



# Interceptor

**Our  
Crowded  
Skies**

*see page 11*

JUNE 1969

FOR THE MEN RESPONSIBLE FOR AEROSPACE DEFENSE

# Interceptor

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## spotlight

*In this world there is always danger for those who are afraid of it.*  
**Bernard Shaw**

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### OUR COVER

Our artist's conception of "Our Crowded Skies." The rate of growth of air traffic in this country has far exceeded expectations. See Page 11.

# memo

from the **CHIEF OF SAFETY**

## PILOTS AND ERRORS

Every year we experience a substantial number of obvious pilot error accidents. Judging by past performance, it would be rash to expect that 1969 will be any different. We ask ourselves, and justifiably so, "How can this be?"

Training standards, though not perfect, have continually improved to the extent that we ought to be making some headway on a yearly basis. Reliable reference material on practically every aspect of flight operations is geared to provide a safe environment for successful mission accomplishment. Across the board, pilots are more knowledgeable and proficient in aircraft than ever before. The fact that pilot error accidents still occur with approximately the same frequency indicates that a deficiency exists somewhere in the system.

We know that proficiency has its ups and downs; that is to say, because of varying circumstances, a pilot is sharper on some days than others. However, everyone has a baseline proficiency which remains pretty constant, regardless of how much time elapses between flights or even specific mission types. The level is determined by the amount of education, training, and experience gained over a number of years. For most pilots, it represents an unforgettable series of narrow escapes involving a supreme effort to undo what could have been avoided in the first place by the use of better judgment. In spite of beer hall ball stories to the contrary, "I'll never do that again" is the usual private reaction, and rightly so. It's probably the most common way in which a pilot gets to know his own limitations, and if he's smart, he will stick by them. Needless to say, it's risky. And there, I think, lies the deficiency.

We can give a pilot the best education and training possible, then lead him by the hand through known traps and snares, but we can't give him a shot of experience. We can't expose him to all the situations he will face in his flying career. We can't predict his "clunk" point and therefore cannot provide him with a safeguard against it. Realistically, he is at the mercy of limitations which cannot be identified or defined for him. He is the only one who can get a handle on it.

The best piece of advice a supervisor can give to any pilot is "abide by your known limitations." Don't get pressured into doing something you know or suspect is beyond your personal capabilities. Work your way up to your next skill level wisely and consistently with safety. Your life depends on it.

COL. H. C. GIBSON

# HOT LINE



## F-101 MODIFICATION

In the October 1967 issue of INTERCEPTOR an article discussing the F-101 automatic flight control system improvement program was published. The new flight control system, called the MB-5, has now been purchased and will soon be installed in all ADC F-101B/F aircraft. Basically, what it will do is give the pilot two of what he now recognizes to be the MCNL, one being a backup system if the first should fail. The new system also detects rate and restricts movement of the control column if the rate of movement is computed to be excessive. Additionally, the present pusher will be removed in the new system. The horn boundary will remain approximately where it is; however, it will not be functional unless both of the new boundary limiters are turned off or if the landing gear is down. This new system will be incorporated in the F-101B/F aircraft approximately 15 July 1969. All ADC aircraft will be modified within approximately one year from that date. Firm scheduling has not yet been established.

## FOG SQUAD

The ranks of "engine-busters" are swelling again. Since the beginning of this year, three giddy-yap-go's on F-101s and one on an F-106 had choking fits because of something they ate. Same old story. Handlers are getting too chemistry with the business end of the ramp booz.

During engine start on a 101, doors 212B and 213B were left open to check for popped circuit breakers. As the crew chief got up on his tiptoes to button the panel, he was yanked off his feet and up against the lip of the intake. The engine was at idle and the man weighed 175 pounds. Before being shut down, the engine sucked coins and wallet out of his hip pocket which was sealed by tape.

During a cursory load, a technician ducked under

the fuselage of a 101. His fatigue hat was sucked from his head and ingested by the engine.

After landing and in the parking area, a crew chief activated the rotary door of an F-101 to check baggage position. A bag of laundry fell out and burst. The engine promptly gobbled a piece of underwear.

An F-106 was being prepared for an engine run. A walkaround was made and screens put in place. Shortly after the engine was started, strange noises were heard. After shutdown, the remnants of a red streamer and gear pin were found. It was assumed a gear pin was left in the intake area, but it could be that the pin was lying in one of the screens.

Cross, gang! Those axial vacuum cleaners cost a lot of dough. Let's take common sense precautions around them for your own sake as well.

## T-33 FUEL CONTAMINATION

At one-third mile on radar final, the pilot made a slight power reduction from 50 percent open, but the open continued right on down to 35 percent. Advancing the throttle brought no response. Speed brakes were retracted and flaps raised to one-half. The aircraft touched down in the overrun just in front of runway threshold.

Inspection of the low pressure filter revealed a fuzzy pink substance which was restricting fuel flow. The presence of this foreign matter was traced to the use of a red-dyed powder, P/N 491, stock number 6850-909-3123, which was mistakenly put in the aircraft fuel tanks to check for leaks. This dye is normally used externally for fuel leak checks. The powder cartridge was not marked "for external use only" and a qualified supervisor in fuel system maintenance was not available.

This was a close call and it sure points out the necessity for having qualified people in every corner of the maintenance business.

# THE COMMANDER SPEAKS

DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIRSPACE DEFENSE COMMAND  
300 AIR FORCE BARRACKS WASHINGTON D.C.



8 May 1969

Re: "100 Critical Days"

- All Airspace Defense Command Personnel

1. Once again the USAF/AEDC "100 Critical Days" campaign is underway. I regret to say that by the time you read this issue of the INTERCEPTOR some of your friends, coworkers or buddies will no longer be with us.
2. Happiness is our greatest resource. Yet, each year during the summer months, Airspace Defense Command loses a sizeable number of young and not so young men. In countless ways which result in self-destruction.
3. All too often accident reports contain the phrases, "I didn't know" - "I didn't think" - "Nobody told me". These are the phrases in the reports of those who survived. If we could question those who have died, I'm sure similar words would be heard.
4. I urge each of you who read this letter to carry a message to all who work with you and with whom you enjoy recreation - "Think before you act, know what you are doing or about to do, and don't hesitate to avail yourself of the results of life-saving information and talent available within every AEDC unit."
5. Vacations you and should provide the ultimate in enjoyment for both you and your family. It is my sincere hope that each of you will have a career to be forgotten vacation, replete with most pleasant memories.

  
ARTHUR C. AGAR, GENERAL, USAF  
Commander



# SPINNING DARTS

by **WILLIAM FAIRBY** / *Aerospace Engineer, SAAMA, Kelly AFB, Texas*

**ABOUT THE AUTHOR:** Bill Fairby is an Aerospace Engineer at San Antonio Air Materiel Area, Kelly AFB, and is the F-100 Flight Manual Manager. He flew the F-80 and F-100 while on active duty with the Air Force and now flies the F-102 with the Air National Guard.

By now some of you have had a taste of Aerial Combat Tactics (ACT) and are feeling like fighter pilots of old. You've also had a few

brushes with post stall gyrations when you felt the onset of lateral control oscillations during a high "g" turn with your airspeed a little low. All this is part of learning exactly what the F-100 will do in a fighter vs fighter environment with a highly trained, highly disciplined fighter jock at the controls.

Others of you have learned the hard way why minimum maneuvering speeds were established and what happens when these mini-

mums are ignored. Some of you may also have slept through that portion of ACT ground training which covered post stall gyrations, spin characteristics, and spin recovery procedures. Or you told yourself that with all your experience you were too good a pilot to get into that kind of a situation.

What have I got to do with all this? Well, one of my jobs is to review all F-100 accidents and incidents attempting to deter-

at improvements can be made in operating procedures and what the pilot could have done to prevent the accident or incident. During the last few months a large portion of my time has been spent analyzing spin incidents, old spin test reports, and talking to pilots who have been there.

One factor that should interest you stands out above the rest—in the ACT environment, the F-106 is the safest and most forgiving century series fighter (including the F-4) flying today. It is also the most maneuverable and in the hands of a highly trained and motivated pilot can be the greatest thing since sliced bread. It is the least spin prone. In fact, there is only one possible way it can enter a spin and that is in a direction opposite to aileron input at the stall. You can't get there any other way and that's not true for many other planes. It gives you plenty of warning prior to spinning, i.e., an increase in buffet followed by a decrease in buffet and then lateral control oscillations in that order. However, if the heavy buffet and lateral oscillations warnings are ignored and you roll with aileron, the F-106 will most assuredly enter post stall gyration and/or spin. It takes the utmost in discipline to keep from using aileron for roll at the lower airspeeds but it has to be that way.

