flying

SAFETY

AUGUST 1987

Bird Strikes 1986

Desert Memories

These Eyes Are Made For Looking

Protecting Privileged Information

TIG Bids Farewell

■ As I come to the end of my tour as The Inspector General, I want to leave you with my thoughts on safety, now and in the future. You can be proud of what you've accomplished.

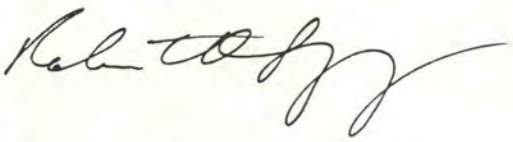
When I became the IG in August 1985, the Air Force was having its best ever year in flying safety. We ended the year with a record low Class A rate of 1.49. I didn't achieve that milestone, you did — the fliers, maintainers, life support people, traffic controllers, and all the others who support the flying mission. Safety is an integral part of our flying mission. Commanders are involved at all levels, and each of you are personally committed to accomplishing the mission safely.

The mishap rate was a little higher in 1986, but still it was a very good year. We achieved the lowest ever Class A operator factor mishap rate. The pilot and total fatality rates were the lowest ever. We had our second best combined Class A and B mishap rate. These are only a few of the flying safety achievements of 1986.

You continue to demonstrate this safety consciousness in 1987. At this time we are doing better than we did last year. It is possible this could be another record breaking year for us.

I appreciate your support and your achievements during the time I have been the IG. Not because of the "numbers" — they really mean nothing when taken alone. The real achievement is in the lives saved and the increased readiness because of the aircraft and combat capability saved through better flying safety. That is the real significance of your accomplishments.

I ask you to continue to keep safety up front in your operations. Aircrew discipline, maintenance professionalism, alert and involved controllers, etc., are the ingredients. Couple that with strong command influence and you can readily conquer the many challenges ahead. The future is in your hands. I know it will be bright — because I have seen what you can do. ■



Robert D. Springer
Lieutenant General, USAF
The Inspector General

UNITED STATES AIR FORCE

flying

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SPECIAL FEATURES

REGULAR FEATURES

DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, USAF

THERE I WAS

■ As a young lieutenant, I was taxiing in trail with my flight commander for the flight to the home drome. The weather had improved to 1,500 feet overcast with 3 miles visibility; however, rain showers had left the ramp wet.

While taxiing cautiously, I discovered the perks of attempting to stop on newly paved asphalt. My flight lead stopped for quick check on a narrow taxiway with two cars on one side. As I began braking, my aircraft started to fishtail, with every attempt yielding the same results. Unable to stop, I directed lead to move forward. The urgency in my voice resulted in his moving while the quick check on his jet was still in progress. Fortunately, my aircraft came to a stop before further action was required.

After taxiing my jet for a brake check, we were cleared for takeoff and subsequently taxied into departure position. Twenty seconds after lead released brakes, I began my takeoff roll and once safely airborne, established radar contact. Following squadron standards and as briefed by lead, upon reaching 350 KCAS I set the power at 850 degrees FTIT and complied with standard radar trail departure procedures. As the saying goes, I was "fat, dumb, and happy" following lead on the published SID (standard instrument departure).

If you haven't figured it out by now, it wasn't my day. Instead of maintaining my situational awareness by closely monitoring our position on the SID, I depended on my radar to follow lead. You guessed it — I lost my radar contact. I informed lead of this while attempting to re-establish radar contact. A glance at my flight instruments revealed my disorientation. My aircraft was passing 3,000 feet MSL in excess of 20-degrees nose high pitch with 190 KCAS, and power set at 700 degrees FTIT. Immediately, I confirmed the unusual attitude and executed recovery procedures. Suffering from a severe case of the "leans," feeling as though I was in about 70 degrees of left bank, it was all I could do to keep my jet in a wings level climb.

Upon reaching VFR conditions, passing through 16,000 feet MSL, I was able to reorient myself and rejoin with lead. The remainder of the flight was uneventful.

In summary, this "nondemanding" mission was truly a learning experience. Hopefully, you already know trail departure procedures do not require the use of a radar. In fact, my dependence on a radar contact resulted in my spatial disorientation and unusual attitude, not to mention the "leans" that followed. The bottom line . . . if my jet had been nose down instead of nose up, you wouldn't be reading this. ■

Beware of the Birds

PEGGY E. HODGE
Assistant Editor

■ Summer is almost over — we're all looking forward to cooling off and taking a deep breath of the cool, fresh fall air. No need to worry any longer about heat stress or thunderstorms. But, the beautiful fall does have its problems, too! It's that time of year when we need to "beware of the birds."

From mid-August to late December, our feathered friends become a real threat. They cause crewmembers great concern. Although some improvements in bird strike avoidance have been achieved, bird/aircraft collisions continue to be a problem. As crewmembers, we need to fully understand the situation to avoid its hazards as much as possible.

The Bird Aircraft Strike Hazard (BASH) Team helps us each year to more fully understand the problem. Let's look at some highlights of the BASH Team's 1986 report. There are important lessons that can be drawn from the 1986 statistics. Their figures tell us where and when our problems may occur and the types of aircraft and birds involved.

Although indepth information is not available to perform thorough statistical analysis for *all* reported Air Force bird strikes, the BASH Team reports the following trends and summary of the data gathered in 1986.

In 1986, the number of strikes reported increased to 2,765 over the 1985 report of 2,722 and the 1984 report of 2,321. The large change in 1985 was due to an increased awareness of the hazard, better bird strike reporting, and more emphasis on low-level flying.

Bird strikes cost us $5,193,618 in 1985 and over $18,000,000 in 1986. Unfortunately, this sharp increase in cost was due to two Class A mishaps caused by bird strikes.

■ An F-4E struck a black vulture. The bird penetrated the fuselage, rupturing fuel lines and causing a fire. The aircrew ejected, but the pilot was killed due to improper man/seat separation.

■ A griffon vulture struck an F-16 on the engine inlet. The engine failed, the aircraft caught fire, and the pilot ejected successfully.

Table 1
Percent of Bird Strikes by Impact Point
1986

IMPACT POINT	PERCENT
Windshield/canopy	21.4
Engines/cowlings	17.9
Wings	17.6
Radome/nose	15.5
External tanks/pods/gear	7.9
Fuselage	7.3
Multiple strikes	9.6
Other	2.8

continued

Beware of the Birds

continued

Table 1 shows all areas of the aircraft are potentially vulnerable to birds. Of course, where a bird strikes the aircraft is a matter of chance, unless the pilot is able to see the bird and maneuver the aircraft in such a way that the bird strikes the underside of the wing or fuselage. Normally, engine and windshield strikes pose the greatest damage and are the greatest threat for a crash or fatality.

