

# Interceptor



NOVEMBER 1967

THE LAST OF A LONG PROUD LINE OF AIR DEFENSE FIGHTERS

FOR THE MEN RESPONSIBLE FOR AIR DEFENSE

# Interceptor

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## spotlight

Never stand begging for what you have the power to earn.  
— Cervantes

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## Interceptor



## OUR COVER

The Interceptor that started with the command, the F-89 Scorpion. Departing the various models from the 20mm cannon-equipped F-89C — the F-75 WEAR "Nighty Weaver" rockin' live HVAR — the F-89H with "Yellow" missiles and F-75 WEAR rockets, and the latest and probably best — the F-89J with the lethal "Genies" — grand old bird.

# memo

from the **CHIEF OF SAFETY**

## Our American Heritage

Discussion has been an important part of our heritage from the beginning of this country. We have read about our Puritan forebears in New England who sat around the old pot-bellied stove in the general store and entered into some very lively discussions about almost any subject under the sun. We read about political debates that are in the news constantly. In most cases these exchanges of words bring forth new ideas and policies which provide us with something tangible.

Air Defense Command has something that is very closely related to the pot-bellied stove dissertations and the political debates. I am sure you would recognize it much more readily if I present it in a different frame of reference. We are all familiar with the alert hangar late evening discussions (arguments). How about people who sit around the ops building after flying is done? Or the impromptu pilots' meeting when the weather turns sour and flying is cancelled? And finally, the Friday half-price night in the fighters' den or similar place? Even though most discussions may open with likes and dislikes in the female species, it usually ends up with a lively discussion on flying aircraft and backing the mission. From these arguments jocks learn things about flying which may not be covered in any ground school. We usually get a very frank debate on what a particular aircraft is capable of doing. We get individuals to tell anyone who will listen, the story of how they got into a particularly unusual situation, and what they did to get out of it. I will concede that most experiences are exaggerated to some degree, but the fact remains that others can learn from these experiences.

I think we need and should continually encourage this exchange of ideas. Why? Because generally in any gathering of pilots we will find people of very low experience in the aircraft; in this same group of people will be some who have many hours of flying time, but who are not really familiar with our mission; and, finally, in this same group, are the people we fondly refer to as "Old Heads." There are always some of these around. They grew up in an ADC environment and have grown along with it. They can provide to everyone listening, information that cannot be written or explained in any book, manual, tech order, or pamphlet. Unfortunately too often behind the lines pilots cannot participate in these discussions. If it is at all possible, I urge them to avail themselves to any or all of these meetings.

I do not necessarily advocate "get togethers" for the sake of working longer hours than we need to, but I do feel that any time we can get people to exchange ideas in a relaxed atmosphere, one of the important by-products will be a better understanding of each other, the aircraft, and the mission. When we have a better understanding, we have a safer operation.



COL. OLIVER G. CELLINI

# HOT LINE



## UPSIDE DOWN BALLAST BLOCK

Ask any pilot who has landed an F-101 aircraft with a hung nose gear and he will probably say it is exciting and dangerous. We in the maintenance business also know it is embarrassing, to say the least, when an aircraft landing gear fails to extend due to "maintenance error."

This type of incident did occur some months ago at an ADC base and was caused by the mechanic installing a ballast block "upside down" in the nose gear wheel well. The flight was normal until the pilot prepared to land and placed the gear handle in the down position. Both main gears came down but the nose gear stayed up. The pilot recycled the gear handle several times, but the nose gear failed to extend. The aircraft landed nose gear up.

Investigation revealed the left nose gear wheel remaining nut had jammed on a ballast block installed on the left side of the wheel well. The ballast block had been removed and installed the night before to facilitate other maintenance. This incident resulted in ADC F-101 units stenciling the dash number of each ballast block and applying identification markings. Each ballast block and adjacent structure is stenciled forward and top with appropriate arrows pointing up and forward for reference during installation process. These markings have proven an aid in this area.

Just recently another F-101 was landed with the nose gear up due to the gear becoming jammed on a ballast mount bolt. The bolt had evidently worked out during flight.

Incidents of this nature create a heavy workload in repair of the aircraft plus out of commission time.

Maintenance personnel should be alert to the problems and hazards associated with ballast blocks. Once a ballast block is removed, a red cross entry should be made on the AFTO Form 781A indicating ballast block removed. After reinstallation of the block, a retraction check should be accomplished to insure that adequate clearance exists between ballast blocks, attaching bolts and nose gear assembly. Inspectors should inspect the identification markings to insure blocks are installed in

the correct position. Any mount bolts found that are not properly seated should be double-checked to insure they are installed correctly and torqued prior to signing of the red cross condition.

## EMERGENCY AND SURVIVAL EQUIPMENT FOR OPERATIONAL AIRCRAFT

Nonrated personnel and civilians required to participate in regular and frequent flights should be indoctrinated on emergency procedures and the proper use of emergency equipment, according to the type of mission and aircraft to be flown.

The minimum essential items of clothing and equipment should be adequate to assure survival in the event of an emergency ditching or landing. The quantity and type of equipment should be consistent with the kind of terrain, environment, number of occupants, and the timeliness of search and rescue service. Before takeoff, parachutes should be fitted to each person aboard the aircraft. In addition, each occupant should be advised of (1) location and method of operating the emergency exit, (2) techniques for operating the parachute and associated equipment, and (3) procedures for abandoning aircraft, and emergency signals to be used.

## CREDIT CARD NOW MANDATORY FOR REFUELING

Effective 1 November 1967, with changes in AFM 67-1, unless AF Form 1239, "USAF Avfuels Indentplate" is presented to the refueling operator at AF bases, no fuel will be issued.

The avfuels indentplate system is designed to assure that fuel managers obtain reports of avfuels issues into USAF aircraft world-wide. These figures are then matched with actual flying hours to obtain dependable hourly fuel consumption factors. Factors are used at all levels of command to determine projected aviation fuel and oil requirements.

Pilots, crew members, refueling and maintenance personnel must be aware of and comply with the requirement, i.e., "no ticket—no fuel."

Many pilots fly for years without ever being faced with a situation which would require them to leave the security of their cockpit and eject. We know that when someone is forced to leave his aircraft, he will only have one chance to do everything right the first time. This is why the Air Force conducts survival training and has refresher courses from time to time.

Another way to find out what happens to someone on bailout is get a first hand report from someone who has recently been in this position.

What follows is what happened to a crew of an F-101 when they had no other alternative but to bail out.

The pilot has stated that after he had made his "Mayday" transmission and attempted several air starts he then went through the pre-ejection procedures with the RIO. Together they checked visors down, chin strap fastened, gold key connected and hooked to their zero delay lanyards. They also checked lap belts and shoulder harnesses tight and locked. Arresters were checked to insure the safety pin was removed.

The RIO stated he started preparation for possible bailout at 20,000 feet when the pilot informed him they only had 800 pounds of fuel remaining. He says the training received during the ADC Life Support Course flashed before his mind, and he very calmly checked his equipment.

The pilot leveled the aircraft at 7,000 feet, let it slow down below 300 knots, and told the RIO to eject. The RIO pulled both handles, the left slightly in advance of the right one, and the canopy immediately jettisoned. He experienced moderate wind buffeting while assuming ejection position of head back, neck straight, and arms in the arm-



see you  
on the  
ground

rests. He says he first pulled his feet back against the seat to place them in stirrups—an act he attributes to training in another aircraft—but remembering the Dash One procedure, he placed his feet forward again on the footrests.

The RIO fired the trigger. He claims the noise of ejection was most apparent than the boom in the seat of the pants. He says he didn't even grey-out as the seat left, but he never saw the aircraft again. The chaff in the container on the headrest of the RIO's ejection seat did not deploy the chaff because the lanyard was not hooked to the bracket in the cockpit.

The pilot states that after the RIO jettisoned the canopy, he heard the

"Whoosh" of his seat, and the cockpit filled with vapor. His helmet bag, checklist, and various loose items floated out. He noted he had descended slightly to about 6,500 feet, and ejected himself at about 280 knots, about five or ten seconds after the RIO.

Just prior to ejection the pilot assumed the proper position of head back against the headrest, back straight, and arms in the armrests. He noted that with the handles pulled up his arms fit in position perfectly. As with the RIO, the pilot first pulled his feet back against the seat, but then moved them forward to the rudder pedals.

When he pulled the ejection trigger, the pilot says he felt an initial

boost and then a big boost. He says he greyed out but was conscious of what was happening all the time.

The chaff dispenser on the pilot's seat was hooked up properly and deployed the chaff on ejection. However, the chaff was not observed by GCI, Center or RAPCON.

The RIO states that after ejection he had the sensation of going through the air seat first. He felt the lap belt open and the butt snapper push the seat away. He reached for the D-ring, but about then the chute opened with mild opening shock. He retained his helmet and oxygen mask on bailout.