Let's get back to the sleepy Tiger who finds out the hard way that the F-106 will spin. The first thing he says as the ground goes spinning around it "But I didn't move the stick laterally." It is an aerodynamic fact that he did. Below 150 kts it takes only a couple of degrees of aileron deflection to get the adverse yaw needed to spin. So what about his airspeed? "Well, the time I looked it was about 180

or so and I was almost over the top of a high 'g' barrel roll." Looks like he did everything just right—right to spin, that is. This is the main reason why you have minimum maneuvering speeds in ADCM 51-106, Vol III. If these minimums are observed, and granted in the heat of battle it takes some doing, the probability of entering a spin or post stall gyration is very, very low.

(The following paragraph is for those of you who, like I mentioned earlier, like to sleep during lectures, or are experts in ACT because of experience in other aircraft, or just born good at it.)

Once you have entered a post stall gyration or spin you are still one of the luckiest pilots in the Air Force. The F-106 is more forgiving than any other high performance aircraft, and flight tests have shown that if you let her, she will recover all by herself. That's why the first step of the recovery procedure is NEUTRALIZE CONTROLS. There are two big reasons for this step. First, and most important, is that your control inputs caused the spin or post stall gyration in the first place. So let's eliminate the cause of the problem, quick. Second, if the bird is in a post stall gyration, the only known recovery procedure is to neutralize the controls. The bird will either recover immediately or continue into a normal spin and then recover. Once the spin has developed and you have determined the direction of rotation by reference to the turn needle, then all that other good stuff like aileron into the spin, etc., will speed up the recovery. This recovery procedure is not one that somebody dreamed up because of wind tunnel data. It resulted from extensive stall and spin tests conducted on both A and B

aircraft with full instrumentation at a wide range of gross weights and e.g. locations. The delta wing configuration requires a slightly different recovery procedure from other aircraft, therefore, you do not use forward stick or rudder against for recovery. A few informal tests (some intentional, some not) also were conducted during the development of the ACT program which verified these recovery procedures. So don't experiment—read your—L.

Each pilot flying ACT should consider what is at stake when he ignores the rules. With present ADC commitments, the F-106 could well come up against unfriendlier flying fighter type aircraft. These guys, while maybe not the best around, managed to down a few of our TAC and sister service aircraft. They would do much better against the "six" if you had to go against them without ACT training. A training program that requires flight at the edge of the performance envelope is inherently more hazardous than one that does not. Since the "six" doesn't have a big red light to tell you when it is doing all it can, you must rely on the airspeed indicator, angle of attack indicator, and the seat of your pants. This, combined with the rules, will get you through the program safely and with the knowledge required to make the most of the best thing flying. You know the old story about how if you eliminated landings you could reduce your accident rate by two-thirds. The same holds true for ACT. If you eliminate ACT training then you can eliminate ACT accidents. So know the rules. Follow the rules. Know your spin recovery procedures. We can't afford to have your name on an AF Form 711 in my "in" basket. ★



## NO LACE ON COOLSTONE

The Cold Rock was on alert, fifteen minutes really, and the weather was down. Mandatory was the word. With fifteen minute status, plus the mandatory weather, he wasn't too concerned about any action for the rest of the night. Just before retiring, he and his faithful RIO went down to the Voodoo and gave it one last check.

Coolstone One and Two were a very striking combination. Coolstone One was about six two, two hundred pounds, more or less, barrel-chested even though his chest was running down further than it used to. He was slow and deliberate in his actions and only the scramble horn could really get him moving. Two, his fearless RIO, was about five six, a hundred and thirty, wiry, nervous, and quick. The pair pulled alert often together, probably because their great differences in size and personalities provided some unnamed attraction.

When they returned from checking the bird, they decided to sack out. They knew that unless an extremely critical situation developed, there would be no problems during the night.

"Look," said One to Two, "if something should come up, I'll get on the horn to Bloodshot and you get out to the bird more skosh. If we have to go, it will take some time to get everything cranked up and I'll want to check the weather real good again for alternates. You can get things rolling down at the bird."

"Bug," said Two, and quickly peeled off his shoes and flying suit. He placed them at the foot of his top bunk. One did the same with his clothes at the foot of the bottom bunk. Sacked out, the Rock burped gently, greased in a landing or two under very, very trying circumstances, sighed contentedly, and fell asleep.

Two had the target all the way, head on, rate of closure fifteen hundred knots, locked on, but at B time, the pilot fouled it up. He sighed, rolled over, knocked his suit off the end of the bed, and fell asleep also.

Some people count sheep.

Several hours later, One was awakened by an urgent voice telling him that Bloodshot was on the line. He got up and took the call.

"This is Coolstone, Bloodshot, go ahead."

"Roger, boy, we have an emergency. May have to scramble since you are the closest to the bogie."

"Hey, wait a minute," said the Chilled Rock, "We're nothing and nothing here. What about the Guard Squadron? Let them have it."

"The way the bogie's tracking," said Bloodshot, "they couldn't get to it. You're about the only ones that can get it. We have an alternate for you, pretty much on the way. The emergency is a B-52."

"Stand by," said Coolstone, and roused over to where Two was sleeping, woke him up quickly, and told him, "Better get going, it looks like we're going to have to scramble." Two came up blinking and scrambling for clothes.

One got back on the horn to Bloodshot and said, "What's wrong with that aluminum cloud, anyhow, are they down to seven engines?"

"Negative," said Bloodshot, "they've had an electrical fire, lost their navigation equipment, and lost radio shortly after they declared the emergency. They are circling now, waiting for help. Wait a second—the Division Commander has okayed the scramble, so go! How long will it take?"

"We are on our way now," said the Rock, and visions of air marshals passed before his eyes. As he raced back to the sleeping room, the horn began to sound which provided One with more motivation than he really needed. He found his shoes and flying suit, along with the survival vest. He tried to don the suit, but couldn't even get one leg in it. He tried again, desperately—it was impossible. He looked at the suit closely, and saw to his horror, that it was Two's.

The horn was still sounding, his adrenalin was pumping, and he hesitated only momentarily, then...





his credit, and then he put on his shoes, vest, and scrambled in his skivvies. He raced down to the aircraft, and as he took to the ladder, the crew chief stared and then said, "Dressed a little light, aren't you, Sir?"

Coolstone just glared and mounted the bird. When he finally got strapped in, and connected, he shouted at Two, "You've got my suit?"

"Thought something was funny," said Two, "I tripped all the way up the ladder. I almost fell off."

"I don't have a flying suit," said One, "I am in my skivvies."

"Reg," said Two, "I've got the vector for us and it's gate to 40,000."

One started the engines, cleared the bars, but when the Rock saw the weather, he forgot all about his clothing problem. He cautiously lined up, checked his instruments and was sure, real good, hesitated but a

minute, released the brakes, lit the burners, and was IFR approximately twelve seconds later. He switched to Bloodshot's frequency and checked in.

"Roger, boy, got you five square and have you on the weapon. The fifty two is still circling. She's about two hundred nautical miles, two five zero, and last reported 33,000."

"Roger, boy," said One, "What have you got for an alternate?"

"Standby one," said Bloodshot, "We're checking on it right now."

"What d'ya mean you're checking on it?" said Coolstone, "There's no chance of getting back to home plate, it was terrible on takeoff. Where are we going to take the B-52, Bloodshot?"

"Standby one," said Bloodshot, "We're checking on it now."

One acknowledged disgustedly. Two complained gently, "It's a little hot in here, don't you think, One?"

"Look," said One, "from where I'm sitting it's extremely drafty. If you sweat, you sweat."

Coolstone from Bloodshot. The B-52 just called in, he's got his fire out and radios back. They don't need you now, and I think they're heading for Bermuda, or some such place. Your alternate is doing fine, it's at the municipal airport."

"Municipal!" shouted the Rock, "I'm not going into any municipal airport, and that is final. Find something else, and it's gotta be Air Force, understand, Air Force!"

"Reg," said Bloodshot, "Stand by."

"Well, Two," said One, "You've really got me in a mess. Can you imagine pulling up in front of an airline terminal and me getting out of the bird, no ladder, in my skivvies?"

"We've got a great set here," said Two, "Too bad we couldn't run on something."

"Wait till we get on the ground, boy, you'll be running."

"Coolstone One from Bloodshot. Everything is below minimums within range except the municipal. The Colonel has checked with them and they can handle you fine. They even said they would pull you up right next to the terminal, and you can have the run of the place. The airline passengers waiting will get a big kick out of seeing a fighter and will undoubtedly want to talk to the crew."

"I think I'm sick," said One, "and I'm going to kill you, Two."

"Great set," said Two.

"Bloodshot from Coolstone One. I think I have just had a radio failure. If you read, I'm heading for home plate."

"Tomstone One from Bloodshot. The Colonel says you are to land at the municipal airport. Do you understand? Home plate is busy."