Bird Strikes by Phase of Flight

Assuming many of the bird strikes in the "unknown location" category occur on airfields, over 50 percent of Air Force bird strikes occurred in the airfield environment. (See Figure 1.)

This proportion is because a great deal of time is spent in this environment. Also, high aircraft density, low altitude, and greater vulnerability to strikes during takeoff and landing contribute to this statistic. Fortunately, it is in this area we have the most control to reduce bird hazards.

Operational changes such as raising pattern altitude, changing pattern direction or ground tracks, flying during least hazardous periods, etc., should be considered.

A large number of bird strikes also occurred on our low-level routes. With the increasing emphasis on high speed, low-level flying, this is to be expected, but control in this environment is much more difficult to achieve.

We can fly during that time of the day or season when birds are less prevalent. We should avoid known concentration areas for birds. The

Figure 1
Bird Strikes By Phase of Flight 1986

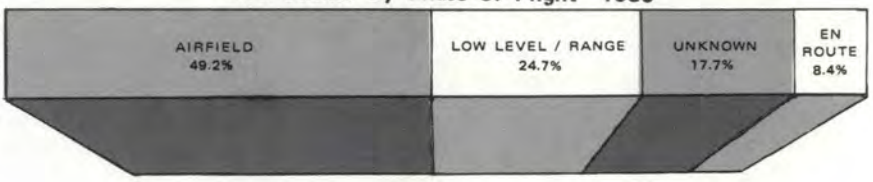


Figure 2
Bird Strikes By Altitude 1986

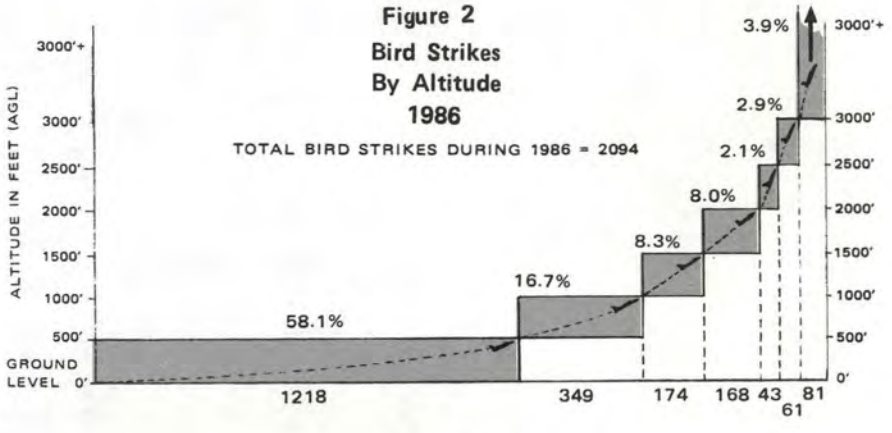
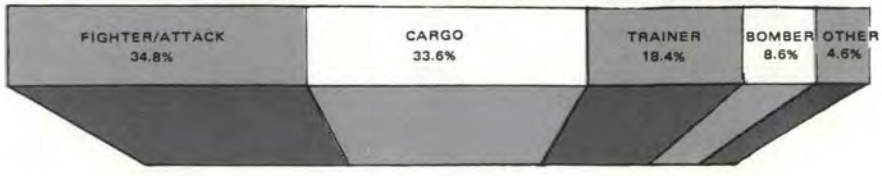


Figure 3
Bird Strikes By Time of Day 1986

Figure 4
Bird Strikes By Type of Aircraft 1986



computerized Bird Avoidance Model (BAM) is helping make our low-level routes safer by allowing pilots and schedulers to select routes with lesser bird strike risks.

Figure 2 shows over 97 percent of our bird strikes occurred below 3,000 feet AGL, with the majority occurring on the airfield and on low-level routes.

Since bird strikes increase significantly as altitude decreases, the importance of remaining as high as possible in the pattern and on low-level routes when the mission permits is clear.

When Do Bird Strikes Occur?

The Air Force does most of its flying during the day; so naturally, most of our bird strikes occur then. Figure 3 shows almost 70 percent of our strikes occurred during daylight hours.

Many birds are most active at dawn and dusk as they fly to and from feeding or roosting areas. Strike numbers were low at this time in large part because little flying was done during these hours. However, a disproportionately large number of strikes seemed to occur here per flying hour, and extreme caution must be exercised during these times.

Many strikes occurred at night during migration periods. Most waterfowl and passerines (perching birds) migrate at night, and night flying in spring and fall can be particularly hazardous because of this.

Aircraft Involved in Bird Strikes

Aircraft mission played a major role in which aircraft experienced the most bird strikes in 1986. Aircraft which flew high speed, low-level were much more susceptible than those which spent more time at higher altitudes. Additionally, aircraft size, configuration, type of engine, and geographic location played a role in aircraft susceptibility to strikes. Figure 4 shows fighter aircraft led the list in most bird strikes.

This fact is not surprising but can be misleading. The number of aircraft involved, hours flown, and emphasis on low-level flying made our fighters most susceptible to bird strikes, yet other aircraft, such as the B-52, actually had higher strike rates per flying hour.

Species of Birds Encountered

The BASH Team has an ongoing program to identify bird remains as a result of bird strikes. Air Force safety officers send feathers and other nonfleshy remains to the BASH Team for identification.

Table 2
Birds Identified in Aircraft Collisions 1986

Blackbirds and starlings	55
Hawks and vultures	166
Waterfowl	42
Gulls	120
Pigeons and doves	50
Shorebirds and herons	39
Horned larks	33
Meadow larks	28

Additionally, 6 bats and 1 deer were reported struck in 1986.

By knowing the bird species causing the problem, the BASH Team and other experts can more specifically channel their suggestions. For example, should the identified bird be a duck, there is less need to spray a pesticide for insectivorous birds than there is to look for a source of water to attract waterfowl. Raptors (vultures and hawks) and gulls continue to give military flying the most problems. Because of their large size, they also pose our biggest threat.