When the pilot's seat cleared the cockpit, it climbed to an altitude well clear of the plane and started to tumble forward. He felt the seat-man separator actuate and reached for the D-ring. The zero lanyard had already pulled the rip cord, and as the chute deployed, the lap belt initiator control tube on the lower left rear of the seat snagged the canopy skirt, ripping panels No. 4 and No. 5. The pilot, unaware of chute/seat involvement at the time, experienced moderate opening shock and noted the torn panels in the deployed chute. He also felt the left leg of his four month old flying suit tear up the rear from cuff to buttock. He attributes the cloth failure to opening shock and the weight of the ADC mandatory items in his lesser left pocket. He did not lose the mandatory items.

He also feels the chin strap helped retain his helmet and mask during ejection because he felt it raise up during parachute opening shock, tug at his strap, and settle back down on his head.

The subject F-101 had been modified with TOC 1049 and 1052. The automatic bailout bottles in the seat kits of both aircrews functioned properly; neither aircrew experienced any difficulty with oxygen/com-

munication leads or the quick disconnects.

As the aircrews descended, they could see each other and waved. The RIO says he was quite comfortable floating down and was surprised at the slowness of his descent. He looked down through scud clouds and could see nothing but forest below. The wind was calm, and since he was not oscillating or drifting, and no clear landing area was evident to steer toward, he chose not to make the four-line cut.

The pilot, even though two panels were torn in his chute, took out his MC-1 knife from his leg pocket and cut the four red-marked suspension lines with the hook blade. He then attempted to steer toward the RIO, visible about a half-mile away, with no success. Due to calm air he experienced no oscillation, but he did drift more than a quarter mile west because of the four-line cut and the two torn panels in his canopy. Both aircrews deployed their seat kits with the yellow handle prior to reaching the ground. The kits deployed properly, and the life rafts inflated.

Both the pilot and RIO prepared for a tree landing by retaining their helmets, keeping the visor down, the oxygen mask in place, and the chin strap fastened.

Both men buried their faces in their arms and kept their legs tight together as they passed through the low clouds into the trees.

Both crew members parachuted into a dense hardwood forest about one-half mile from each other. The RIO came down within 100 feet of his ejection seat. But the pilot, though he had ejected on a vector of 060 from the RIO, drifted due west a quarter of a mile from his ejection seat and ended up almost directly north of the RIO. They were both two and one-half and three miles, respectively, due south of the crash scene.

Both men landed in high trees nearly 100 feet tall. The RIO and pilot both were suspended in space between the survival kit and the parachute which were caught in the high limbs.

The RIO managed to reach a large limb close at hand. He climbed onto the limb, unbuckled his chute, and took off his helmet, which he left behind. He then climbed down the tree to heavier limbs, regrouped, and smoked a cigarette.

At this time the RIO noticed blood dripping down the front of his flying suit. On landing, a branch had torn an inch-wide, V-shaped gash in his chin. He wasn't particularly concerned about the cut because it didn't hurt much. He checked himself over and found no other injuries.

The RIO decided to climb down to some large lower branches of the tree where he could be more comfortable. He surveyed the items in his SRU-21/P survival vest and took out his pen-gun flares. After a period of about a half hour, he heard a jet aircraft and fired two or three flares. He later decided firing the flares had been a waste, because they weren't seen and decided to wait for a more opportune time.

The RIO studied his position. He was in the crotch of a tree about three feet in diameter, about 60 feet from the ground, with no safe way to get down. The shroud lines of his chute and the lanyard to the survival kit were inaccessible. He prided himself that he had not panicked during ejection nor after the landing in the tree. He was content that it wasn't yet noon, and that it wouldn't get dark until 2100 hours. He knew rescue was just a matter of time and noted that his chute was in a good position in the top of the tree to be visible from the air. He recalled a survival movie dealing with parachute tree landings that caution-

the aircraft to be careful getting down from the tree. He decided to stay put for the present, and if he got uncomfortable later, he might try slipping 60 feet down the limbless trunk to the ground.

Meanwhile, the pilot, too, was hung up in the trees. His survival kit and raft were caught in one tree, his parachute in another, and he was suspended at a 60 degree angle in between, about 25 feet from the ground. He undid his oxygen mask and pulled on the risers and the survival kit lanyard to see how firmly they were straggled in the trees. He decided to release the survival kit from the ring on the parachute harness, but found that he could not with the weight of his body being supported by the survival kit lanyard. He tried to cut the adjustment strap on the right side of the survival kit with the hook blade of the MC-1 survival knife. The hook blade

roke. He then pulled the hook blade around line cutter from the pocket on the right from riser of his parachute and used it to cut the strap. He then swung to the ground without injury because the tree and parachute supported him and broke the fall.

The RIO did not quite so fortunate. He decided to try to slide 60 feet down the trunk of the tree. The tree bark was damp and rubbery. He wrapped his arms around the trunk and tried to ease on down, but couldn't hold on tight enough and slid and fell to the ground. He hit on his right foot, fell to the left, and bashed the left side of his face against a rock or tree root. He did not lose consciousness and after a few minutes, he got up and found only obvious injuries on the left side of his face and previously injured chin. He removed the individual survival kits from his SRU-21/P gear, took out a couple of gauze compresses and placed them over

these parts. It wasn't until a week later that it was discovered that the fall had caused a slight compression fracture on the right side of the third lumbar vertebra in his back.

The RIO did not retain his chute, survival kit, or helmet. He left them up in the tree. He did have the contents of his SRU-21/P vest however, which included the five mandatory items, plus the two packet individual survival kit.

The pilot was able to remove his chute from the tree, but he couldn't get any of the items from his survival kit. He laid the chute on the ground and surveyed all his survival equipment, which included the five mandatory items in the pocket of his torn flight suit, the SRU-16/P minimum survival kit in the back of the parachute and booklet "Survival Uses of the Parachute," the SDU-5/G strobe light, and the URT-21 radio beacon.

The pilot's URT-21 radio beacon actuated automatically during chute deployment and was heard by tower and RAFCON. After reaching the ground, the pilot removed the URT-21 beacon from the parachute pocket. He disconnected the flexible antenna and pulled out the telescope antenna. A few minutes later he inadvertently bent the extended metal antenna, and when he tried to straighten it out, it broke off, right at the base. He then pulled the flexible riser antenna off the parachute harness, hooked it up, and placed the radio up in a tree. Later the T-33 search aircraft was able to pick up the warbling tone of the radio beacon at a range of two miles, while flying at 2,500 feet.

The forest was very dense where the pilot landed, so he reconnoitered 100 yards or so in several directions until he found a small clear area. He spread out his chute in the clearing, laid out his signal equipment, and started a smudge fire with hemlock

boughs and paper from his pocket.

A T-33 passed over a couple of times, but then departed.

The pilot reasoned that if he walked out, his torn orange flying suit would hook on the brush, so he repaired it with a needle from the minimum survival kit and inner parachute abroad line cord, while he waited for rescue.

About this time an Army National Guard O1A flew by. He spotted the smoke from the fire, the pen-gun flares, and the pilot's orange flying suit. To make himself more visible, the pilot waved one bladder of his LPU-3/P, which he had inflated. He also attempted to use the signal mirror, even though the sky was overcast. The signals were acknowledged by the light aircraft.

About this same time, the RIO noted more aircraft activity. He spotted a civilian helicopter up through the trees, but it didn't stay long. He then saw a T-33 and the O1A. He fired a pen-gun flare, which was seen by both aircraft. Both aircraft also saw his orange chute in the top of the tree. He himself could not be seen, because his green flying suit blended with forest green.

The RIO had no doubt that he had been located, so he sat down and awaited rescue. He wanted a drink of water and recalled a creek he had seen while descending in his chute. He had no idea which way to travel to reach the creek, so he did not move. While he waited he felt a headache, so he took APCs out of his two-part individual survival packet, and chewed them for relief. Then, he sat there in an open spot and watched the aircraft orbiting overhead.

The T-33 and two O1As remained with the downed crew members for an hour and forty five minutes. They passed information back to the base which helped aid the ground search party to reach the crew members. ★



# the heart of the matter

by LT COL P. W. LOVELL, AFM, MC

"It's the most vital pump in the manned aircraft system and there isn't even a satisfactory method of periodic inspection, but there are means of preventive maintenance."

A flight of F-102s is making a fly-over when suddenly a wing aircraft pulls up and rolls over slowly to the right. The pilot makes no attempt at egress and the aircraft strikes the ground with the pilot in his seat. Post-mortem examination of the young (less than 30 years old) pilot showed marked coronary artery arteriosclerosis and the investigating board ruled that this accident was due to coronary occlusion in the pilot.

The human heart is a remarkable organ and can be considered the most vital structure in the manned aircraft. Yet the average fighter jock

has less understanding of its structure and function than he has of the hydraulic system on his aircraft. Much of this is due to vocabulary. The medical *vambo jumbo* is confusing and often applies difficult terminology to fairly simple hydrodynamic problems.