"That's Coolstone One, Bloodshot, not Tomstone. And I have had a radio failure, and that's it."

"Look," said Two, sounding a little worried for the first time, "let's go to the municipal. You stay

in the cockpit, kinda like a static display, and I'll get out and lead the guided tour. When the weather gets better at home, we can go ahead and take off."

"You've gotta be kidding," said One. "We're not forecasted to get above minimums for eight hours. We're going to home plate now."

The Rock made his penetration and three practice ILS. On the fourth, One's hair was up on the back of his neck and Two's voice had become squeaky.

"That is it," Coolstone said to Two. "If we don't make it we're going to have to punch."

As he hit the middle marker, he forced himself to keep the beam rising to a minimum. He had the cross hairs dead center. Practice did help. A long, long time after passing through minimums, he got a glimmer of the strobe, then the threshold lights, and then a runway light. He chopped power and landed. There was a rush of fast breathing on the intercom which had been absolutely silent since the middle marker.

As he turned off the runway,

Coolstone found that his legs were shaking to a point where control was marginal. He was forced to stop for a moment.

"Max," said Two, "you are our instrument pilot. I was kind worried there for a minute."

"No sweat," said One, forgetting he had been planning an assassination just minutes before. Because of the visibility and the leg problem, it took Coolstone a long time to get to the pits, long enough, in fact, so that when he did finally arrive, quite an impressive looking little group had assembled.

"Hey," said Two, "The Colonel's out there, the Squadron Commander, and the Ops Officer also."

Coolstone One did not answer. They shut down and were checked, the ladder was up, and Two was out. One was still extremely busy in the cockpit. He hadn't even found the time to look out, but he knew he couldn't delay the inevitable, and finally he slowly stood up, climbed down the ladder. The reception group moved forward at a man, stopped, stared, and then obviously were victims of a serious emotional disorder.

Two quickly told them that his set was good and there had been no intercepts. He was excused from the debriefing, but he hung around outside of the office, waiting. He thought it only proper. Occasionally he could hear high pitched voices and catch a word or two. He wished he hadn't.

It had been fairly quiet in the debriefing office for about five minutes before Two heard the door open. The group came out with One in the lead position. The Squadron Commander stopped, went back to Coolstone One, walked around him very slowly, looking him over carefully, then said, "Coolstone, you're going to have to talk to your wife about the kind of bleach she is using."





# Our Crowded Skies

by LT COL FRANK SCHELLENBERGER  
Headquarters ADC (ADDOP-3)

**W**e are curious whether the "average bear" in the field is truly aware of extent of the increase in air traffic volume over the United States. The last AFCS Flight Facilities Digest reports that, according to Mr. James McEwener, Director of FAA's National Airspace System Program Office, "In 1964, when we bought the basic enroute automation system, the industry was forecasting a workload of 13.1 million operations a year by 1971. However, that landmark was passed in 1960 and we now expect over 30 million operations a year by 1975". Anyway you chop it, that's a lot of traffic and it is bound to have an effect on our operations.

We have a notion that your flight plans may be coming back somewhat changed from the way you planned and filed them. Also there may be longer delays while you stew on the ground waiting for your clearance. In the air, you may be asked to deviate from your route to accommodate conflicting (slower or faster) traffic. According to a statement by Mr. Herman C. Meyer, Executive Director, Professional Air Traffic Controllers

Organization, "Despite all of the critical attention being focused on the ATC system in the US at present, it is the best, most efficient network in the world. Our concern is that the safety potential of the system is not being realized, and that not enough is being done to meet the demands of aviation's constant growth." (Reported in *American Aviation*, 11 Nov. 1968 "Professional Status for Air Controllers, Increased Pay and Goals of PATCO.") In our view, FAA has provided this command outstanding service over the long haul; however, the administration has a first class problem and they are the first to admit it.

Our purpose is to point out that air traffic control system irregularities should be promptly and definitively documented by you, the military pilot. This is not intended to be used in a "finger pointing" sense, but to identify system deficiencies either in equipment or procedures. This should materially aid in the accomplishment of our mission and insure a safe operation.

Contrary to popular opinion, the Operational Hazard Report (OHR)

is specifically designed to accomplish this end. AFB 127-301 defines an Operational Hazard, in part, as any condition or act that affects or may affect the safety of Air Force aircraft or associated personnel. Operational hazards include but are not limited to inadequacies, deficiencies, or unsafe procedures in the following areas: NAVAIDS (TACAN, GCA, VOR, ILS, surveillance radar, etc); personnel procedures, techniques, or instructions in management or air traffic or voice radar approach aids; air regulations, procedures, or policies published by the Federal Aviation Agency (FAA) or foreign civil or military agencies; flight publications, and near collision between aircraft in flight. In our reading, we found no indication that immediate threat to "life or limb" is required before submitting an OHR.

So if you really had a problem with ATC the last time you filed and flew the airway, don't keep it to yourself. You owe the painless filing of an OHR to yourself, our friend Blue 4, this command, and FAA. Everyone, including FAA, will welcome your constructive criticism. ★



# SILVER SENTINELS

by LT COL WILLIAM M. MACK / *Hq AAC*

Three birds sat huddled on the wet tree branch overlooking an Elmendorf runway. It was a gray, cloudy Alaskan day and the mist hung low over the area; the pea soup weather made flying impossible even for birds.

Suddenly, the air was shattered by the thundering sound of a jet engine racing down the runway towards the birds. The three shook their heads in amazement as an F-106 Delta Dart all-weather jet interceptor, cleared the trees, screamed its way into the mist and disappeared.

In a corner area seldom noticed by Elmendorf residents, there stands the complex of hangars, sophisticated jet aircraft and maintenance crews known as Det. 3, 25th Air Division, Aerospace Defense Command from McChord AFB, Wash.

Alaska newspapers in 1963 were filled with accounts of Russian aircraft flying over land on the west coast of Alaska. Because the threat was obvious, F-106 Delta Darts, with extensive range, were sent to Alaska to augment the striking power of the F-102 Delta Darts already stationed at Elmendorf.

## ROTATIONAL

The pilots and aircraft rotate to Alaska from ADC units in the "lower 48" and, while on duty with

the detachment, are assigned to the 21st Composite Wing under the operational control of the Alaskan Air Command.

The F-106 has a fantastic ability to respond in record speed to any possible threat that may come to the northern spheres. Its speed, weapon capability, and range of operation, make the supersonic interceptor the ideal machine with which to patrol the high aerial boundaries of the Alaskan Yukon.

To the personnel of the detachment, being constantly alert, ready to do battle, if need be on short notice, is not just a game played to keep aircraft and crews familiar with procedures. Nor is it a play, based on military phrases and taken apathetically. For these men it is a duty of trust marked with the accent of strong purpose.

The supersonic fighter interceptor is capable of speeds in excess of 1,500 mph. It can carry out its deadly defense missions at altitudes of more than 50,000 feet.

## AUTOMATED

Normally, while operating in the regions of Alaska, the F-106s fly by manual control, with the necessary data furnished by AAC's Aircraft Control and Warning Squadron. In the "lower 48," the F-106s receive their flight data through a different data furnishing system, called "SAGE."

F-106s assigned to ADC units in the continental United States, use the MA-1 electronic guidance and fire control systems, which augment human skills in bomber interception.

During the intercept mission, the pilot acts principally as a monitor of the electronics guidance and fire control system (MA-1). If he, in case of emergency, has to resume control of the fighter, he can override the electronic control at any time.

When fully integrated into the Semi-Automatic Ground Environment (SAGE) System, the MA-1 will direct the F-106 on its bomber interception mission. The MA-1 can fly the plane from soon after takeoff, through its climb and cruise, to attack position. When the aircraft's radar sights the enemy plane, the pilot is notified. He sets the controls to lock onto the target at the proper time for the greatest kill probability, then the MA-1 fires its deadly armament.

Immediately afterward, the pilot breaks the F-106 from the intercept course. He then elects to return the aircraft manually or automatically to its home base or another base closer by. If the pilot flies home on the MA-1 system, he will be flown to the runway and there he will resume control and land.



#### NO SUBSTITUTE

The F-106 weapons system is designed to offset the combat deficiencies of human eyesight and reflexes, but no electronic substitute has yet been found for the decision-making judgment and reasoning of the human mind.

In addition to keeping the skies secure and vigilantly guarding the aerial borders of Alaska, the personnel of the detachment have a second primary mission: maintenance of the highly complex F-106.

Keeping the F-106 poised for action is a serious task to the personnel of the detachment. "I feel the reason our people do take their jobs so earnestly, is the fact that are within close geographic

proximity to potential hostile aerial threats," remarked Lt Col Keith D. Christberg, Commander of the Detachment.