Conclusion

The BASH Team has made great strides in reducing airfield bird strikes throughout the Air Force through habitat modifications and bird control techniques. Increased emphasis has been placed on evaluating and reducing the low-level flight bird hazards.

By continuing to collect and maintain bird strike data, the Air Force has been able to channel its efforts toward reducing the risk of bird strikes. Since we know the bird species most often hit, when bird strikes most frequently occur, and under what conditions they occur, we can more effectively minimize the hazards caused by birds.* ■

* For information on pilot response to minimize hazards, see "Dodging Feathered Bullets," *Flying Safety,* May 1986, and "The Feathered Foe," *Flying Safety,* September 1986.

BASH NEWS

The BASH Team continues to evaluate individual base and MAJCOM programs upon request. Please contact them if they can assist you in any way with bird strike problems. To keep you posted on what's new with the BASH Team:

- The Team supervised production of a slide/tape show entitled "Frightening Techniques for Airfield Bird Control" (Number 604805DF). This show is designed to train base level people on proper use of bird frightening equipment. It is available at every base's audiovisual library.
- The Team migrated from Tyndall AFB, Florida, to Bolling AFB, Washington, D.C. Their mailing address is:

HQ USAF/LEEV
Bolling AFB, DC 20332-5000
AUTOVON 297-6244/3332

DESERT MEMORIES

MSGT THOMAS S. BARTRIDGE
USAF Recruiter
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■ There I was — my first real exercise. My first chance to take the plane out and fly a few combat "sorties." The exercise was taking place in the Southwest — flat open plains, steep rocky mountains, scrub brush, and cactus dotting the landscape. It was a cool April morning as I climbed into the cockpit, but I knew it would be getting hot as the sun climbed into the sky.

Everything was going fine as I played out the role assigned to me — support the ground forces in the desert war below. One minute playing — the next playing for keeps as the fire light came on. At 400 feet, you don't have much time to live — pull the handles and get out!!!

What did I remember from Survival School and all those base-level classes I had attended? Keep calm . . . don't panic . . . find shade . . . water . . . food . . . all those thoughts and others ran through my mind . . . .

Deserts occupy nearly 20 percent of the earth's land surface, and only about 4 percent of the world's population lives there. Most important to the survivor are the extremely long distances (and travel time) between water sources. What did those instructors say about food and water in the desert?

■ **Opuntia** (oh-PUNCHA) is the cactus family of the chollas (CHAW-yuh) and the prickly pears.

Cholla have cylinder joints. The blossoms are mainly red and yellow, and all the flowers are edible. The fruit of the cholla was left alone even by the Indians. The joints are loosely attached, and if you brush against them, the segments break off and attach to you. It would be nearly impossible to squeeze water out of the segments, but their roots lie close to the surface. Even in times of drought, the roots remain moist and succulent, protected by a thick bark.

Prickly Pear have flat joints connecting a series of pads. This

The cholla flower is edible, but leave the fruit alone. Look to the roots for a source of water.

The beavertail cactus is a member of the prickly pear family. It can provide you with both food and water.

To the knowledgeable survivor, the Joshua tree on page 6 may represent a cafeteria. Not only are the flowers and fruit edible, but so are various residents.

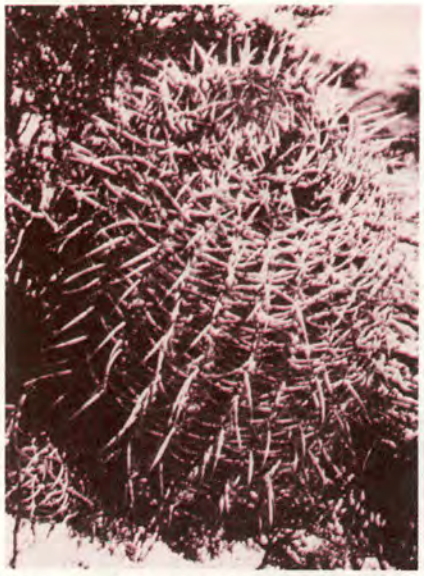
cactus is the most widely distributed member of the cactus family. They are found throughout the new world. The blossoms are normally yellow, red, or purple, and all are edible. The fruit of all species is edible raw or cooked. The Indians used to boil the peeled fruit, strain out the seeds, and eat the pulp that remained. The seeds were left to dry and then ground into flour.

Many of the prickly pear, such as the beavertail, appear to be free of needles, but if you look closely, you'll find very fine needles which are extremely irritating. You can slice open the pads and chew or crush the pulp for a water source as well as a food source. The pulp is light green and is very similar to the white meat on a watermelon rind.

■ **Barrel Cacti** were used by many an oldtimer as a water source. The flower blossoms and fruit are edible. You can cut off the top of this cactus and then squeeze a water supply out of the inside pulp. Be wary of the spikes because they are normally hook-shaped on the end. These water kegs range from 5 or 6 inches to over 10 feet tall.

■ **Ocotillo** (oh-koh-TEE-yo) What a strange-looking plant — a bundle of sticks tied tightly at the base and left loose at the top. They often grow to 12 feet or more. The red flowers at the end of each stem may be eaten raw or cooked. The thorns completely cover each stem, and the small, green leaves, when present, indicate moisture in the ground. The Indians would bundle dead stems together, because they are filled with resin, and use them as torches.

■ **Yucca** is a very common desert plant with white or cream-colored flowers. You may eat the flower, flower stalk, and buds of all species either raw, roasted, or boiled. Some yucca produce fruit which can be eaten by roasting or grinding it into meal. The roots can be dug up and ground into pulp which makes an excellent laxative. The leaves, which are thick and fleshy, can be split open and used inside a solar still or vegetation bag for water.



Mention finding water in the desert, and most people will think of the barrel cactus. It can provide you with both food and water.

The ocotillo is not a source of water, but it may indicate water is present in the ground. It can also provide food and fuel.

■ **Joshua Tree** Nothing more than a "yucca tree," these are found from 2,000 to 6,000 feet elevation. The cream-colored flowers and fruit are edible. This tree is a miniature environment — a close look may expose a bird nest that is filled with eggs or even a red-tail hawk perched high in the tree. Desert woodrat and ground squirrels may be found on or near the tree, and the dead, decaying fibers littering the ground are home to termites, ants, and the yucca night lizard. All of these are potential food sources.

■ **Juniper** All of the species produce edible berries which are normally blue in color. The Indians would dry and grind these berries into a flour and then bake it into cakes. The juniper is found throughout arid portions of the world and is an excellent source of water when using a transpiration bag.