The heart is a two-sided pump. It weighs about 2/3 of a pound and makes about 38,000,000 strokes a year without missing a beat. The smaller right side pumps blood to the lungs for exchange of oxygen and carbon dioxide. The larger left side receives the blood from the lungs and pumps it out to all functioning parts of the body. The valve system is ingenious and has its own disease problems. These are, however, primarily congenital (occurring at the time of birth) or due to rheumatic

fever which is primarily a childhood disease; hence they would preclude the individual getting on flying status and do not concern us here. There is an electronic conduction system that spreads the contraction signals from a "pacemaker" to the muscle bundles. However, the key to our story here lies in the coronary artery system.

The heart receives its own nourishment and oxygen supply by two small arteries, called coronary arteries, which arise from the aorta (the main large artery leading out of the left side of the heart). These blood vessels are about 3/16ths of an inch in diameter and branch and spread over the heart. In the normal heart, these branches don't anastomose (hook up with each other) so a block in one of them will cause death of the heart muscle supplied by this branch. (What actually happens during a heart attack is beyond our scope here, but there may be focal death of muscle with gradual recovery by scarring, or there may be sudden death due to the development of abnormal rhythms in the conductor system.)

Arteriosclerosis, atherosclerosis, or just plain hardening of the arteries is a disease of unknown cause that results in thickening of the walls of arteries and deposits of material that narrow the lumen (passage) of these vessels cutting down the blood flow. Despite voluminous research we still don't know the cause. It is more common in Americans (it is quite rare in Asiatics); it starts in men at a much earlier age than in women; it occurs with much greater frequency in the obese, the physically inactive, and in the heavy cigarette smoker. It can be the cause of an aircraft accident. A real problem is that we have no practical method of detecting the degree of coronary artery disease unless there has been previous heart muscle damage.



What about the electrocardiogram (ECG, EKG)? This valuable tool was invented around the turn of the century. It measures the electrical forces caused by the contraction and relaxation of the heart by tracing a path of squiggly lines on paper. If there is death of heart muscle (infarction), either recent or old, it will cause changes in the pattern of these tracings that mean something to the cardiologist. There have been normal variations to the pattern and such things as severe viral diseases can also cause change in the pattern, which adds to the confusion. *What the electrocardiogram will not do is tell us the degree of arteriosclerosis of the coronary arteries.* The only test that will do this is "coronary angiography" which is a complex and slightly dangerous non-routine procedure. These arteries can be plugged to a remarkable degree without any symptoms or detectable defects in the EKG. It is only when there has been damage to the heart muscle that the EKG will show evidence of coronary heart disease. The reserve of the coronary artery system is remarkable and it is hard to visualize a pump in an aircraft that could have its fuel or lubrication supply so restricted and yet check out normally. Hence we have no really adequate practical method of performing a periodic inspection on the heart.

What about preventive maintenance? While the most important item is selecting our grandparents for their longevity, there are effective things that can be done. Probably first in priority is to stay lean (even minimal obesity counts against you) and in top physical shape. The interrelation of diet and exercise to a lowered incidence of coronary disease is not clear cut, but there is a strong statistical correlation. A high intake of animal fat products also is related with a higher incidence of

coronary artery disease. Physical activity, in my opinion, is the most effective preventive measure. *Regular and consistent physical exercise to the point of stressing the system will result in a marked lowering in the incidence of coronary artery disease.* Just how this is done is not clear. There is evidence that the exercise will create "anastomosis" (hooking up of ends of arteries that don't normally meet with each other) that will by-pass a focal block. However, exercise also actually cuts down the amount of deposits inside the artery, but the mechanism is not clear.

Smoking cigarettes in large numbers will definitely increase the death rate from coronary attacks. Emphasis has been placed on the cancerogenic properties of cigarettes, but in the middle-aged male, the heavy smoker will have twice the incidence of coronary attacks that the non-smoker will have.

Hence, what can we do for our own preventive maintenance? Stay lean! Stay physically active (you can't beat running)! Lay off the cigarettes! *This should be a consistent and life-long program for a long life.* This is not just to insure the Air Force's investment in you and to keep you from clobbering a shiny new bird due to a sudden coronary

occlusion, but for your own enjoyment and active longevity. An item of interest in the history of our young fighter pilot mentioned at the beginning of this article, is that in the three years preceding his death he had become more sedentary and had gained 30 pounds.

Coronary artery disease is not one of upper middle age, but it definitely starts in the twenties. While many individuals having severe coronary artery disease may be without symptoms, certain manifestations may become apparent. The classic symptom is crushing chest pain radiating down the left arm, but the symptoms may masquerade as a sudden onset of indigestion. Usually if the process is severe enough to cause symptoms, there will be EKG changes. The "baseline" EKG on file for every rated pilot is of great value here because minimal changes can be compared with the baseline. Don't be afraid of being grounded unnecessarily. The School of Aviation Medicine consultation program has extensive experience in evaluating these cases. If you've got the disease you don't want to be flying, and if you haven't, they'll keep you in the air. In the meantime, stay lean, physically active, and think twice about how badly you need that cigarette.

## ABOUT THE AUTHOR

Dr. Colonel F. Warren Lovell, AFRes, MC, currently a reservist, on 30-day assignees to the Surgeon's Office, ADC, is both a rated pilot and a flight surgeon. He entered military service with the National Guard in 1940. He attended flying school and was a combat B-25 pilot with the Seventh Air Force in the Pacific in WWII. He then attended Northwestern University Medical School. In 1957 he re-entered the regular Air Force and was one of

the pilot physicians in the Air Force; he was Chief of Aerospace Pathology at the Armed Forces Institute of Pathology.

Colonel Lovell returned to civilian life in 1963 and currently is a pathologist in Seattle, Washington. He also serves as a consultant to FAA in pathology and teaches in the FAA-NTSB accident investigation school at the Federal Aeronautical Center in Oklahoma City.



# "But gee"



I am not allowed to drive the train,  
I cannot clang the bell,  
But let the darn thing jump the track  
And see who catches it——.



He has always been a good hunting dog, but he  
sure eats lots of food.

# Whiz, Sir."



All mouthwashes taste too sweet to me.



Gentlemen, behold our new Will

No 11 The attitude indicator  
is not always right.



# Why Blame Me?



**W**e live in a world of progress. All around us we see evidence of what man is capable of doing. Buildings are designed with an eye toward functional use. Homes today have appliances in them which make the old wood cookstove an item seen only in a museum. Automobiles have had great engineering changes. Aircraft have gone from the wood and baling wire phase to the jet engine and titanium phase. Yes, progress is a wonderful thing.

We have made great strides in reducing the number of aircraft accidents within the Air Force. We have identified and eliminated many accident cause factors in the past. The aircraft today is much more refined than it was years ago.

We would like to compare two accidents and perhaps we can see how much we have progressed in 56 years:

## ACCIDENT NO. 1:

Extract from Proceedings of Board of Officers held at San Antonio, Texas, May 10, 1911:

From the evidence given the

Board, Lieut. Kelly made a flight of approximately five minutes duration, in a Curtiss bi-plane, at about 7 A.M., May 10, 1911, under good atmospheric conditions. As a result of this flight he met his death.

He had made not a normally hard landing. Upon landing at least one and possibly both sides of seat fork were broken at a point between pilot seat and foot rest. At the same time it appears that one diagonal bamboo brace from front wheel to front elevator was broken, and its mate was bent.

After striking the ground the first time, the machine bounded to a height approximately ten feet, and gradually rising to about thirty feet until, within about seventy-five yards of the camp of the Eleventh Infantry, it made a sharp turn to the left, banked up the turning wing, and made an abrupt dive to the ground. Kelly was thrown clear of the machine to a distance of about twenty feet.

As a result of the first impact with the earth it is apparent that the pilot lost control of the machine.

It is the unanimous opinion of

the Board that the front wheel must have struck an abrupt depression in the ground or some obstacle causing the strain which resulted in the break.

From all of the preceding facts the Board is of the unanimous opinion that the accident was due to the efforts of Lieut. Kelly to avoid endangering the occupants of the Eleventh Infantry camp in which endeavor it became necessary for him to make a sharp left turn, which, in the crippled condition of the machine, put more strain on the controls than would have been required in a straight away landing. Such straight away landing was impracticable owing to the proximity of the tents.

**Probable Cause of Accident:** Error in judgment on part of pilot in selecting an unsuitable landing place.

## ACCIDENT NO. 2, 1967:

Takeoff and climb were normal in all respects. Call No. 2 quantity was monitored during the climb. At level off individual tanks were checked. Call No. 5 was noted





**OPERATIONAL  
READINESS  
INSPECTION TEAM  
HQ, ADC**

## "Mistakes"—Again!

A review of past ORIs indicates discrepancies that have existed for a long time. Some things mentioned in this article seem to be repetitious, but it seems everyone needs to be reminded of these items once again. Some may appear to be inconsequential but may make the difference between a solid performance or one that is just so-so. After much discussion, we have come up with a few discrepancies that are generally observed.