#### CONSTANT READINESS

Four major maintenance actions are employed to sustain the F-106 in a state of constant readiness. They are organizational maintenance, field maintenance, armament and electronics, and mission section.

The organizational maintenance section handles the inspection of the F-106. The "troubleshooters," as the crew chiefs are called, are proficient in all major specialty fields connected with the F-106. These "jack of all trades" search for maintenance problems and then

call the needed specialist in to assist in the repair.

The field maintenance section handles a complex variety of interrelated specialized maintenance functions. All the maintenance of the F-106 which comes within the following areas is handled by the personnel of the FMS: the J-75 jet engine, hydraulics and pneumatics, egress equipment, cockpit instruments, personal equipment (survival kit for downed pilots) and mechanical accessories (oxygen system, cockpit pressurization and other related systems).

Also, there is within field maintenance the aerospace ground equipment branch which dispatches, repairs, and inspects the ground units essential for aircraft launch and re-

covery. Their major equipment includes: power units, air compressors, and air conditioners.

If a problem is found that is in the electronic field, a specialist is sent from the armament and electronic section to provide maintenance for the F-106.

#### **MOCK-UP**

This section handles all areas of communications, electronic systems, and the MA-1. To aid the specialist in locating and solving electronic problems, a unique "mock-up" of the entire electronic system has been built in one room of the detachment.

The "mock-up" is a complete feature story in itself. It is completely laid out from one end of the room to the other, in the exact order as it is found in the jet aircraft. An elaborate assemblage of sophisticated radar systems, flashing lights, scopes, dials, tubes, wires, computer boxes, and power units is found functioning just as they do aloft under flight conditions.

#### **TIME SAVER**

When checking out a particular electronic component in the aircraft, it is removed and put into the "mock-up". The matching section in the "mock-up" is removed and the part from the aircraft is inserted. If that works properly, then the part is good; if it doesn't, the specialist has somewhat related his search for the electronic trouble. Using the "mock-up" saves the specialist hours of hunting for the fault.

It might be added that Det. 3, 25th Air Division ADC, is fortunate to have this "mock-up" since most detachments do not have them. Due to the number of aircraft assigned here at Elmendorf AFB and the strategic location of the detachment in relation to its vital mis-

sion, the "mock-up" is here to supply the best maintenance to aid in keeping the F-106 in the air and crisscrossing the skies of Alaska.

To round out describing the detachment's maintenance mission, the munitions section must be added to that which keeps the F-106's at peak power.

#### **SOPHISTICATED FIREPOWER**

Securing the mechanical operation of the F-106 supersonic jet fighter interceptor is fine, but with that comes the thought of firepower. Now that a sophisticated flying machine has been sustained, what will this flying machine do in defense, if challenged? It must be armed to backup its defense mission aloft. To accomplish this the F-106's are capable of carrying conventional and nuclear weapons. With this the F-106 jet fighter interceptor has the capability of knocking down individual hostile bombers or a formation of them.

Special munitions teams have been trained by the Air Force for the task of loading, unloading and handling the armament material used aboard the F-106. Each munitions specialist takes his job with utmost seriousness and constantly is aware of the need for complete safety.

Constant supervision, checking and inspecting, operating carefully from a check list, accompanies every munitions team's actions in the detachment. A member of the team must practice loading a weapon nine times, for instance, before he is considered "qualified" only for a period of 90 days, after that he is evaluated again.

Detachment Three is logistically supported by the 25th Air Division (ADC) at McChord AFB, however, a considerable amount of base level support is obtained from the 21st Composite Wing at Elmendorf.

#### **KEY TO SUCCESS**

The key to the successful maintenance mission at the detachment is section cooperation. Each section must work closely with others to keep the aircraft fit and ready. No one maintenance section can maintain the F-106 alone. All the specialists work as a team to launch it successfully.

All sections are subject to close inspection from the quality control personnel of the detachment. Quality control teams evaluate job performance, and insure that personnel obtain the necessary training and follow prescribed directives.

To insure that the silver sentinel will always, at all times and in all kinds of weather, respond safely and quickly, an around-the-clock operation is necessary.

To put a supersonic all-weather jet fighter interceptor into the sky is one thing, but to keep that aircraft flying day after day, month after month, is quite another story! The aircraft maintenance personnel of the detachment take their job in stride and with a true sense of pride.

Somewhere in the wilderness of Alaska, an old seadog's nestle beside the fireplace in his cabin; off the coast of the Bering Sea, an Eskimo fisherman in his kayak searches in the misty waters for his livelihood; at the University of Alaska, a student looks up from his studies to watch the beautiful Alaskan sunset; and in Anchorage, symphony patrons attend a spring concert. All these persons are probably somewhat unaware, that the sense of peace and security that they enjoy is lasting only while the skies above Alaska are patrolled constantly by the silver sentinels of these northern spheres; these ever watchful and alert, supersonic F-106 jet interceptors.

Recently several ADC pilots have been disappointed in their assignments to Southeast Asia via project Palace Cobra. To clarify some misunderstandings on the part of many officers, here's how the system of aircraft selection works: ADC submitted to Military Personnel Center (MPC) the entire list of officers (from September 1968 through August 1969) who were selected for Southeast Asia assignments. The monthly order of availability was determined after considering overseas return dates, time on station, volunteer status, unit manning, and several other factors. Beautiful, now what happens?

All aircraft selections are made at MPC approximately three or four months prior to the Palace Cobra selection month. At that time they pull the career brief on each officer concerned. These briefs are then sorted into three basic stacks:

1. Those who volunteered for SEA prior to Palace Cobra selection.
2. Those who volunteered for SEA after Palace Cobra selection.
3. Those who merely listed aircraft preferences.

They then proceed to fill requirements, obviously starting with the first stack. Naturally the troops who simply listed aircraft preferences get the bottom of the barrel, and frequently that's not much! Screaming and hollering after you have your Southeast Asia ticket doesn't help unless yours is an obvious mis-assignment. A fighter pilot going to HP's does not fit this category. Basically, it amounts to this: If you're a nonvolunteer, there is very little we can do. Remember—when you are notified of Palace Cobra selection, simply listing aircraft preferences does not constitute a volunteer statement. You must specifically indicate that you are a SEA volunteer. Your CBPO can

# more about the SNAKE

by MAJGE MITT DENNER

Chief, Base Judgments, 8th ADC



help you with this.

Now, let's look at the other side of the coin. There are some disadvantages to volunteering for Southeast Asia that warrant consideration: First, you may not be able to convince your bride and/or boss that this is the thing to do. Also, if you have previous SEA time which amounts to less than 181 days, it will be subtracted from your tour. In that case, expensive long training aircraft such as the F-4, F-105, etc. are virtually out of the question unless you are willing to waive your SEA credit in writing. If you have over 181 days in SEA you have credit for a tour, and a volunteer statement is considered as a second tour, in which case you will serve the full 365 days. Finally, as a volunteer, we must assume you want to go ASAP; therefore, you forfeit any reprieve a previous o/s return date might afford.

Okay, fine! "I've been an SEA volunteer for months and haven't

been selected. Furthermore, I know some troops who have gone who volunteered after I did, and even a couple who were nonvolunteers." -- Remember what I said earlier? Unit manning must be considered when selecting anyone for assignment. This ties into command missions' capability and must be preserved. As a result, we are often forced to pass over volunteers in one squadron and select nonvolunteers from another. Also, we have no way of knowing who volunteered when. Therefore, the volunteer list is by previous o/s return date. If yours is fairly recent, you can be bumped. It's similar to a base housing list — only the top three aren't frozen.

So, there you have it, the general operation of SEA selection plus some of the pros and cons of volunteering. Let me emphasize, I am not trying to convince anyone into volunteering for Southeast Asia—merely explaining the situation. The decision is yours. . . .



# Give me 5

by MAJOR RONALD E. WALKER, USAF MC  
Office of the Command Surgeon, 349 ACG

When the lights flash and the horns blow—when your heartbeats sound like they're going to break an eardrum—when you're freezing but yet you're hot—when your mouth is as dry as cotton but you're sweating up a storm—when your stomach feels like you've just had 25 half-cooked hot cakes—when you can't see the blurry gauges—when the words "Mayday! Eject!" finally flash in your mind—then you've made THE decision.

What now? Tighten visor, pull down mask; no, pull down visor, loosen mask, no . . . and so it could go. This is not the time to TRY to remember the ejection sequence. If it's not second nature to you by the time you reach this point in your Air Force career, your chances of continuing in that career are minimal, to say the least.

Our command has noted a definite trend upward in the ejection fatality rate over the last few

months: eight of nineteen attempts in a recent six month period were unsuccessful. Most of these fatalities are the result of ejection outside the envelope. A frequent reason for ejecting outside the envelope is delayed decision. Once you've made that decision don't delay your separation from that aircraft a second longer—you don't have that long!