Other thoughts were racing through my mind as I finished gathering up my parachute and broke out my survival radio. Just then my wingman appeared from behind the ridge and started to circle my position. Off in the distance I heard the sound of a helicopter on its way in . . . . ■

The yucca flowers are edible as is the stalk they grow on. You can find many uses for other parts of this cactus.

Be very careful of the needles on the cholla cactus such as this silver cholla. If you brush against them, entire sections of the plant may break off and attach to you.

You won't get water directly from the juniper, but using a transpiration bag will bring you the needed water. It is also a good source of food.

These Eyes Are Made For Looking

LT COL FRANK BARRON
Air Traffic Control Specialist
HQ FAA

■ Conspicuity studies in both aviation and automobile industries have demonstrated the value of highly visible colors on aircraft and automobiles. And, in that context, it is important to us that we can "be seen" easily by other aircraft in proximity to us. But being highly visible is supplemental to the responsibility that pilots have to actively avoid other traffic, and relying on conspicuity can be a real bust when yours is a camouflaged high-speed military aircraft. By its very nature, the camouflaged aircraft is intended to be so inconspicuous as to allow it to slip up on other folks without being seen.

The responsibility laid on each of us as pilots (whether general aviation, commercial, or military) is to see and *avoid* other traffic. The regulatory basis for see and avoid is in FAR 91.67, which prescribes right-of-way rules for flight operations, and in comparable military directives.

According to the FAA Pilot/Controller Glossary, see and avoid is a visual procedure wherein pilots flying in visual conditions — regardless of flight plan type — are charged with responsibility to observe the presence of other aircraft and to maneuver themselves as required to avoid other aircraft (or obstructions). (You will find the same words in the DOD FLIP, General Planning, TERMS, pages 2-34, but it pays to know how the civilian aviator is getting the word also.)

In reality, see and avoid simply means the pilot not only maintains active vigilance for other traffic, but must also *act* positively to avoid a conflict. Being seen is nice, but it won't keep you out of harm's way like avoiding other traffic will.

Beware the Warm and Fuzzy!

What if I'm in radar contact? The "warm and fuzzy" feeling we get when ATC tells us "radar contact" is a tribute to the controllers in the ATC system, who have provided us such super service that we tend to forget radar contact doesn't change our need to protect ourselves from encroachment by unknown traffic.

Outside positive control airspace, ATC provides radar traffic information *to radar identified* aircraft on a workload-permitting basis. Also, ATC issues a safety alert to any aircraft under their control, *if ATC is aware* the aircraft is at an altitude believed to place the aircraft in unsafe proximity to terrain, obstructions, or other aircraft.

To do so, however, ATC must be aware of the condition. ATC's awareness is contingent upon many factors, including ability (or inability) of ATC radar to see nonparticipating aircraft in the area. Since many users of the airspace choose not to partake of ATC services, much of the traffic outside positive control airspace may be unknown to ATC.

Radar contact means ATC sees that aircraft with which they have specifically established radar contact and not necessarily any others operating in the same area. ATC's responsibility for separating aircraft is generally limited to those aircraft under their control. Outside airspace such as PCA, TCA, and ARSA, ATC's responsibility to separate even IFR aircraft from other traffic (i.e., traffic *not* under their control) is limited.

But Doesn't ATC . . .?

The ATC system is restrained both by the physical capabilities of the system (nonparticipating aircraft not always visible on radar, etc.) and by regulatory or procedural constraints that preserve for the pilot those functions, roles, and responsibilities traditionally perceived as properly belonging to the pilot-in-command.

The FAA's *Official Guide to Basic Flight Information and ATC Procedures* and the *Airman's Information Manual (AIM)* provide superb discus-

sions of pilot and ATC responsibilities under the see and avoid concept as applied in the US National Airspace System (see para 407). Incidentally, AIM content is coordinated with civil flying organizations and the three military services, and in this instance, pretty well represents a consensus as to how things should be. There is, of course, some intentional overlap such as ATC issuing traffic advisories where see and avoid applies.

The procedural requirement for ATC to issue traffic advisories does not relieve pilots of their responsibility for continued vigilance or to see and avoid other aircraft. As indicated in AIM paragraph 162a(1), "The issuance of traffic information as observed on a radar display is based on the principle of assisting and advising a pilot that a particular radar target's position and track indicates it may intersect or pass in such proximity to the pilot's intended flightpath that it warrants attention. This is to alert the pilot to the traffic so that he or she can be on the lookout for it and thereby be in a better position to take appropriate action should the need arise." (Also, see DOD FLIP/GP, TERMS, Traffic Advisories.)

In other words, the issuance of traffic advisories simply provides a pilot with another set of eyes to assist him or her in locating potentially conflicting traffic. That's a proper role for ATC, and they do what they can. But eyes looking out the cockpit window remain one of the best accident prevention methods yet devised.

But When I'm "Tactical," I'm Covered

Here's that ubiquitous "warm and fuzzy" again. Tactical aircrews who believe they're provided separation from all other traffic, while in a military operating area/route or under control of a military radar unit (MRU), may be rudely awakened when Joe and Jane Public go "tooling" across in their Cessna 150. Many, if not most, of the hazardous air traffic reports (HATR) filed by USAF pilots reflect just exactly that: A perceived conflict between the military jet and a civilian general aviation aircraft operating in the same airspace, in VMC conditions, when see and avoid is the name of the game.

Radar contact is not the only phenomenon known to foster a relaxed sense of security. The boundaries of special use airspace have been known to engender similar feelings of comfort. "Ahh, here I am in my MOA (or alert area, or warning area, or ATCAA) and nobody around but Charlie Flight, and they're out of my way . . . " Sound familiar?