We see oversupervision by dias personnel. Don't let this topic mislead you; we do not advocate that personnel be left on their own with no supervision at all. However, we have noticed that many phone calls from the battle staff, SD, and SWD concerned actions that had already been taken by weapons personnel. This information is usually displayed on the SID or DID. So battle managers, *DONT BONG DOWN THE BLUE ROOM WORKERS WITH UNNECESSARY PHONE*

*CALLS!* Why not wait a few seconds to see if the action has already been taken?

Failure to monitor final phase of intercepts by WDs: Information is being requested from INDs that is available if the WDs would monitor the final phase of intercepts. We do not suggest that the WD listen or visually follow the entire intercept on every commitment. Obviously, this would be impossible and even if it weren't, it would certainly distract him from the rest of his responsibilities. We do think that WDs can and should monitor the final phases of most intercepts being conducted. Effective use of WD consoles would certainly give a confirmation of kills or MIs. Certainly in the case of an MI, further commit action could be accomplished much faster.

Poor dissemination of intelligence information leaves INDs in doubt as to the overall battle plan. In order to assist the WDs in positioning intercepts, INDs must be kept aware of the threat, ECM activity, and evasive action.

On two ORIs we have witnessed an IND taking a second MA/KH action rather than making a second pass. In both cases, this misled people into believing the fighters had been neutralized and the fighters reached the BRL when additional interceptors were diverted from them. Needless to say, where percentages are all important, these were very costly mistakes.

Academic training programs have continued to look good and results of written examinations have reflected their effectiveness. However, numerous positional mistakes indicate that practical training still needs more emphasis. There are too many INDs that do not have

SD	Senior Director
SWD	Senior Weapons Director
SID	Situation Information Display
DID	Director Information Display
IND	Intercept Director
WD	Weapons Director
MI	Missed Intercept
ECM	Electronic Countermeasures
MA	Mission Accomplished
BRL	Bomb Release Line
ID	Identification



complete knowledge of armament or aircraft characteristics and basic computer logic. This is evidenced by the tactics employed and unnecessary use of manual command headings that eventually led to unacceptable crossing angles. Lack of voice transmissions concerning ECM and faker evasive maneuvers indicate INDs are not cognizant that this information is valuable to the aircrew. INDs are still lax in updating computer information (i.e., fuel status, armament and proper command altitudes). Improper breakaway headings have resulted in interceptors being out of position to meet incoming fakers. This was either caused by poor preplanning or lack of understanding by INDs. A little preplanning and aggressiveness on breakaway headings will result in more and earlier kills.

In the surveillance area we continue to observe numerous MIs charged to height. If employed properly, our height finders are for the most part reliable. Many height errors can be attributed to tracking problems since positioning of height finders is based on symbolology location. Proper coordination between the weapons, ID, tracking and height sections can certainly minimize these errors.

Slow reclassification of tracks after neutralization caused some unnecessary actions to be taken by

weapons and surveillance personnel. Why wait? A "B" track indicates to everyone that this is no longer a valid faker.

Possibly the most often observed problem is the lack of external and internal coordination. There are cases of Modes I and III units not talking to one another when BUIC is in the monitor mode. Mode III must have the interceptor call signs, fuel, armament, and commitment actions to be prepared to assume control of the air battle. We have noted a vast improvement in this area during the past months.

Various ground environment sections appear reluctant to talk to one another. If weapons personnel notice surveillance problems, why not coordinate. To correct them — let's face it — the most experienced weapons team in the business can't hack it without a reliable air picture.

Even though units are short of experienced personnel, these problems are still not insurmountable.

With proper training, supervision, and coordination you can have a winning team.

So, read, heed and win the battle.

TOM WILLE, Colonel, USAF  
ADC ORI Team Captain

# "Grow old



"Grow old along with me!

The best is yet to be,

The last of life, for which the first  
was made."

—R. Browning

**R**ecently I took what I am sure was my last flight as a pilot of a military aircraft. I was a member of an outfit which was eliminated in the defense expenditure cutback, and I have ranked and aged myself out of active reserve duty. I would be less than human if I did not at this time look back on my years of flying and try to evaluate the factors which operated to keep me alive, as well as those mistakes which might have killed me.

I felt a resurgence of the impulse to buttonhole the boys and girls just beginning, whether in private or military flying, and say the magic words which will keep their bones intact and send them home each

evening a joy to spouse and children.

I can say what I have to say without pride or arrogance because I was a mediocre pilot. I learned slowly; I was not by any stretch of the imagination a "natural". My awareness of my limitations, I am sure, is one important factor to which I owe my life. I did not have the skill to try with chance and stretch my craftsmanship beyond its capabilities. I would not slow-roll at less than 3000 because I scooped out at least half the time; nor would I practice spins unless I had so much altitude that the ground seemed as remote as the moon.

There are two kinds of pilots who get hurt: clever ones and poor ones. The clever ones gradually acquire a confidence which may mislead them and tempt them to cross the safety margin once too often. The poor ones are merely incapable. But there is one common attribute which both

types possess—they lack imagination. Their thinking is narrow. They fail to consider the possible consequences of a breach of flight discipline or an overextension of their abilities.

They assume that all conditions at all times will be normal. They assume that the ground is flat without obstructions, that the old altimeter setting is good enough, that there is no other plane in the air, that the weather will hold, that the obsoletic chart is reasonably accurate, that the fuel tank was topped, that the field is open, that the mags will clear in the air.

These are foolishly assumptions resulting from laziness and wishful thinking. If there is one thing we can be sure of in this journey through the cosmos, on this thin-skinned pea of an earth, it is that change is constant, nothing is ever the same. It is apparent to me if



# d along with me”

the human race is invincible. You need only to consider the fact that a man who knows he has only one life will offer it to eternity because he is too lazy or too unimaginative to take an extra minute to ask a mech how much oil was put in. Courage like that exceeds the tiger's.

I distilled a single rule from the potpourri of experience, a rule which contains just about all there is to flight safety. It is, however, a mere phrase unless we extend it through every flight activity. It is simply, "Never take anything for granted."

There are plenty of things which we are forced to take for granted without adding to the list. We must accept the evidence of our eyes and nose that the liquid in the tank is aviation gas, that the length of the runway is 8000 as Enroute-Supplement says it is, and that the propeller is pitched at the proper angle to pull the plane forward. We lean heavily on properly trained authorities for vital information, and if they fail us we cannot help it.

But there are those factors, which can be checked personally, which should never be taken for granted. I learned one lesson fairly early, and the nearness with which I came to killing, not myself but another pilot, had an extremely sobering effect.

I was lined up on the runway's centerline with a student under the hood in the rear cockpit preparing for an instrument takeoff. Another plane was lined up in front for the same purpose. My student was on the brakes ready for full throttle when I gave the order. While I could not see over the nose of my plane, I did observe the wings of the first plane recede and disappear as it



started down the runway. After a decent interval I told the student to roll and I stayed on the interphone to advise and correct him. He did so, and a few seconds later my guardian angel stepped in.

"Now look, buttonhead," he said to me, "the first plane started rolling and you figure that he is airborne at the end of the runway by now. But you don't see it; you're just taking it for granted."

I popped the hood, took over, hit the brakes, and throttled back. My aircraft stopped 20 feet short of the

number-one plane which had aborted, probably because the student was veering off heading. I would unquestionably have chewed through at least one cockpit if I had continued. I would have had a memory very uncomfortable to live with.

I owe to a certain vice of mine a good bit of credit for the fact that my wife was cheated out of 10 thousand dollars of NSLI insurance. I am an experience thief; I steal the experience of others.

Your own experience is the worst possible teacher despite the famous



dictum. It is much too expensive. I enjoy the nasty habit of appropriating that of other pilots. Every time I read or heard of an accident, I would ask myself "Do I fly in such a way that it could have happened to me?" If the answer was yes, I did my best to correct my habits. Like a parasite, I stayed alive on the flesh and blood of others, and I admit it without shame. I love the taste of hamburger with catsup and onions and I love my wife's embrace in front of the fireplace on a fall evening. My imagination is a vivid one. And when I fail to see the other plane in the traffic pattern when the tower informs me it is there, I panic.

No more hamburger? No more kisses? The cold sweat breaks out, the right hand crooks convulsively for the rip cord handle. No more baseball with my boys? The heart beats faster, the blood pressure rises. No more cans of beer on a hot afternoon? The breath comes short and hot.

"Where in the hell is that other plane?"

I turn right and left to seek it. I drop first the right wing, then the left.

Tower: "Nine zero four, are you having difficulty?"

Oh no, how can the thought of a mid-air collision at a thousand feet suggest difficulty?

I make my voice calm. Nobody must know that I am afraid of a mid-air collision. After all, am I not a pilot?

"Tower from 904. I do not see the number-one plane. What is his position?"

Tower: "He is over the end of the runway on final. You are number one to land."

"And how did it go today?" Cynthia says as the church key bites into the can of cold brew.

