A. W. Smith  
P. O. Box 26446  
Houston, Texas 77006

\*See remarks above.

## LATE INTERCEPTOR DISTRIBUTION

Please explain why we receive our copies of INTERCEPTOR so late. Your January Tenth Anniversary issue arrived at Tyndall in mid-March. Your February issue arrived on 3 April.

Please forward two copies of "The Fighter Pilot" until.

Major Thomas E. Wood  
Commander, Det 1, 40 FS  
Tyndall Field, Wainwright

\*Very for the tardiness, but we only got so many fingers and each one was stuck in a different place. In addition to the Tenth Anniversary issue, which was double size, we also created out a special 40-page January edition on the F-101 and F-104. And what's more, you guys, note that and that and two Fighter Pilot cards.

## HELP WANTED

The 100th Fighter Group, Montana Air National Guard, is an AOC unit flying F-105s. The unit is located at Great Falls, Montana, in the heart of the best hunting and fishing in the United States. The city has a four-year liberal arts college. Any jet qualified fighter pilots interested in full time AOC start and also interested in joining the ANG are urged to contact the unit immediately.

1st Col Bennett J. Whelan  
Commander  
Montana ANG, 100 FG Op  
Great Falls, Montana 59401

\*A paradise for sportsmen!