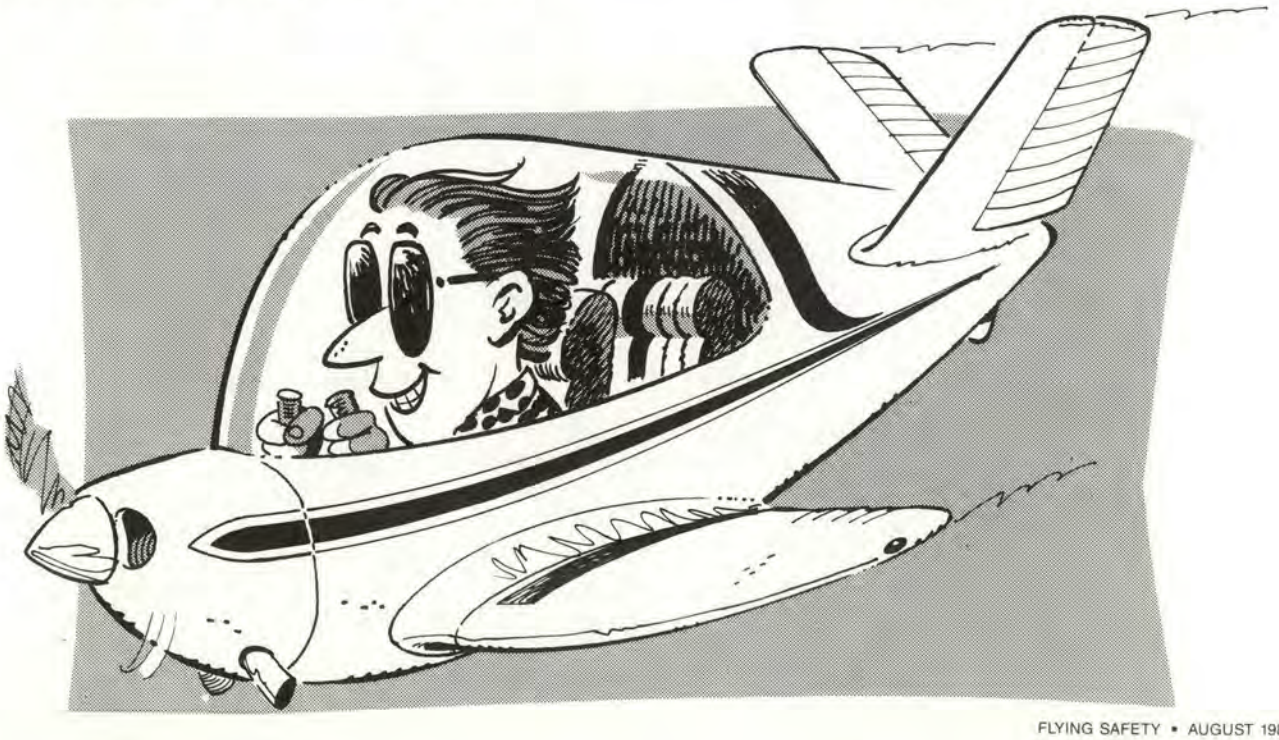
A quick review of the "types of special-use airspace" under TERMS in the FLIP/GP reminds us that very little airspace is really restricted to only the scheduled military users. Other users feel that "share the air" goes hand-in-hand with freedom of the skies.

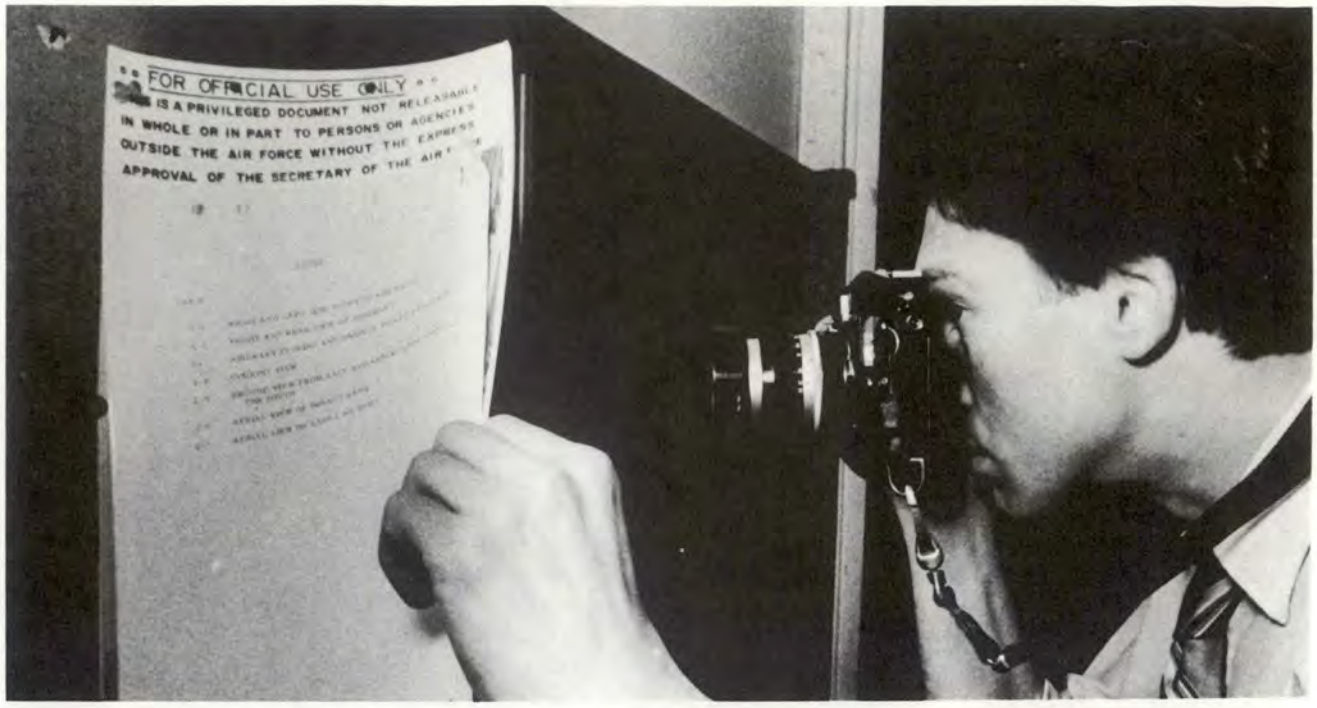
Unless you are in an "active" restricted area (or European/Pacific theater equivalent), chances are pretty good that nonparticipating aircraft have access to your operating area. They may transit the area or route as unknown traffic, unseen by ground-based radar, either MRU or ATC.

Considering the fast closure rate and inconspicuous paint jobs of our military jets, you may see Jane and Joe Public long before they see you. No doubt they have checked with the nearest flight services station (FAA) for status of your MOA or MTR and know you are likely to be out there somewhere, but they logically depend on the heads-up military professional in the fast-moving jet to keep a close lookout. It's times like these that see and avoid is most meaningful.