"Very nice," I answer. "Do you think it is chilly enough to light the



fire?"

I know two pilots whose tragic exits I was able to predict. One was a clever man, with an enviable skill and a superb practical and theoretical knowledge of aerodynamics. The other was a wise guy.

I loved Casey, the first one, like a brother. He taught me much about flying and he was for me St. Exupery and Jimmy Doolittle rolled into one. But he couldn't subtract. He didn't know when his units of safety were reduced to a dangerous minimum. His skill was his undoing.

He could roll at 200 feet and never scoop out. His aircraft was as his own body. This is a fine thing, but there are possibilities over which your skill has no control. Engine failure is one of these, and engine failure when inverted at two hundred feet is a troublesome event. A parachute is useless and your choice of posture is severely limited, even if you complete your roll. Casey did not complete his, and scattered gas, guts, and gaskets over five hundred feet of ripening corn.

I was such a mediocre pilot that I

never had the courage to attempt such intrepid maneuvers. I mourned the death of Casey, but my grief didn't help him. He has been long gone, and I am here tonight, as I write, watching the scarlet leaves of the maple drift by my window in the moonlight. And yet his craftsmanship far exceeded mine.

Marvell said it 300 years ago: "The grave's a fine and private place, but none, I think, do there embrace."

But I love to stare. You should see my triple sequence: The split-5, loop, and Immelman, coming right out on the original heading. I start it at 10,000 feet. I'm very proud of it.

The other pilot I shall call Grant. He was a likeable youth, but he lacked humility. He wore his cap on the side of his head and made sharp turns to a landing. He would argue aerodynamics with pilots who had more hours at night flying than he had altogether. Can you imagine yourself advising Saint Ex on the best route to Dakar? Grant would have done it.

One day I said to him, after a particularly disheartening discussion (I think he was insisting that a plane in the air would weathercock): "Grant, it matters not to me whether I win the argument, but if you fly like you talk, you will kill yourself."

He snorted, re-tilted his cap to a more rakish angle and stalked off whistling. "Off we go, ta-ta-ta-nam-tum-tum."

I had no car, and he picked me up every morning to drive to the field. One Monday morning, two weeks after my melancholy prediction, he failed to show and I had to hitch-hike. No bus.

The CO was on the phone when I loped in, an hour late. I was nervous and furious; we were flying a very tight schedule. I started blabbing when it was apparent that the CO was waiting for somebody at the other end.

"That damn Grant didn't pick me this morning! It ain't my fault!" I pounded on the desk.

The CO started talking on the phone and, being versatile like Caesar, wrote a note for me on the pad.

"Grant was killed yesterday."

I had the psychic feeling of inevitability you sometimes get in a poker game when the card you draw is exactly what you expected. Of course, I said to myself, what else could it be?

He had his brother, a visiting cadet, in the rear seat when he pulled the wings off the trainer over Biscayne Bay. The only two boys in the family. And what did his mother think, I wondered. And what did his father say?

It is the same as in driving a car, of course. In tonight's paper is a picture of a new car and a boy shattered against a tree on a sharp turn. The speedometer stopped at 110. My wife is a cautious driver; too cautious, I tell her. She misses

golden opportunities to pass other vehicles while I fret and fume. You should estimate relative motion better than that, I tell her.

But who skidded off the road one evening and messed up our family wheels in a stump-filled ditch? You know who.

I said that Casey didn't know how to subtract. I referred to my formula for safety. According to my ingenious reckoning, safe flight is maintained only when you stay above a certain number of what I call safety units.

When you have trouble in an airplane, there are at best a fairly large number of life-saving alternatives. As far as I am concerned, there are more of them in the air than on the highway, where an oncoming car on your side of the road, passing on a curve, may reduce your alternatives to almost zero. These units are your treasure, money in the bank, the buffers against chance, fate, bad weather, or even your own fallible judgment . . .

. . . When the hangar-flying drills around to hairy stories, be proud that your narrative is too dull to relate. Let nothing happen to you worth telling about. Go thou and grow old and stodgy. Get your ex-

citement empathetically by observing the carding exploits of Jimmy Stewart and John Wayne on the magic silver screen. Trillize your wife by an impassioned account of how the manager of the airport grill threatened to arrest you when you tried to kick your dime back out of an empty candy dispenser.

Now I am a private pilot only. I look forward to dancing the skies on laughter-silvered wings, to winging to my destination in a safe, straight line far above the twisting hazards of the increasingly expensive highways. There are no toll roads up there in the blue, no billboards on the clouds, no speed traps, no traffic lights. There is only the challenge to my imagination, and to my good common sense.

I must finish now. The ashes are glowing in the fireplace. Cynthia has the coffee on and I have marshmallows to toast.

Robert W. Duncan  
Department of English  
University of Southern  
Illinois

Reprint from *Combat Crew*,  
April 1960





**“Hello, Paris Control...”**

*We are proud to say that we have received many glowing and heart-warming reports on how well our ADC types are doing in all phases of the conflict in SEA. Just one of those phases is air defense of the area. Because so many of ADC's people are pulling their share of duty in Southeast Asia, we asked for, and received, from the Seventh Air Force a few words of enlightenment on the air defense posture in SEA.*

*The Editor*

**A**n unidentified aircraft streaks toward South Vietnam. Almost simultaneously, a red light flashes on in a large darkened room at a sprawling air base in the Republic and tent-faced men set into motion a vast air alert system.

So begins one of the many operations of Vietnam's Paris, which is unlike the French capital city, center of fashion, sidewalk cafes and catwalk to the international "jet set." The Vietnam Paris—the "Paris" Control and Reporting Center at Tan Son Nhut Air Base — has none of the glamour of the famous city and caters to a different "jet set" . . . Allied tactical aircraft engaged in operations throughout Vietnam.

As the unidentified aircraft continues on its way to South Vietnam, an Air Force Senior Director in the dimly lit room reaches for a phone . . . a "hot line" connected directly with alert crews on standby. The Paris Center initiates the final phase of the air defense system protecting the vast amount of Allied troops,

equipment, and materials in the Saigon area.

Within minutes, a flight of two Air Force F-102s from nearby Bien Hoa Air Base speed toward the unknown aircraft. Still others, members of the Air Force 619th Tactical Control Squadron and Vietnamese Air Force personnel working side-by-side, handle complex radar scopes and communications gear in another phase of Paris' vital mission. Center personnel provide radar advisory and flight-following services for all aircraft operating within the III Corps area, jutting out in all directions from Saigon.

As weapons controllers pass on vital information and guide aircraft in the area, many eyes are fixed the vertical plotting board near

front of the center. The course of the unidentified plane has been carefully plotted since its appearance on the radar scope.

The intercept aircraft are being guided to the unidentified aircraft. The following conversation between the F-102 pilot and the Paris Center is typical of one during an intercept mission. "Paris Control, this is Robin Hood, a flight of two."

The Weapons Controller studies his radar scope and replies: "Robin Hood Red I have contact. Vector 220 degrees, climb gate angle two zero, and perform safety checks."

The lead pilot replies: "Roger."

The radio conversation continues: "Red flight you are committed against one bogey at angle one five, tracking 120 degrees. Bogey speed 250 knots."

"Roger, Paris."

"Robin Hood Red set your speed and descend angle 15."

"Roger, Paris."

"Red flight your target is bearing 300 degrees at 20 miles and in a slow descent." The lead pilot acknowledges and the two pilots start searching with their airborne radar. "Red flight this will be a stern identification pass . . . target now 15 degrees left 10 miles."

The lead pilot replies: "Paris, I have a contact there."

"Red flight, your contact is your target."

"Roger Paris."

The Weapons Controller anxiously watches the blips almost merge on his radar scope and then hears the lead pilot say: "Paris, I have a visual. The bogey is a civilian DC-6 liner."

"Roger Red," comes the reply from the Controller, "Vector 220 for homeplate and start descent checks."

This intercept mission identified the unknown as a friendly aircraft. The center movements and identification section supervisor directs the center to mark the track as friendly

and the atmosphere at the center becomes more relaxed.

Nearly 220 unidentified aircraft are plotted monthly by the Paris Center. Not all require alert aircraft to be scrambled . . . some unidentified planes are declared friendly due to their physical nature, location, and direction of flight.

Similar scenes take place at other control centers throughout Southeast Asia, which provide overlapping radar coverage of the entire area.

One of the busiest control centers in the world, Paris handles more than 37,000 aircraft—all types from the supersonic jet to the slower piston-driven aircraft—monthly. Among the guidance provided is target information to strike aircraft; aircraft handoffs to forward air controllers flying as spotters and observers for strike planes; direction around artillery lanes of fire; and furnishing flight following and radar advisory assistance to DV (Distinguished Visitors) and airborne medical evacuation flights.