Your body has some wonderful automatic reactions that increase its efficiency during stress. But some of these also impair your thinking. We will familiarize you with biological reasons for the many psycho-physiological sensations that occur in you during an emergency situation. Then you will better understand why the recall of poorly learned physical tasks is almost impossible under extreme stress.

You are all aware of adrenaline and the superhuman feats per-

formed under the effect of it. It is the side effects of this hormone that produce the myriads of sensations during the emergency.

First, it restricts the flow of blood to those organs which will not be used during the emergency. Examples of these organs include: the skin (no wonder you're cold), the stomach and the intestines. Limiting the flow of blood to the skin also decreases the chances of hemorrhage if cut. The "stomach-full-of-pancakes" feeling is the sensation due to decreased blood supply to this organ. The stomach and intestines do not have time to digest protein and carbohydrates for energy; instead the blood is shunted to the liver, where quick energy glucose is available.

Blood vessels to the muscles, heart and brain are dilated, in contrast to the constriction of those in the skin, stomach and intestines.





# minutes more, only...

organs that must function to maximum effectiveness during the emergency receive more blood by this dilatation.

The tissue and muscles associated with the eyes are affected in many ways: the eyeballs are pushed further out of their sockets, the pupils are dilated and the eyelids retracted. All are actions that increase your field of vision. However, a detrimental side effect is the limitation of the ability of the eye to focus on near objects, an effect that could be very noticeable as you attempt to read your instrument panel.

Nerves are "set-on-end" in preparation to speed up the stimuli that are forthcoming. The cells and other coagulation factors in the blood are increased, another action designed to decrease the possibility of hemorrhage. The secretion of saliva is decreased but you may or may not be perceiving.

As you see, the effects of adrenalin are many and varied. They are also variable in degree from person to person. But the over-all effect is to prepare you to be at your best to meet your stressful situation.

Despite all these wonders of the human body and its ability to react to stress, success will not be achieved if you have not prepared yourself mentally. For the ability to organize thoughts is impaired by adrenalin and your actions must be, for the most part, preconceived, preplanned, and pretrained.

Emergency actions must be so implanted in your mind that when the first thought of ejection occurs, you automatically begin the first step in the ejection procedure. Your body will do everything to get you ready to meet your emergency, except prepare you to think it through. You must train for this part beforehand, on the ground,

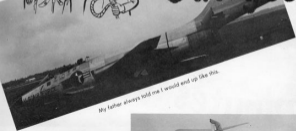
when your mind and learning processes are not cluttered with adrenalin. You must simulate the ejection procedure a thousand times in your mind, and run through the sequence another thousand times and then do it all over again. If you haven't done all this your chances of survival are drastically reduced. Particularly in supersonic aircraft you won't have time to think it through.

Once you've made the decision to eject, don't delay your separation from the aircraft one second by not knowing your ejection procedures—you don't even have a millisecond to spare! We've already said that up in the third paragraph you say? Okay, we'll say it again in the fourteenth, because we don't want to end on an unlucky (your?) number.

Once you've made the decision to eject, don't delay . . . . .



# "But gee"



*My father always told me I would end up like this.*



*It's a good thing we were on the runway when this happened.*



*No wonder they built this for wing weenies!*

# whiz "Sir..."



*If I told you once I told you guys a thousand times, take that bubble machine and get out of here.*

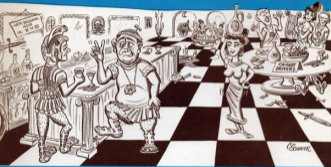


No, no, no—you Air Force dummies are all the same. Next time keep your feet together on ejection.



Roger, Venus Control, the Flying Saucer has a delta wing and a pointed fuselage.

# DUO HOMINUS CONCEPTUS



by LT COL MARVIN C. FRIEDMAN Chief, Mid/Nav Branch • My ADC (ADCSA-G)

Centurio Maximus Rex, Commander of the XXX Super Chariot Squadron, stood alone at the bar of the Officers Club. He observed that it was a typical Friday night Bacchanal Hour at this eastern frontier base.

Huddled around the lyre player, a group of chariot drivers of a newly forgotten war of XXV years ago, were nostalgically singing songs about the weaknesses of the old two-digit series of chariots and how they would rather serve an isolated tour — anywhere — than drive one of them. At the bar the young drivers of the new three-digit series chariots, whose horses were a special breed with the speed of the wind, and were equipped with the new Super Weapon rock catapult, were discussing the attributes of the native girls.

Huddled around a secluded table in the corner were a group of sen-

ceres imported from the very far East. These men, Backguides-Interceptor Occult, rode in the two seated chariots and by peering into their halls of crystal were able to direct their chariots to enemy targets in times of darkness or poor weather. The BRDs were bragging of their prowess in detecting targets at long range and directing the rocks to the target. The more they drank, the longer became their "pick-up and rock-on" songs, as these orientals called it.

Man's thoughts were abruptly brought back to the problem at hand when an inspection gang from Legion Headquarters, headed by Chief Inspector, Magnus Finkio, entered the club and walked toward him. The two old friends shook hands and swapped the already ancient lie about how Finkio was here to help him and how glad Max was to see him. "Well, just

how are things going out here, Man?" his friend asked.

"To tell the truth," Max answered, "some of this Super Weapon jazz has me worried. Sometimes I wish they never discovered that damned exploding rock, and that we would just have the conventional spears and arrows instead of the Super Weapon."

"You know you can't return to that," Finkio said. "We can do so much more with fewer troops that it is worth the extra effort. What is giving you the problem?"

"The Duo-Hominus Conceptus is what is worrying me right now," replied Max. "I feel we are in good shape on most of our Super Weapon safety program. We have the pre-mishap plan, a procedure to control a disaster if one of our rocks should blow up accidentally; a Personnel Reliability Program; safing and sealing procedure; train-

ing programs for rock handlers and crews; and all that stuff. But the thing that might rip our togas is the Two-Man Concept. Frankly, I am confused as to exactly what we are trying to do."

"Well, old buddy," Finkie began, "for a tall cool one, I will tell you the facts of life."

Max took the hint and signaled for the slave girl to bring refreshments.

"To begin with, there are several different and varied objectives we try to gain by having more than one man on a job. The first is people safety. Here we have the 'Buddy System.' Whenever we have a hazard to a single individual, we use two. For example, remember when old Joe Bacchan went down into the big wine cask by himself to clean it out? The spirits caused him to pass out before we found him. If he had had a buddy up at the top of the ladder, holding onto a rope around his waist to pull him, he would still be around."

The next objective is technical perfection. When we have a difficult and complicated task to perform, we are assured of higher quality when we have two men working together. This is sometimes called the 'Two-Man System.' The manufacturer of our Greek Fire is a good example. By having two men working together, each one with the formula, we are assured of having the correct mix.

"The last objective is the one we are concerned with when we speak of the Two-Man Concept—module safety. We must give the Super Weapon special attention. The drastic consequences of an inadvertent catapult justify drastic preventive measures. The purpose of the Two-Man Concept is simply to increase the Safety of the Emperor's Super Weapon System. The opportunity for someone messing around with a Super Weapon is

minimized by compliance with the Two-Man Concept. Any questions?"

"No, that clears it up pretty well for me," Max assured the Inspector, "except for one area, the section of the chariot where the driver has the catapult release control, the 'cockpit' (given this name by the drivers because it is small and confining, resembling pit where the fighting cocks seek a little action). We know we are supposed to have a second man closely observe whenever we have a man in the cockpit, checking out things like the Imperial Seal. Some of the outfits have the two men entering side by side. Some have the second man climb behind the first. What should the procedure be?"

"I would recommend letting the first man get up and have a second man follow behind. After the first man gets into the cockpit, he will keep his hands in view until the second man gets up to where he can observe his actions."

"You know," interrupted Max, "that procedure sounds a little silly. We all know that if conditions around here get bad enough to use the Super Weapon, our single seated chariots will scramble out and there will not be a second man around to provide safety."

"That is true," Finkie said, "but when we get into the advanced stages of Pucker Conditions such as PUCKON II or PUCKON I we still won't release the Super Weapon until we get the word from higher headquarters. Up until the time when we are actually going to send the chariots out to fight we must provide vigilance to the Super Weapon."

"I don't know about you Headquarters women, Finkie, always using big words. What's 'vigilance' mean when we're talking about weapons?"

Finkie proceeded with exagger-

ated patience, "Vigilance means maintaining a watchful position in such visual proximity to a critical component such as a module or a loaded catapult that an incorrect procedure or unauthorized act can be detected."

"Well, buddy," Max replied, "how about giving me some specific distances, some definite measurements to adhere to. Like you must be within XII cubits of a parked chariot in order to maintain vigilance."