The Bottom Line!

See and avoid is more than just a catchy phrase; it's a rule for flying. More than that, it is a concept we *live* by. ■





Protecting Privileged Information...

It is absolutely essential that everyone in the flying and safety business understand and protect privileged information. This protection is the cornerstone of mishap prevention. "Protecting Privileged Information . . . A Necessary Tradition" serves to remind us of the importance and necessity of the Air Force's concerns and directives. — ED

PEGGY E. HODGE
Assistant Editor

■ Each time a major flight mishap occurs, an enormous amount of information is generated. The proper handling of that information is vital to the continued success of mishap prevention and the Air Force's outstanding safety record.

The number of lawsuits filed as a result of Air Force flight mishaps has increased in recent years to a point where we can expect virtually every mishap to be followed by litigation of some nature. This increase in litigation has been paralleled by an increasing demand for mishap information and a need to guard against unauthorized or inadvertent disclosures of privileged safety information.

The Promise of Confidentiality

The Air Force promises each witness involved in an aircraft mishap the information they provide to the safety investigation will be treated as privileged information and used for the sole purpose of mishap prevention. The promise is made to promote full cooperation and help get to the real causes of the mishap. Accurate cause determination results in corrective action that can prevent a similar mishap from occurring in the future.

This promise of privilege, which is vital to our mishap prevention efforts, is accompanied by both a moral and legal obligation to protect this information and ensure it is, in fact, used solely for safety purposes. Every time we experience an unauthorized or inadvertent disclosure of privileged information, that promise is violated, and we face the possibility of losing the executive privilege exemption under which this information is protected.

Many of us in the flying and safety business routinely have access to privileged safety material. This is important because we need the information to do our jobs. But if we don't use care to protect that information properly, we're compromising the Air Force's legal position. If those who are not authorized gain

access to privileged safety information — particularly if they get it because of our negligence (an unauthorized release, once made, is extremely difficult to undo), it will be a lot more difficult to protect. Remember that only the Reports and Analysis Division at the Air Force Inspection and Safety Center is authorized to release information from mishap reports; therefore, all requests for such information should be referred to that office.

What we are really protecting is our investigative process — our continuing ability to offer investigators and witnesses a promise of confidentiality and being able to enforce that promise.

Everyone in the flying and safety business must understand what can and can't be (limited use) released outside Air Force channels. We must familiarize ourselves with the Air Force's limited use information policy, its development, and the reports and their restrictions — what is considered limited use information?

History

The history of the present policy on release of information goes back to World War II. The first recorded statement that safety investigations were conducted solely for the purpose of preventing future mishaps was in Army Air Forces Regulation (AAFR) 62-14, May 1942. That regulation also stated such investigations were not conducted to secure evidence for disciplinary action; rather, a separate investigation was required for that purpose. Two years later, a change to AAFR 62-14 required witnesses to be advised of the purpose of the safety investigation and the limitations on the use of their statements.

These early regulations limited access to safety reports to "command personnel concerned and to representatives of the commanding general, Army Air Forces." Mishap information was not released outside the military.

The next significant change in release policy was in 1967 with the passage of the Freedom of Information Act. As a result of this legislation, the Air Force began releasing factual information from safety reports.

A major change in the structure of Air Force safety reports was made in 1976 when AFR 127-4, Investigating and Reporting US Air Force Mishaps, was changed to provide for a two-part report with Part I containing releasable factual information and Part II deliberative analysis.

A recent legal decision supporting the Air Force's position (1984) involved a contractor request for the release of witness statements. The Air Force appealed to the US Supreme Court to withhold such information. The Court decided in favor of the Air Force. Such release would jeopardize the promise of confidentiality.

It can be seen the claim of privilege in safety reports is nothing new but has been consistent Air Force policy for over 40 years. While the regulations and the format of the report have changed over the years to meet new circumstances, the value of the policy has been proven, and it has, therefore, been consistently adhered to.

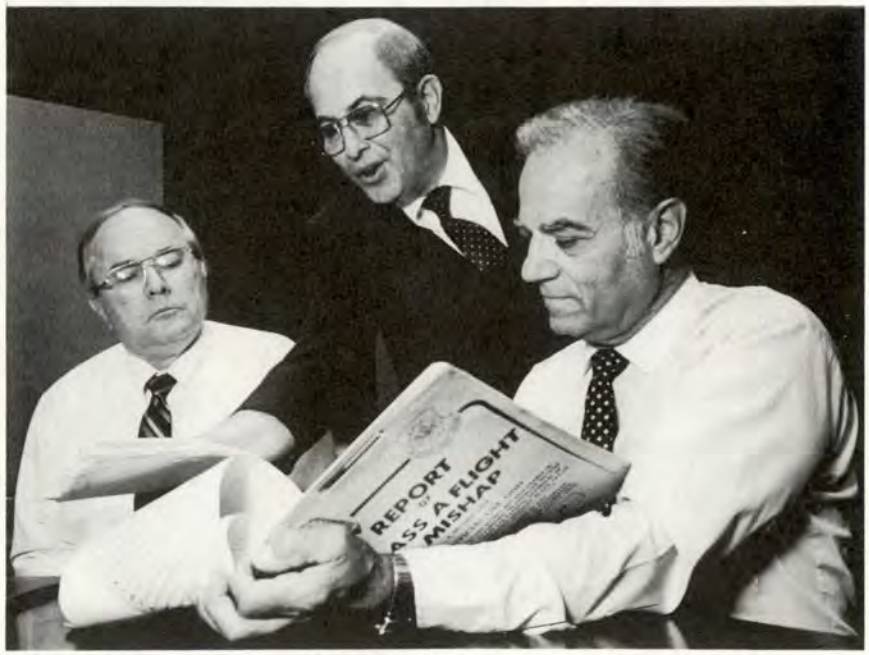
What happens when a mishap occurs? What constitutes our reports? And, what are the restrictions?

When a Mishap Occurs

When an aircraft mishap occurs, the nearest USAF installation commander deploys an initial disaster response force to the site. Within one hour of the mishap, the Public Affairs Officer (PAO) releases to the media a general description of the

continued

Even though it isn't classified material, the privileged information in mishap reports requires protection. Your "friend" must be authorized access to this information and have a mssion-related need for it.



Someone who suddenly expresses an interest in a particular mishap report may be working to get evidence to use in a lawsuit. Information or testimony you were supposed to protect may soon be in dangerous hands.