In addition, Paris controllers complete radar handoffs to Tan Son Nhut, Bien Hoa, and Cam Ranh Bay ground control approach (GCA) units for aircraft desiring precision landing assistance at these bases. Control centers are able to maintain constant contact with aircraft in Vietnam by handing off responsibility from one center to another when aircraft leave various areas of coverage.

Another important part of Paris operations is the high quality maintenance work done by unit personnel on complex radar and communications equipment.

Allied offensive and defensive airpower receive a big assist from the men from Paris, whose everyday activities get the "jet set" treatment typical of the French capital . . . only in a different way and different place . . . war-torn Vietnam. ★



Here's how it's done.



Radar tower at Tan Son Nhut.



The nerve center.

# GENTLY and GRADUALLY



By JOHN M. WELCH  
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Many of you will be driving on ice and/or snow for the first time. Primarily, there is no substitute for proper defensive driving combined with learned judgment. Avoid the common tendency to overpower, oversteer, and overbrake on ice or snow.

**OVERPOWER:** When attempting forward movement in snow or on ice, power should be applied gently. Spinning rear wheels will only dig deeper and create tire heat to add to the dilemma. Assure that your front wheels are directed straight ahead if at all possible. If the front wheels are turned, more force is required to start the car moving. Inappropriate acceleration or deceleration during travel can produce dangerous skids and possible loss of control.

**OVERSTEER:** While traveling on ice, you will notice the steering is almost effortless. For those of you who don't have power steering, you will have the effects of it. Notice with every minor movement of the steering wheel, the

varied reactions of your car, and how easy it is to overcontrol.

**OVERBRAKE:** Use your brakes sparingly on ice and assume ample clearance in front of you. (At least three car lengths for every ten miles per hour.) As you apply gradual pressure on your brakes, you will note the forward speed diminishes very slowly. The tendency for many drivers is to slam on their brakes and lose all control of the vehicle. This action locks the front wheels and eliminates the possibility of steering away from the area of danger. The present recommended action is to pump your brakes when attempting to stop. This will lock your wheels temporarily, but upon the release cycle, you would be able to control your steering.

These three factors - overpower, oversteer, and overbrake - even though used correctly, will not, in themselves, preclude an accident. Variables such as terrain, other traffic, visibility, tire tread, and many adverse conditions peculiar to the winter months could

be a contributing factor. The primary cause of this type accident would be "loss of control by the operator" or possibly "no fault of the Air Force Driver." Don't allow yourself to be involved in either of these situations. How? Maintain proper control and retain a clear area or emergency path for defensive driving techniques.

**PRACTICE:** If you have an area of ample clearance from obstacles, try full braking action on ice. You will notice a skid, or drift develops. Release your brakes and gently turn your front wheels in the direction the rear of the vehicle is drifting. Practice this at a low speed of 10 mph or less to improve your winter driving ability. You will also gain an insight on the definite increase (up to 12 times) in stopping distance, compared to dry road conditions. Try fast accelerations and decelerations, as well, so you will get a "feel" for the effects. Knowing the basic reactions of the vehicle on ice and your ability to analyze and control this reaction will assist you greatly in preventing a potential accident.

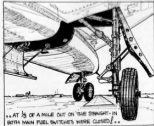
**TEMPERATURE:** A change of temperature will have a great deal to do with braking distances and traction on snow and ice. When the temperature rises, ice and snow become more slippery. Braking distances when the ice begins to thaw are twice those found at zero. Your outdoor thermometer will give you a clue when starting out. If it's near 32°F, it clearly says "caution." Temperatures tend to drop at nightfall. Driving during this period has a special meaning for the experienced, winterized driver. If there has been enough "thaw" to melt the road ice or snow, during the day, the evening drop in temperature will again produce the ice hazard. If you are moving at a very slow speed, as you should be, the slipperiness of the road can easily be felt as you pump the brakes once or twice. In some cases even a road that appears dry will be icy.

In conclusion, reduce your speed significantly when driving on ice or snow. Space yourself in traffic to allow for greatly extended stopping distances. Be prepared for the reaction of your vehicle. Turn into the direction of skid, but don't over-control. The above procedures will help you be an accident-free, winterized driver, rather than an accident statistic. Above all, "keep your cool."

# THE HAIRY ONES



... AFTER 20 MINUTES OF FLIGHT, NUMBER TWO F-106 BEGAN A LEVEL OFF. THE "SCOTTIE" WOULD NOT REDUCE BELOW 34%, ENGINE RPM, EMERGENCY WAS DECLARED AND IMMEDIATE REVISION BEGAN. ALL EMERGENCY PROCEDURES REVIEWED. ....



... AT 1/2 OF A MILE OUT ON THE COURSE - IN BOTH MAIN FUEL SWITCHES WERE CLOSED! ...



THE ENGINE CONTINUED TO OPERATE. THE PILOT EXTENDED THE TAIL HOOK AFTER PASSING THE APPROACH, TOUCHED DOWN AT 6000 FT. ... CONTINUED OVER THE SAC-6 BARRICADE AND THROUGH THE RUSSED WA-1A WEDDING. ...



THE F-106 TECH ORDER STATES THAT 4 TO 5 SECONDS AFTER YOU CLOSE THE MAIN FUEL SWITCHES WITH TORQUE, STUCK AT 34% ... FUEL INNOVATION (TYPE) OCCURS ... AFTER 4 SECONDS AFTER PLACING THE APPROACH !!

BO GARRY

... WITH THE ENGINE STILL RUNNING, THE PILOT, AFTER CLIPPING THE OVERRUN, PULLED THE AIRCRAFT INTO THE GUN AND EJECTED!

**EMERGENCY CASE !**  
MATERIAL FAILURE OF FUEL SHUT-OFF (WHITTAKER) VALVE TO CLOSE .

# DOWN and out

## FUEL SHUTOFF VALVE (F-106)

The flight leader of the two ship formation briefed the flight. Call signs were assigned. A normal preflight was accomplished, and as a part of the preflight I checked the throttle linkage, rods, and connections in the left engine bay. All was in order.

Engines were started, systems checked, and the flight taxied out for takeoff on Runway 09. Lead rolled at approximately 0921, and after 20 seconds I followed. Takeoff and climbout were normal, all systems performing properly. We contacted

Center for the flight to the intercept area.

I joined up in close formation at 35,000 feet, and as the flight leader's IFF was inoperative, I switched my IFF on so that the flight could be identified. Arriving in the intercept area, we were descended and were turned over to SAGE for control.

SAGE took control and designated me as the first "target." I was descended to 4,000 feet. Airspeed was 250 knots. During this period of time, I noticed very slight engine surges, with the EGT fluctuating 4 to 6 degrees occasionally. The RPM remained constant, and fuel flow

fluctuations were not noticeably excessive.

After about twenty minutes lead was broken off, and I was designated as the "interceptor." Data Link commands followed and I switched the Flight Mode Switch to Auto. Power was advanced to full military power, and the aircraft climbed smoothly to 12,000 feet, as it automatically followed changes in Data Link Command Heading.

Leveling off at 12,000 feet, I found that I could not retard the throttle below 94%. I declared an emergency and set my IFF to "EMER" and Mode 3, code 77. SAGE gave me "Pigeons" to home plate. I determined that throttle response was available above 94%, but left the throttle at the lowest available setting, for fear that it might hang up at a higher RPM. My leader requested a joinup, and the flight was joined without delay. I continued toward home plate with the power at 94% and, as the air speed was increasing, I allowed the aircraft to climb to 22,000 feet, where I leveled off at about .9 Mach.

I discussed the problem with lead and decided the best course of action would be to shoot a straight-in approach, cutting the fuel switches once the landing was assured. With a BAK-6 barrier available, I felt fairly confident with this plan. My leader said, "Be sure to turn both the switches off."

I advised SAGE that we would begin our descent about 60 miles west of home plate, and requested that Approach Control be prepared to handle us for a straight-in approach. I also requested that Mobile Control be prepared to assist me.

Speed brakes were extended and descent commenced from 22,000 feet. I made a determined attempt to retard the throttle, but could not free it. I looked down into the throttle quadrant for any foreign object which might be present, but I could





not see any.

Contact was established with RAPCON on Channel 19. I made one attempt to contact them on Guard, but neither aircraft could receive properly, so the flight went back to Channel 19, where communications were good.

I called off my power setting and fuel flow to Mobile Control, and asked him to check the Tech Order to determine how long the engine should run after cutting the fuel switches. He replied, "About 5 seconds, don't turn off the fuel switches until you have the runway made."

About 30 miles west, I raised the nose and decreased airspeed below 280 knots. I then lowered the gear, and continued my descent to 2500 feet. After leveling off, the airspeed bled down to about 220 knots.

We intercepted the glide path, and with gear and speed brakes extended, the airspeed climbed slightly and held between 225 and 230 knots.

About 1/4 mile out from the be-

ginning of the runway, I made one last attempt to free the throttle. This failing, I immediately turned off the left and right fuel switches.

I flew the aircraft on down toward the runway, expecting the flameout imminently. Once past the approach end barrier, I lowered the hook, and lead said, "Your hook is down." I rechecked the two fuel switches off, and noticed that the yellow warning lights were on.