The Inspector answered, "We can't do that, Max, there is no one set distance. Conditions vary too much. For example, if you were the second man participating in an inspection of the Emperor's Seal, you would have to be X digits away to maintain vigilance. If, on the other hand, you were part of a two-man team guarding a phalanx of chariots loaded with Super Weapons you might be able to do it from a distance of C cubits. In other words it depends on the task at hand."

"Well," said Max, "we have operating instructions out for all our sections telling the folks what to do, so I guess we'll be OK. You know, I want to do well on this inspection. Not just because I come up for promotion this year now that I have XVII years in grade, but because of what happened to my predecessor. You remember Centurio Perennius Calamitas who had this outfit before I got it. He got in deep, serious trouble over a Two-Man Concept problem. They put him to the test in the Arena by having him open one of two unmarked doors. One door concealed a hungry lion, the other contained the symbol of office for the Legion Headquarters Safety job. He was lucky though. He picked the lion and was eaten up all at once. That's better than the safety job — there you get chewed up a little at a time!"



**OPERATIONAL  
READINESS  
INSPECTION TEAM  
HQ, ADC**

## **"AT LONG LAST WE MADE THE TEAM"**

Normally, we would not publish an article of this nature in the INTERCEPTOR magazine. We usually use our limited space in describing problem areas or, hopefully, helpful hints on how to pass on ORI. However, this momentous event (the awarding of the Controller Badge) deserves special recognition. Since the INTERCEPTOR has world-wide status we feel it is an excellent media to disseminate this information to not only our controllers but all those who are in the combat operations field.

As so many of you know, this badge has been long in the works. As a matter of fact it goes all the way back to 1953. At that time it was proposed at the world-wide weapons symposium at Tyndall Air Force

Base, Florida. Reaction was unfavorable and action was deferred. After this initial effort little or nothing was accomplished for almost ten years. In 1963, weapons controller retention problems became extremely acute. An ADC controller survey indicated that lack of recognition was foremost among the reasons for dissatisfaction in the controller field. Based on this survey and other factors, efforts were renewed to obtain approval for a distinctive weapons controller badge. All Air Force major commands utilizing controllers were polled and they supported the concept of a controller badge and requested ADC be the action command for the United States Air Force.

Preliminary design and supporting documentation



**BASIC**

**SENIOR**

**MASTER**



It was submitted to the uniform board. The design was not approved, but the board did provide funds for redesign of a symbolic badge by the Institute of Heraldry. Three designs were developed and again submitted to the uniform board, however, all designs were rejected. ADC then asked the uniform board for a general design that would meet their approval. When this was obtained the Institute of Heraldry was tasked to design a badge that would marry previous design efforts with the desires of the uniform board. From these efforts the present badge evolved. Although approval of the badge was the result of the efforts of many, the interest of Lieutenant General Agas, ADC Commander, was a significant factor in obtaining approval. Through his personal efforts a breakthrough was achieved and on 28 June 1968, General McConnell approved a distinctive badge design for qualifying 1716 and 1744 controllers. This was a milestone and affected approximately 3000 weapon controllers throughout the world. By that single stroke of the pen, weapon controllers were accorded visible recognition as possessors of one of the four USAF combat operational AFSCs.

The qualifications and criteria have been approved by the USAF and are now included in AFR 900-21. You

qualify for one of these badges (Basic, Senior, and Master) if you possess a 1744/1716 AFSC and have completed one, three, or seven years in the career field. AFM 35-10 has also been revised and contains instructions for wear of the badge, i.e., where it is to be worn, restrictions on wear, etc.

That's the story of the badge. Certainly, the badge itself is not the panacea for all the ills of the weapon controller field, however, it is a major step which signifies the importance of the controller as a part of the combat team.

We are very appreciative of the opportunity to publicize this long sought and much needed symbol of the vital role of the controller and the unique skills he provides to the Air Force.

We hope all those that are qualified, wear it with pride and a sense of achievement; and to those who have relied on controller services, we hope this badge will readily identify those who are dedicated to the aerospace defense mission and the success of the interceptor pilot.

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

# DOWN

# and out

## B-57 FATAL

The mission was a Faker aircraft flight from a Canadian base to a northern IP with recovery at a northern ADC base. A complete mission briefing was conducted at 1000 hours. Takeoff was scheduled for 2250 hours. The Faker Force Commander briefed on aircraft operation, cold weather and night operations, individual routes, and electronic warfare tactics. The crew was qualified to complete the task assigned. Following the briefing, the crew was released for rest.

At 2115 hours, the pilot reported for weather briefings. Preflight was completed by 2130 hours after which the pilot left the flight line. He returned to the aircraft at 2220 hours. Number one engine was started with no problems. Number two engine had a false start on the first attempt, but cranked up normally on the second. No further difficulties were experienced during taxi, takeoff (2251 hours), and climb. It was established later that the pilot had mentioned to another pilot that he had paralleling problems with his aircraft generators. Apparently they caused no major concern, since he chose not to abort the mission. It is now pretty evident that if maintenance had been asked to investigate the generator difficulty, the accident could have been prevented.

The aircraft arrived over the IP on time at FL370. With the exception of a weak transmitter, there were no abnormalities noted enroute. About 40 miles south of the IP, the Faker aircraft was intercepted by fighters. A short time later, at 0910 hours, and after the NAV/EWO made two garbled transmissions, the pilot radioed that he had an emergency and would be returning to the base of departure. Another aircraft in the area relayed that he thought he heard the pilot state that an engine was out. A left turn was made and the aircraft headed into the airspace of another division. Faker Monitor gave a frequency change, but received no acknowledgment. Voice communication with the distressed aircraft was never reestablished.

Although IFF contact was subsequently lost, the aircraft was tracked in a medium descent (1500 to 2000 feet/minute) and heading for an enroute airfield. The aircraft descended below a 2800 foot broken layer of clouds and the pilot positioned himself on downwind or base leg for landing. Generally, the weather was good. The broken condition was not a thick layer. There was a bright moon and visibility above the clouds was good. Although the visibility below the clouds was 1/2 mile, additional cockpit concentration was required

because there was very little haze present and few reference lights on the ground. The landing gear was lowered by the normal system and shortly thereafter control was lost. The aircraft crashed on a southerly heading in generally flat terrain. Ground was hard frozen to a depth of six feet. The aircraft configuration was gear down, speed brakes and dive flaps up, flaps up. The wreckage pattern showed that the aircraft was partially inverted just prior to impact, in approximately a 90-110 degree left wing down attitude. A definite yaw/roll under to the right was indicated, as is usually the case was a loss of control maneuver on aircraft with number two engine out. Airspeed was moderately slow. The pilot began ejection sequence by raising both seat handles. The canopy was jettisoned. The NAV/EWO had raised his left handle. Radar plots show that at least 20 minutes were available to abandon the aircraft at a safe altitude. However, the crew elected to continue descent and attempt a landing. When the aircraft went out of control, ejection was started, but too late.

From examination of the wreckage it was determined that the number one engine was running, but not at full power. The number two engine had failed in flight. The power takeoff bearing had failed allowing the engine shaft to move forward causing subsequent disintegration. There are strong indications that the DC generator on the number one engine failed simultaneously with loss of the number two engine due to an overload condition. Everything points to the pilot taking load reduction actions appropriate for a complete DC generator failure. Navigation equipment appeared to have been tested



No lights were observed on the aircraft by witnesses. Tracking information shows that IFF was lost at approximately 26,000 feet at which point checklist procedures recommend turning off the battery. Boost pump circuit breakers being opened as part of load reduction action would explain lack of boost pump operation at time of impact. Loss of UHF radio and hints to land the aircraft indicate a battery duration factor. Apparently, some DC power was available during the final stage of flight to enable the pilot to lower the gear on the normal system and reposition the trim motor actuators. This power source must have been the battery.

The most logical explanation for the loss of aircraft control centers on the rudder and feel system operation. To put it simply, the B-57 has a rudder feel system which restricts rudder deflection as airspeed increases in order to prevent the pilot from applying too much pedal pressure (which is boosted) and accidentally warping the tail section. The DC generators provide power to AC inverters which, in turn, power an AC motor which automatically establishes a set rudder restriction based on airspeed inputs. Investigators found the rudder feel system at a high airspeed setting (270-300 knots). At this setting, the rudder is restricted to 9 degrees of travel and it would take 300 pounds of foot pedal force to reach this deflection. More important, 9 degrees would not be sufficient to maintain aircraft control at traffic pattern airspeeds and single engine thrust needed to maintain flight. The pilot was unaware of the effect that his multiple emergency would have on the aircraft rudder.