Protecting Privileged Information

continued

mishap, the time and location of mishap departure point, destination, number of crew and passengers, type of aircraft, unclassified mission facts, and a statement the mishap will be investigated by a board of officers.

An aircraft mishap in the Air Force is normally subjected to two separate investigations. First, the Safety Mishap Investigation is conducted solely in the interest of aviation safety to prevent recurrence of mishaps. The investigation is governed by AFR 127-4.

The Safety Mishap Investigation

The formal safety report prepared in the Safety Mishap Investigation is divided into two parts. Part I is essentially factual, and in the case of major aircraft mishaps would include such information as the basic factual summary of mishap sequence, data on aircraft maintenance, aircrew flight records, flight plans, weather summaries, transcripts of recorded conversations except for intracockpit voice recordings (for example, tower tapes and air-to-air or air-to-ground communication), damage assessments, and photographs. *Part I is releasable information.*

Part II is the analytical section and includes the analysis, findings, and recommendations made by the Safety Investigation Board. It also includes the statements and testimony of witnesses and others involved (these are *not* made under oath), rebuttals filed by persons identified as causal in the mishap, technical and engineering analyses made by manufacturers, life science reports, and certain comments on Board findings and recommendations. Part II is protected as *limited use* and cannot be obtained by anyone not directly involved in Air Force mishap prevention.

AFR 127-4 specifies the investigations will not be used as evidence or to obtain evidence in disciplinary actions of any sort, or to determine line-of-duty status or pecuniary liability. Every effort is made in safety investigations to persuade the individuals involved, including people of the military departments and representatives of manufacturers, to make full and accurate disclosure of all relevant facts, even though disclosure may be embarrassing to the individual or firm or constitute self-incrimination. Full and free disclosure is essential to the success of these investigations. To achieve this desired freedom of disclosure, assurance must be given statements made will not and cannot later be used in civil, criminal, or administrative actions.

Privileged information may be impossible to protect once it has been released to the wrong person. A compromise of the promise of privilege could lead to lawsuits and severely hamper our mishap investigation and prevention efforts.

The Accident Investigation

The Air Force also conducts a separate investigation in cases where there is the possibility of litigation, claim for private property damage exceeding $50,000, fatality, or permanently disabling injury. This investigation is governed by AFR 110-14, Investigations of Aircraft and Missile Accidents. Its purpose is to preserve available evidence for use in claims, litigation, disciplinary actions, administrative proceedings, and all other purposes.

In addition to evidence, it contains a factual summary of the evidence, *but not opinions*, conclusions, or recommendations of the investigator. The report of this investigation is *completely released* to Members of Congress, the news media, litigants, and members of the general public on request and payment of the applicable fees.

It is important to note the difference between participation as a witness in the Safety Mishap Investigation and the Accident Investigation. The promise of confidentiality is given to witnesses in a safety mishap investigation (unsworn testimony), but there is *no* promise of confidentiality given to witnesses in an accident investigation (sworn testimony).

Conclusion

All of us in the Air Force must constantly be on guard to protect privileged information through proper handling of that information. If we are to save resources and lives through open safety investigations, the privileged status must prevail. There have been some unfortunate releases lately — reporters receiving progress reports; final progress reports posted on bulletin boards where unauthorized people can view; and specific references to mishaps and their causes, findings, and recommendations in system safety group minutes or hardcopy handouts. Let's all be more aware of what privileged information is, and protect it well.

The promise of confidentiality is an effective way of gaining information to *improve safety.* Our continued low mishap rate is a result of factors including leadership, discipline, realistic training, and capable, reliable aircraft and crews. It also is a direct result of an aggressive flight safety program that relies on a promise of confidentiality. ■

Today's Jet Engines
— A JOB WELL DONE

HENRY L. LITTLEJOHN
System Safety and Engineering Division
AFISC

■ The loss of an Air Force first-line fighter is an event that can make the national news. And when the engine is suspected as the cause, there often is an inference that today's jet engines cause a disproportionate percentage of our mishaps.

I'll give you the statistics for both the single-engine and twin-engine mishap rates for engine-related mishaps and let you judge for yourself. Each aircraft's Class A (destroyed) mishap rate is plotted against its total flying experience. See Figures 1 and 2.

If you look closely at the three newest USAF aircraft on the Figures (F-16, A-10, and F-15), it's easy to see their engine-related Class A mishap rates are better than any of the older aircraft at the same time in the aircraft's life. The mishap rates per 100,000 hours are:

F-16 — 2.2 after 1,091,399 hours
A-10 — 0.3 after 1,621,075 hours
F-15 — 0.2 after 1,406,199 hours

The trend for all three is still improving.

Of course, there are reasons for these excellent safety records. An important one is the overall excellence of the Air Force and contractor teams that developed, procured, and now manage, support, operate, and maintain these systems. Although I can't cover all of the reasons for the successful programs, some of them follow.

During the development of these aircraft (and their engines), Systems Command incorporated inputs from the operational commands and Logistics Command into the development contract. Good communication between the commands, the airframe system program offices (SPO), the engine SPOs, and the contractors have identified and solved many potential problems before they happened. Extensive testing under realistic conditions and testing of interfaces between the engine and other aircraft systems identified problems that were solved before causing a mishap.

Also, engine controls have been designed to tell maintenance people when the engine health is marginal. The service reporting/materiel deficiency reporting system that has evolved is responsible for early identification of possible catastrophic failures so new designs can be developed and implemented before loss of an aircraft.

Finally, the Component Improvement Program (CIP) permits fielding of new designs in the least possible time. CIP reduces the effort and time required to initiate the contract for a modified design and helps maintain the contractor's engineering staff who remain informed of the ongoing problems for each particular engine.

I don't want to imply there aren't any engine problems today, because there are. What I do want to convey is that engine people deserve a pat on the back. All of you deserve the credit for your continuing efforts and a job well done. ■

Figure 1.