I set the aircraft down on the runway, and locked my shoulder harness. I used no brakes for fear of blowing the tires, and did not deploy the chute at that airspeed, hoping that I might be able to use it after the flameout occurred, and the airspeed had decreased below the drag chute limit speed.

I kept the aircraft on the runway and called that the engine would not quit, and gave my airspeed. I felt no deceleration as I rolled over the BAK-6 and my leader called, "You didn't get it!" from his airborne chase position.

Immediately I saw the MA-1A barrier, but I felt only a slight deceleration as I contacted it. I was not immediately sure if I had engaged it successfully. The aircraft continued to roll and I felt no further deceleration. The roll became more bumpy and I could see that I had used all the runway, and that I was about to go into an unprepared area.

I pulled back on the stick and was heartened by the aircraft's response, although the controls felt somewhat sloppy.

Unsure of how much damage had already been sustained, and in a climbing attitude with the imminence of a flameout, I realized that I had a good chance to survive if I ejected. I raised the left handgrip and the system functioned as designed.

The reason that the engine would not flame out was that the right fuel shutoff (Whitaker) valve failed to close because of a sheared pin in the actuating mechanism.



# ✓ POINTS

This section of the magazine has been designed for you. Be you a headquarters type at any level, a commander, safety officer, pilot - interceptor, transport, light aircraft - radar intercept officer, mechanic, a civilian in industry, weatherman, doctor, designer, or Indian Chief. This is your corner.

We solicit your ideas, items, notes, photographs, sketches, and pictures. The writing should be less than a paragraph - preferably a sentence or two.

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

✓ Carbon monoxide, a colorless, odorless gas, is a killer, especially during the winter months when we keep our car windows closed to keep out the cold. You have heard the best way to handle the problem is to keep a window slightly open for ventilation. This is not necessarily a true fact. By keeping the window partially open, we reduce the pressure inside the vehicle. With a leaky muffler this allows the deadly gases to be drawn into the car. The solution? Have your exhaust system thoroughly checked by a reliable agency. Even then, don't tempt fate by parking with your engine running. A cold car most certainly beats cold death. (ADCSA)

✓ The allowable tolerance for altimeters in Canadian aircraft is  $\pm 50$  feet as opposed to USAF allowable tolerance of  $\pm 75$  feet. (409 AW(F) Sqd, CFB, Comox, BC)

✓ Winter storms tend to follow certain climatological tracks as they move across the U.S. and Canada. In the east there are two main tracks, one northeastward along the St. Lawrence Valley and the other from Cape Hatteras northeastward off the New England coast to Newfoundland. Most storms which develop or intensify in the Canadian Rockies or the Colorado - Wyoming - Kansas area move through the Great Lakes region and St. Lawrence Valley. Some storms which develop in the Gulf area move across the southern part of the Appalachians to the Hatteras area or on up the east coast. Others move northward on the west side of the Appalachians and up the St. Lawrence Valley. Many of the western and northern Pacific storms enter the Gulf of Alaska. Storms developing in the eastern Pacific usually enter the U.S. in the Washington-Oregon area with a few entering farther south in California. (AWW)

Sea temperatures off both coasts of North America decrease considerably as winter progresses, and reach their coldest values in late winter. Fifty degree water temperatures are as far south as Nantucket in November, and Hatteras in January, February, and March. On the Pacific side, water temperatures are colder than 50 degrees in the Gulf of Alaska in November, off the Washington coast by December, and the Oregon coast in January, February, and March. [4 WW]

Recent experience gained from RF-101 operations indicates that should the Voodoo experience loss of the primary and utility hydraulic system, an immediate pitchup will be encountered. Pitchup will occur at any indicated airspeed and altitude as soon as pressure in the primary and utility hydraulic system drops below 100 psi. Should it become evident that both hydraulic systems are failing, aircrews should take immediate action to both slow the aircraft and gain a safe altitude for ejection. [62 FIS]

Some uninformed individuals still believe it is safer to be thrown clear of a vehicle in an accident. One study of 139 fatal accidents showed ejection from the vehicle to be the biggest cause of death. Eighty percent of these deaths could have been prevented had seat belts been utilized. [ADCSA]

If you're trying to survive until help comes, don't throw away that cigarette lighter just because it's out of fluid. It's still an excellent fire starter. Just pull a little of the cotton out of the inside, fluff it up, then spin the wheel of your lighter backwards, throwing the sparks into the cotton. [4600 WGOOT-L]

The cooling power of wind and temperature has a tremendous effect on human comfort in winter. For example, a 10°F temperature with a 20 knot wind is equivalent to -25° with no wind. [4 WW]

Aero Club pilots charging off on cross-country flights may have trouble getting proper octane fuel if they fail to plan their stops to be compatible with type of aircraft/fuel available. Proper fuel is necessary for good engine performance and necessary checks such as water/contamination must be made before feeding the bird. Light aircraft usually require 80 octane gas and some vendors may register surprise when it is mentioned unless all stops are preplanned. Flying Safety Officers can render the Aero Club members a service by insuring that the Aero Club Operation Directory in the July 1967 issue of Aerospace Safety is available for their use. [AFSC]

Couple Up For Safety . . . Interceptor Aircrews should make coupled attacks and coupled ILS approaches on a frequent and regular basis if they are to expose the malfunctions that exist in their automatic flight control systems. It's too late when a demanding situation arises and it doesn't perform as advertised. [ADCSA]

Dispersal Operating Base Detachment Commanders should check ADC Supplement 1 to AFR 60-13 before the snow season arrives for info on runway surface conditions (RSC) and runway condition reading (RCR). [ADCOOP]

Did you know that glasses will be worn while performing those aircrew duties requiring the corrected visual acuity? [ADCSG]

## FIELD REPORTS

**RUDDER TRIM, F-101.** After approximately twenty minutes of flight, the aircraft yawed to the left. Turn coordination instrument (ball) was deflected full right. Rudder trim was activated with no result. Stabilator augmentation and autopilot were turned on and off with no effect. When right rudder trim was selected, trim was partially effective, but when the switch was released, the trim returned to the left. Aircraft was trimmed and rudder trim circuit breaker was pulled. Emergency was declared and straight-in approach was flown to an uneventful landing. Inspection revealed loose wires on the aft cockpit rudder trim switch. The wires were secured and APCS checked okay in accordance with the T.O.

**AC/DC POWER, F-106B.** After approximately 45 minutes of flight the AC/DC power failed. Aircraft was at 43,000 feet, 95 Mach in afterburner, in a 60° bank 20° turn. Emergency was declared and uneventful landing made at home base. Investigation revealed that the oil quick disconnect connection was loose on the engine mounted gear box resulting in loss of oil. The entire engine mounted gear box was replaced due to overheating caused by loss of gear lubrication. The aircraft flew two days later with no repeat discrepancy.

**HYDRAULIC SYSTEM FAILURE, F-101A.** After approximately one hour of flight and level at 15,000 feet, the secondary hydraulic system started to fluctuate 2200 to 3500 psi. Primary system OK. RTB started and while enroute to home plate, pressure dropped to 1000 psi, the pilot attempted to open speed brakes and pressure dropped to 0 psi. Speed brakes were closed. Landing gear lowered by the emergency system and secondary hydraulic failure followed immediately and hydraulic oil hot light illuminated. Emergency drag chute was used with success. Hydraulic fluid was seen around speed brake area at roll out end of runway and hydraulic pump could be heard cavitating. Aircraft shut down. Findings: Fuel found in hydraulic system and rudder actuator servo leaking. "B" nut loose in LH No. 3 tank allowing fuel into hydraulic system. Suspect JP-4 caused deterioration of seal in rudder actuator.

**T-33, BAD ENGINE.** Pilot first noticed that maximum air speed obtainable at 8,000 feet MSL with full power was 300 KIAS. Aircraft was in a clean configuration, i.e., gear, speed brakes and flaps, up or closed. Pilot was enroute back to home base from low level intercept training area when this discrepancy was noted. Shortly after above malfunction the RPM rapidly dropped from 100% to 85-86% RPM, then recovered to 100%, although the engine produced low thrust. An emergency was declared and the pilot landed from an SFO pattern. Maintenance investigation has not revealed the cause, but engine was removed and condemned for vibration.

**T-33, HYDRAULIC FAILURE.** Hydraulic fluctuations from 800-1200 psi occurred while in level flight, with indications as low as 500 psi when ailerons were used. The gear was lowered by the normal system at which time the pressure dropped to zero and the nose gear indicated unsafe. The emergency system was used and all gear indicated safe. The air side of the hydraulic accumulator was depleted. When re serviced, the system functioned normally.

**INOPERATIVE S/B, F-106A.** Speed brakes would not open during descent. Pilot blew them open with emergency position of drag chute handle during landing roll. Investigation revealed that the speed brake fuse in the nose wheel well had blown. Broken insulation was found on one of the wires going to the right hand speed brake actuator limit switch. The circuitry was rewired between the limit switch and the hydraulic control valve. The system then checked OK.