When he lost his number two engine and its DC generator, the



load shift to the DC generator on the other engine caused it to fail. This may not have occurred if the pilot had asked maintenance to check the generators in parallel before the mission was flown. At any rate, the pilot declared an emergency and headed for the nearest suitable airport for landing, knowing that the only DC power he had left was the battery. He reduced electrical load and, passing 26,000 feet, he turned off the battery to conserve it. When he did this, he removed all DC power from the AC inverter and therefore deactivated the feel system motor at his descent airspeed setting (270-300 knots). With all DC power removed, the rudder system went fully manual and if it had stayed that way, the accident might have been avoided because rudder travel of 25 degrees is unrestricted by the feel system in manual. However, after the descent was completed and gear lowering speed attained, the pilot placed the battery switch on again. This inactivated the feel system and the high speed rudder restriction was reapplied. The AC invert-

ers did not have enough time and/or DC power to get up to speed to reposition the feel system motor for 180 knots before the gear was lowered and single engine power advanced. A violent roll to the right resulted which the pilot could not control because of the limited rudder travel available.

To sum up, there were several actions the pilot could have taken which would have averted loss of control. If, during descent, he had left the battery switch on, the feel system would have continued to reposition itself for changing airspeeds. Or, if he had left the battery switch off and lowered the gear by emergency means, or if he had failed the feel system by switch action when the battery was turned on, manual rudder would have been available and the aircraft could have been controlled manually.

Prior to his accident, the Dash One and checklist did not contain sufficient guidance relating to the effects of DC electrical loss on power/manual rudder control. This situation is being resolved. ★

# 1 ✓ POINTS

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

✓ Let's dispel the notion that OHRs are only applicable where an incident involves an immediate threat to "life or limb." Among many other items, AFR 127-301 specifically identifies the OHR as relating to inadequacies, deficiencies, unsafe practices in personnel procedures, techniques or instructions in management of air traffic or voice radar approach aids. (ADCSA)

✓ Annual flying physical exams can be scheduled anytime during the three months preceding your birthday. If you're scheduled for a PCS or a TDY in excess of 30 days during the six months preceding your birthday, then you can schedule your exam sometime during the six months before your birthday. However, you are encouraged to schedule your examination as far in advance of your birthday as possible to insure clearance to fly is received in the appropriate offices by your birthday. (ADCSG)

✓ A word to the wise . . . Physiological incident reports involving hypoxia are on the increase. Complacency? (ADCSA)

✓ Did you know that after exposure to bright sunlight you have a retarded rate of dark adaptation for as long as five hours after the sunlight exposure? The effect can be prevented by use of standard-issue sunglasses when in sunlight. A point worth remembering if you're scheduled for an early night flight. (ADCSG)

✓ EXPLOSIVES SAFETY OFFICERS . . . ADC Sup 1 to AFR 127-4 has been revised and distributed. It has a publication date of 30 July 1968. Paragraph 19a(1) of this supplement states: "Explosives accident/incident reports will be prepared by the explosives safety officer. These reports will be forwarded through explosives safety channels (MME) in sufficient copies to insure the original and one legible copy arrives at Hq ADC (ADMME-DC). The reports will be coordinated with the Chief of Safety at each echelon." Reference paragraph 16a, page 12, Change 1 to AFR 127-4. Positive corrective and preventive actions in preliminary reports involving explosives incidents could preclude the preparation and submission of a Form Report. (ADMME-DC)

**F-101 Drivers:** F-101 pilots have been known to attempt to reduce fuel load by cycling the afterburner using the following procedure:

Afterburner is selected normally, then immediately terminated. Upon termination, the throttle is immediately placed back into the afterburner position, but no afterburner ignition is achieved because the ignitor has not had time to be recharged. Thus, fuel is dumped at the same rate it would be used by the afterburner without the resulting thrust increase.

This procedure is extremely hazardous as it could cause overspeed of the N1 compressor resulting in extreme damage to the turbine and afterburner sections without the pilot being aware of it.

(ADCSA)

**Aftermath:** Many heartaches and much suffering are still endured by victims of long-ago traffic accidents. How close was close on your last "near miss"?

(ADCSA)

A recent inspection of an ANG F-102 unit revealed that a conflict existed between military and civilian procedures for taxiing aircraft. AF checklists and directives require F-102 aircraft to turn on anticollision lights just prior to take-off and to turn them off just after landing. Some civil airport procedures require that these lights be operating all during taxi operations. There is no FAA regulation that requires this procedure. Therefore, any unit having this problem should work out an agreement with the local tower to insure that military directives are followed. (ADCSA)

An eye for an eye: A county district judge tried a new idea in an attempt to make a driver aware of the consequences of his recklessness. The judge sentenced the man to a jail term equal in length to the time his victim remained in the hospital. (ADCSA)

Pilot weather reports are most valuable in provision of weather support. Your inflight observations and experiences often provide the forecaster with information available from no other source. Reports of turbulence, icing, unusual winds, and cloud conditions enable the forecaster to complete the weather picture and materially assist you through better forecast service. An aggressive pilot report program pays off for both you and the forecaster. (4M/W)

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## BLUE ZOO

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"My landings have been getting worse ever since the barber shop prices went up!"

## FIELD REPORTS

**T-33A, HIGH SPEED GEAR EXTENSION.** During recovery from an unusual attitude, nose down, 280-300 KIAS, the landing gear extended to a full down and locked position. Airspeed was reduced immediately and there appeared to be no other malfunctions or difficulties. The aircraft was visually checked by an F-102, and no structural damage was visible. Following an uneventful precautionary landing, the gear was inspected for overstresses and no damage was found. Inspection of the gear positioning system revealed the interconnecting linkage between the cockpit gear handles was out of adjustment. When the handle was raised, it would not lock in the UP position without being forced. It appears that the gear selector handle fell to the DOWN position during the high "G" pullout maneuver of the unusual attitude recovery. The interconnecting linkage was adjusted and the system was operationally checked without further discrepancy. There was no gear or aircraft damage.

**F-102 CONTROL PROBLEMS.** With autopilot on at FL 390, aircraft started rolling left wing down. Momentary interrupt, turning off AFCS and dampers did not relieve the force necessary to hold wings level. Emergency was declared. After descending to FL 200, aircraft was slowed to 180 with gear down to check landing configuration forces. By this time the occurrences of the onset of the left wing pressure were further and further apart. Main AC generator was turned off and emergency AC turned on when 40 miles from the field on straight-in final. No further unusual forces were felt. During this time the hydraulic pressure in both systems was normal. The trim button would move the stick, but would not relieve the force when it was occurring. A defective hep valve was found on the left side.

**F-101B HYDRAULIC FLUCTUATIONS.** Shortly after takeoff the Utility Hydraulic System pressure started to fluctuate and the wingman called that hydraulic fluid was streaming from the aircraft. The external fuel tank was jettisoned in the prescribed jettison area, the landing gear was lowered using the emergency system and the aircraft was landed without further incident. The cap to the hydraulic reservoir had been changed just prior to this flight and was thought to be installed correctly; however, it apparently came off during or just after takeoff.

**F-102A, FLIGHT CONTROL.** The AFCS had been engaged for 40 minutes during the flight. When the AFCS was disengaged, the stick could not be moved to the left without exerting excessive force. There was no restriction to stick movement fore and aft or to the right. The airspeed at the time was 220 KIAS. The dampers were disengaged, but this did not correct the problem. The aircraft was then porpoised between -1 and +2 Gs which broke the controls free. The condition lasted for 3-5 minutes. The suspected cause of the problem is material failure of a HEP valve.

**F-102 FOD.** As the pilot was accomplishing his pre-flight for a night mission, a crew chief was preparing to install a Nadar can. His task was interrupted by the arrival of a transient aircraft. The crew chief placed the Nadar can in the intake, then ran to park the transient aircraft. In the meantime, another crew chief (not realizing the location of the Nadar can) attempted to aid the pilot in meeting his takeoff time by starting the aircraft. Subsequently, the Nadar can was ingested, resulting in extensive FOD.

**FLIGHT CONTROL MALFUNCTION, F-101B.** During level flight at 37,000 feet and .83 mach, the left aileron drove up above five inches, requiring nearly full control stick displacement to hold the aircraft upright. As speed and altitude were decreased, the aileron returned to near normal operation with only slight wandering. A straight-in approach was flown and the aircraft was landed without further incident. The left aileron actuator was replaced and the system checked good.