**FLAP MALFUNCTION.** An F-101B experienced flap malfunctions during landing. On turn to base leg, flaps were lowered and a rolling movement to the left was experienced. Right flap was extending and left was still up. Flaps were retracted, but right flap stopped approximately three inches extended. A straight-in final no-flap landing was made with no further incident. Cause was material failure: broken bell crank assembly, trailing edge flap up latch cylinder LH. Broken bell crank would not allow up lock to release LH flap sections for extension and when the rolling movement was experienced the pilot retracted flaps prior to time required for RH up latch to reposition to accept roller for locking. RH flap roller lodged underneath up latch mechanism and caused flaps to remain extended approximately three inches. Flaps could not be re-extended due to interrupted sequencing cycle.

THE WAY THE BALL

# Bounces

## ACCIDENT RATE

1 JAN THRU 30 SEPTEMBER 1967

ADC ANG

Thru September 1967

4.2

4.1

MAJOR - ALL AIRCRAFT

## ON TOP OF THE HEAP

MO	ADC	MO	ADC	MO	ANG
68	436 FIS	39	87 FIS	76	119 Pfr Gp
48	62 FIS	38	444 FIS	56	162 Pfr Gp
41	48 FIS	32	414 Pfr Gp	44	112 Pfr Gp
39	4600 AB Wg	30	18 FIS		132 Pfr Gp
					141 Pfr Gp

**ACCIDENT FREE**

## BOX SCORE

ACCIDENTS FOR	1967					
	1st AF	4th AF	10th AF	14th AF	4600	ANG
CONV						
T-33						
F-100						
F-101						
F TF-102						
F-104						
F-106			1			
B-57						
F-89						
EC-121						

MAJOR ACCIDENTS THIS PERIOD - 0

## CUMULATIVE RATE

1 JAN THRU 30 SEPTEMBER 1967

ADC ANG

JET	5.4	4.4
CONVENTIONAL	1.0	0

BY AIRCRAFT	T-33	2	0
	F-89		0
	F-100	42	
	F-101	7	
	F TF-102	8	6
	F-104	16	
	F-106	6	
	B-57	7	
	EC-121	2	

RATE - MAJOR ACCIDENTS PER 100,000 FLYING HOURS

# we point with



CAPTAIN JAMES B. FALL  
4684 Air Base Group (ADC)  
Sondrestrom AB, Greenland

## PRIDE

### HU-16B SINGLE ENGINE

Captain James B. Fall and his crew departed Thule Air Base, Greenland, at 1930 hours enroute to Sondrestrom Air Base, Greenland, in an HU-16B. Several hours after takeoff, the number two engine began backfiring and losing power. The mixture was placed in rich and power reduced on number two, and the power on number one was increased.

All engine gauge readings were normal and there were no external indications as to what the problem was.

High winds and severe turbulence precluded a landing at Thule so the flight was continued towards Sondrestrom. An emergency was declared with Sondrestrom Airways and an intercept was requested. Their course had to be altered to

clear the highest terrain since they were slowly losing altitude. Approximately thirty minutes later, the number two engine began severe backfiring and losing power. It was found that the use of the engine primer every two and a half seconds smoothed out the engine performance sufficiently to maintain partial power. Aircraft icing was encountered and altitude had to be sacrificed for airspeed. Icing, high terrain, and darkness dictated the continued use of the number two engine even though it was still backfiring.

As the intercepting C-130 approached, it was discovered that the UHF radio on the HU-16 was inoperative. Captain Fall's crew therefore had to give VHF steers to the C-130. The intercept was completed

at 2140 hours. The use of the number two engine primer was continued until just at high station on the instrument approach when the backfiring became so severe that the engine was shut down, and an uneventful GCA landing was accomplished at 2330 hours at Sondrestrom.

Captain Fall's professional airmanship was displayed by his ability to maintain crew integrity and teamwork while coping with a lengthy emergency that was compounded by darkness, adverse weather, icing, and radio failure. To him, "We Point with Pride."

Captain Fall's crew:  
Capt James K. Schuchler, copilot  
Major James T. Zamwalt, Navigator  
SSgt Coedric L. Kyle, Flight Mech  
A1C D. R. Francis, Radio Operator

# AFTER BURNING

Address your letters to The Editor, INTERCEPTOR, Box ABC (ADCSR-8) on AFM GD 89113

To be published, your letters must be signed.

but names will be withheld upon request.

## ADCPs

During a recent Personal Equipment and Survival training course, I had the opportunity to review your INTERCEPTOR Magazine feature "Post Ejection Survival" (ADCP 41-50) and "Limits of Man" (ADCP 41-52). I feel they are very worthwhile publications and would appreciate having a copy of each to use in P.E. and Survival training within our Squadron. Our mission is Combat Crew Training of Reconnaissance Pilots in the RF-101 and since nearly all the crews are en route to SEA, I feel the feature is of more than average importance. INTERCEPTOR Magazine, incidentally, is a valuable part of our magazine reading file.

Captain Anthony W. Bledsoe  
Life Support Officer  
4411 Combat Crew Training Sq  
Hans AFB, S. C.

"They're on their way."

## MODE DOPPLER AGAIN

I wish to reply to CWO Puthoff's letter in the August issue of INTERCEPTOR Magazine. I think he is misunderstanding all of his fellow Swope Dopers with his idea.

It seems apparent that he is not using all of his resources at hand effectively. His drawing method indicates that he is identifying all F-4s aircraft and having them almost later reported by the time they enter the area. I also think his idea defeats the purpose of the F-4s Mission according to all of the regulations.

His resources such as the Surveillance, Identification, Control Team, and other positions would not get a chance to do their jobs correctly if you use CWO Puthoff's idea. The crews are responsible for getting the initial detection of F-4s, and getting it into the system. They can't do this properly if this director is all ready to pounce the minute the aircraft enters maximum range or enters the area.

What is this director going to do when he can't shoot against actual THREAT aircraft but stationed at remote sites in Vietnam, Laos, Iceland, Truak, West Germany, etc.?

I don't see how you or your team could pass any OBI using your procedures for establishing a F-4s track during a mission.

Major Theodore Lerner  
Colinell AFB  
Iceland, Missouri

"We suppose he'll think up a new gimmick applicable to the particular war in progress."

## MODE P's AND ADCP's

As an Instructor Pilot and Safety Officer of my flight in the UPT program here at Randolph AFB, I am greatly impressed in each and all methods I can use in trying to promote safety in the new students that we are training to be the Air Force pilots of the future.

In the course of my training in TAC, I run across one of your programmed tests and spend a couple of spare hours in the alert shack reading it. I feel that a few hours spent by our students at this stage in their training, reading and studying some of these manuals will greatly enhance their understanding of many aspects of flying that are brushed over lightly or even skipped in the course of pilot training.

If possible, we would like to order four complete sets of your programmed tests for our flight to be used by our students. If necessary, we will be more than happy to purchase them from your publishing department.

Looking forward to many more excellent issues of your INTERCEPTOR Magazine, and your programmed tests, I remain

1) Edward W. Garland  
P. O. Box 418  
Randolph AFB, Texas

"ADCP's are published for instruction purposes throughout the services. We are happy to furnish them."

## THE CHEST PACK

In the article "The Chest Pack," in the August 1967 issue of the INTERCEPTOR, I read the following on page 15: "This makes

the "form through the river" method for a high wind or water landing obviously impractical. The pack tray also assures your view of the suspension lines and will make the "lean into Cur" difficult if not impossible. For a high wind or water landing preparation, you should firmly grasp each riser, in turn, and release the safety covers. Then grasp your harness over the quick releases. Don't put your fingers through the cables. As soon as you touch the ground or water, release both quick releases.

The portion of the quoted paragraph which concerns the construction of the chest pack parachute making the "form through the river" method impossible could easily be construed to mean that this is a procedure which can, or should, be used with other types of parachutes. It is not, as demonstrated by some reputable facilities.

The correct preparation for parachute landings is that stated at the end of the cited paragraph. It summarizes the correct instructions in USAF Technical Orders and is the only method we should be presenting to aircrews.

Major Wayne L. Williams  
Commander, 4550 School Sq  
Sea Survival  
Hemsworth AFB Florida

"How about that, Sergeant Marler?"

## ISSUE BANKBOOK

I am assigned to the Office of the Air Attaché, APO San Francisco 96312, and as such work very closely with a friendly foreign nation. We would like to be placed on regular distribution for your magazine in the amount of ten copies, to include any Safety magazine or bulletin that you could furnish. Please let us know if you can help us. Thank you for your assistance in the above matter.

Major (Sgt) L. Fulton  
Assistant Air Attaché  
Embassy of the United States  
of America  
OFA, San Francisco 96312

"We hope that our ABC flight safety publications will assist you in our mutual efforts."