# THE WAY THE BALL

# Bounces

## ACCIDENT RATE

1 JAN THRU 30 APRIL 1969

ADC ANG

Thru April 1969

6.8

8.8\*

MAJOR — ALL AIRCRAFT

## ON TOP OF THE HEAP

MO	ADC	MO	ADC	MO	ANG
60	48 FIS	24	551 AEWBC	75	162 Ftr Gp
35	4603 AB Gp	21	343 Ftr Gp	73	113 Ftr Gp
27	75 FIS	19	49 FIS	63	141 Ftr Gp
25	4758 DSES	14	71 FIS	54	148 Ftr Gp

## ACCIDENT FREE

## BOX SCORE

ACCIDENTS FOR Apr	COM TOTAL					
	1st AF	4th AF	10th AF	ADWC	4600	ANG

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

MINOR ACCIDENTS THIS PERIOD — 1  
MINOR ACCIDENTS CUMULATIVE — 3

## CUMULATIVE RATE

1 JAN THRU 30 APRIL 1969 ADC ANG

JET	9.4	9.7*
CONVENTIONAL	0.0	0.0

BY AIRCRAFT	T-33	3.2	34.0*
	F-89		0
	F-100	0	
	F-101	8.6	
	F TF-102	0	4.5*
	F-104	0	
	F-106	19.7	
	B-57	31.2	
	EC-121	0	

RATE — MAJOR ACCIDENTS FOR 100,000 FLYING HOURS

\*Estimated

# we point with



Captain David B. Abel  
940 ABWAC Sq  
Oris AFB, Mass.

# PRIDE

## EC-121H BOOST OUT

Captain David B. Abel, the aircraft commander of an EC-121H assigned to the 551st Airborne Early Warning and Control Wing at Otis AFB, Massachusetts, was departing Keflavik Naval Air Station, Ireland, with a 15 man crew on a scheduled active air defense mission at 0800 hours on the morning of 10 October 1988.

The active runway in use for takeoff was 12, with a 35 degree crosswind from the left at 15 knots, gusting to 25 knots. As the aircraft approached takeoff speed, Captain Abel applied the control forces necessary with the aircraft assum-

ing what appeared to be a normal takeoff attitude. Immediately after liftoff, the aileron boost control malfunctioned and the heavily loaded aircraft immediately rolled into a 30 degree bank to the right. The abrupt banking action caused the aircraft to turn sharply toward the airfield complex. Immediate corrective action was attempted by applying left aileron, but the pilot was unable to rotate the yoke. Captain Abel, utilizing asymmetrical power, trim, and opposite rudder, and with the application of sheer physical strength, was finally able to right the aircraft and disengage the aileron boost control. A boost-

out climb was continued to a safe altitude. Control checks determined the ailerons could not be controlled with the boost engaged. Captain Abel configured his aircraft to the best advantage by dumping fuel and maintaining boost-out flight, and completed a boost-out night landing in high gusty surface winds without further incident.

Captain Abel's outstanding skill, judgment, and decisiveness during this emergency reflect the highest standard of professional airmanship and individual ability. AEWG takes great pride in pointing to the performance of Captain David B. Abel.



# AFTER BURNING

Address your letters to The Editor, INTERCEPTOR, Rm. 402, (AECOM) for AFM, 60 00011

To be published, your letters must be signed.

But names will be withheld upon request.

## TWO CHALLENGES

The 10th Anniversary issue of the INTERCEPTOR can only be rated as excellent. The articles and sketches are as fine as can be found in the many commercial publications or the newspapers today.

I do wish to challenge two statements found in the first article:

1. The inventory of combat aircraft of the three major powers at the start of World War I.

2. The inception of airborne intercept. In reference to the first challenge I refer to the following: "Context! The Story So Farly Bled," by Henry Hanson Willard, published in 1968, page 110, which quotes a compilation by one inventor made in 1919 as follows:

France	240	Italy	30
Russia	100	Japan	14
Germany	48	United States	4
England	29		

To the second challenge I refer to the same publication and page. While it is true that the British pilot did intercept the first in a combat area, you will find that Captain Charles de Forest Chandler of the United States Air Arm (Signal Corps) did mount and fire a machine gun from a military aircraft at College Park, Maryland, 7 June 1913.

Once again, your publication and the Anniversary issue merit "The Blue Star" for its outstanding edition.

Bruce E. Taylor  
4809ADC (AME)  
Livestock AFE, Michigan

"First, we are very pleased to receive your kind praise of our Tenth Anniversary issue. Second, we are embarrassed to say that we are unable to meet the challenge, because we cannot recall the source statements. We borrowed two from the Air Museum files and they were returned

shortly after the magazine was in print. Our apologies for our being able to cooperate.

## WHOM RADAR?

The January issue of the INTERCEPTOR has been thoroughly enjoyed by the 10th Missile Warning Squadron personnel. However, we did note one error. The bottom picture on page 27 is captioned as being B-29's Site II at Clear, Alaska. It is actually a picture of (Bomber #1) one of our four Detection Radars here at Site 1, Thule, Greenland.

The personnel here at Thule don't have very much to brag about, such as women, sports, trees, fish ponds, and many other good things, but we do know our Radars.

1/1r James E. Lynch  
Unit Information Officer  
10th Missile Warning Sq  
APO New York 09023

\*Thanks for keeping us honest.

## FROM ONE WHO'S BEEN THERE

I am fortunate to have access to the monthly INTERCEPTOR which I read with avid interest. In addition to my other duties as a Squadron Commander of "Wingman" F-51s in Okinawa, I was also the Chief Engineering officer of the 14th Air Force.

Your theme from the Chief of Safety in the November issue is great. Congratulations to you for this fine article.

Being a completely disabled and liver-bound "flier" of WW2, I deeply appreciate the contents of your message. I often ask myself if I were 25 years of age again, would I be capable of flying two million dollars worth of aircrafts gun and return to base in one piece, intact. I shiver when I think of it.

While I was credited with nine "official kills" and five "probables" during WW2 in China, I did manage to lose one wonderful

Mustang to the enemy when I was shot down in aerial combat again. However, I "made" it into a hot collapse path, hoping to save it, but the Gods of War decided otherwise. Two years at Walter Reed decided my fate. My 25 years of flying came to an abrupt end in China.

Truly, today's fighter pilot is definitely a superior breed of cat. The built-in-leather type of aerial combat has long since vanished from the scene. The so-called "hot looks" are needed today like a hole in the head. I am happy to know that continued screening goes on to keep our Air Force strong with real, calculating engineers who fly our jet aircraft today.

Leslie C. Bell, Jr. Col, USAF (Ret)  
2720 West Center Street  
Santa Ana, California

\*A word from the wise is sufficient.

## "HOW MANY MEN IN THE COCKPIT?"

Please accept our sincerest belated thanks for forwarding copies of the INTERCEPTOR article on the multimanic simulator. As with the article on the night vision approach research, the presentation was excellent. We have heard nothing but favorable comments from people who have read the article.

Several personnel from other Air Force commands and the Navy have asked for copies of the article. We were able to fill their requests because of the copies which you made available to us.

Again, thank you very much. Those of us engaged in this research endeavor really appreciate your interest.

The Boeing Company  
Military Aircraft Systems Div  
Leo S. Widay  
Everett, Personnel Subsystem Lab  
Seattle, Washington

\*Our deepest appreciation to Boeing for their invaluable information.

# The Cold Hard Facts...

Forward down-slopes and steep banks have limited our efficiency to voice communications... at the back of it.

• **ATIS 60-14** says that "Positive reports, lost communications, and radio procedures are examined according to RHP instructions." Further, it says, "When operating in controlled airspace under IFR, the pilot is assumed to report immediately to the appropriate ATIS facility any malfunction of any/one/all or air/ground communication equipment, according to RHP instructions." Is view of recent events, a close look at RHP publishing is in order... especially lost comm procedures. Prior to securing an IFR approach, be sure you are familiar with the LOCAL lost comm procedures.

• **ATIS 51-37** has the following to say about radio procedures during a radar approach: "The radar approach is predicated entirely upon radio instructions from the controller. During the approach, report all handouts, altitudes, and altimeter settings; acknowledge all other pertinent radio unless otherwise advised. During high density radar operations, a landing clearance is the communication time available. **KEEP TRANSMISSIONS BREVIS AND SPECIFIC. COMMUNICATE LAST WITH SAFETY OR FLIGHT.** Never sacrifice aircraft safety to acknowledge receipt of instructions."

• **IFR** are the subject of lost communications during a radar approach: "When the aircraft under **RADAR** has not received a direct transmission (this means transmissions specifically addressed to your aircraft) after one minute in the pattern or two minutes on final, an attempt should be made to reestablish contact. If this attempt is unsuccessful, lost communication procedures should be followed, with attempting to regain radio contact."

• The capability to monitor Ground Channel while working other frequencies is too valuable not to be used. The status of Ground Channel, especially in high density traffic areas, makes it tempting to reach off the Ground number position, and in many cases it is necessary. Un-theoretical use of Ground channel should be reported on an **QRM**. If Ground monitor is switched off momentarily, it should be indicated as soon as possible, especially when working on IFR approach.

• When all else fails, knowledge of the local terrain and the will to survive should prevent man, machine, and mountains from making a noisier mess of radio work.

VOICE COMMUNICATIONS