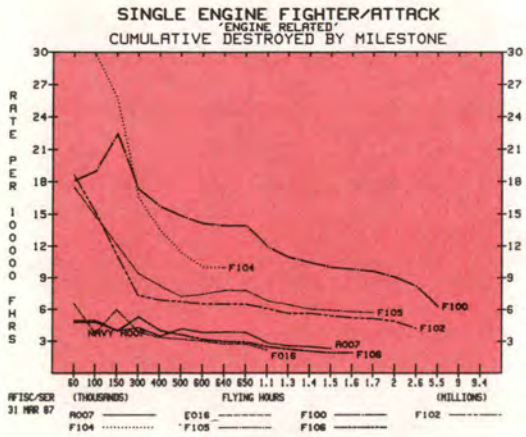
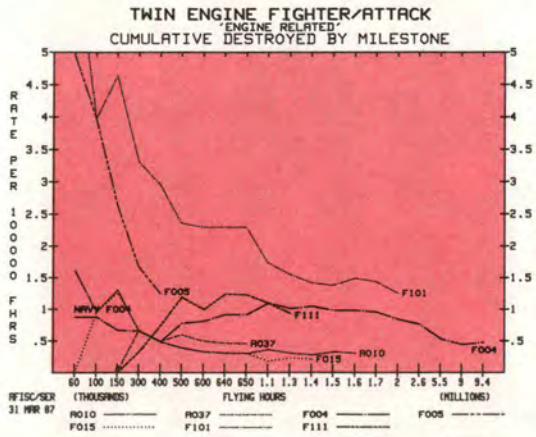


Figure 2.



USAF SAFETY AWARDS

CHIEF OF STAFF INDIVIDUAL SAFETY AWARD FOR 1986

Presented to Air Force personnel who made significant contributions to safety during the previous calendar year.

LIEUTENANT COLONEL ROBERT JOHN DICKINSON

United States Air Forces in Europe

Colonel Dickinson served as Chief of Flight Safety for Headquarters United States Air Forces in Europe. His outstanding safety program management increased safety awareness throughout the command. He improved mishap reporting procedures, provided training for more than 90 additional duty squadron flight safety officers, and initiated a new "Jet Noise" column in *Air Scoop*, the command's safety magazine. Under his leadership, the United States Air Forces in Europe set a new record-low Class A aircraft flight mishap rate for 2 consecutive years.

FIRST LIEUTENANT ANNE E. OTT

Air Force Systems Command

First Lieutenant Ott served as Director of Safety for Armament Division Operating Location A, Holloman Air Force Base, New Mexico. Her outstanding safety program management greatly reduced the risks to Air Force people and equipment operating in the Complex Defense Systems Test Environment. As a result of her leadership, extremely important improvements were made in safety and test evaluation operations.

MASTER SERGEANT ROBERT L. CUMMINGS

Military Airlift Command

Master Sergeant Cummings served as Additional Duty Safety Noncommissioned Officer for the 313th Aerial Port Squadron, Royal Air Force Mildenhall, United Kingdom. His extraordinary personal initiative and leadership produced a unit safety program that achieved one of the lowest mishap rates in the European Theater, despite exposure to hazardous working conditions at three operating locations in the United Kingdom. Under his safety guidance, the squadron has not experienced a single operational injury in 3 years and no Air Force motor vehicle mishaps for 2 years.

MASTER SERGEANT MICHAEL S. MIXON

Air Force Communications Command

Sergeant Mixon served as Additional Duty Safety Noncommissioned Officer for the 1948th Communications Squadron, Columbus Air Force Base, Mississippi. His innovative ideas and programs integrated unit safety policies throughout all levels of the squadron and base activities as well as the Air Training Communications Division. As a result of his safety leadership, 185 squadron people, operating from 8 separate work centers processing high-voltage equipment, have achieved a zero on-duty mishap rate for more than a year and 5 months.

THE CHIEF OF STAFF SPECIAL ACHIEVEMENT AWARD FOR 1986

Established in 1981 to provide recognition for outstanding flight safety accomplishments.

48TH TACTICAL FIGHTER WING

The 48th Tactical Fighter Wing flew more than 20,700 hours and 8,550 sorties in F-111F aircraft during 1986 without a Class A or Class B aircraft flight mishap. This was the wing's third consecutive year without a Class A flight mishap. This outstanding safety record, compiled while performing a demanding combat training mission and participating in numerous exercises and operational missions, testifies to the professionalism of aircrews and dedication of maintenance and support people.

51ST TACTICAL FIGHTER WING

The 51st Tactical Fighter Wing flew more than 22,100 hours and 15,800 sorties mishap free in 3 different types of aircraft during 1986 and completed 2 years and 2 months without a Class A aircraft flight mishap. This outstanding safety record, compiled while conducting flying operations from three bases and performing a demanding combat training mission, attests to the professionalism of aircrews and dedication of maintenance and support people.

The Lesson Learned

CAPT JORGE ENRIQUE LEAL
Colombian Air Force

■ The 7 days TDY became 15 due to a deficient operations schedule. To this pilot, a second lieutenant who just got married 2 months earlier, 2 weeks away from home was too much. The expected replacement day came, but so did engine troubles in his T-33. So, he had to wait until maintenance people replaced the engine. The T-bird was ready late in the afternoon. It was not too late for our harried pilot who made a rapid flight test after 1730 hours.

Anyway, he was anxious to get home. Our guy thought it took hours to get to the hold position for his direct flight home. By then, the sun had already set. He knew 2-½ hours flying at night through thunderstorms was not a good idea, but he did not listen to anything. He just wanted to be at home with his wife, especially since that day was her birthday.

He was soon at the penetration pattern descending in the black night with the lights of the base in sight. At 5,000 feet, he checked the VOR. The field elevation was 2,000 feet, and once he got configuration speed, he lowered the landing gear. One, two, . . . and the left main gear indicated up, and the light and horn alarm came on.

Assisted by the control tower pilot, they decided to accomplish the emergency procedure to lower the gear. The pilot leveled the aircraft at 3,000 feet, traffic pattern altitude. He took his navigational reference from the lights of the airfield and dedicated all of his attention to the emergency procedure, which takes a long time. He left the reference behind and continued with the checklist steps. A smooth and unnoticed descent began while the pilot checked the 45-second time, the landing gear lever, the correct function of the emergency pump indicators, etc.

When he looked at the altimeter, he saw the aircraft was at 2,100 feet and everything was black in front of him. The rest of the story is easy to imagine, but don't be pessimistic! This guy had enough luck to react in time, pulling the stick backward and setting full throttle, expecting to crash at any moment. After all this, he landed safely with a single malfunction of the micro-switch indicator in the left landing gear.

The pilot learned his lesson. I guarantee it, because *I* was that second lieutenant. Today there is no way to make me hurry to take unnecessary risks. There are many birthdays, Christmas days, and Thanksgiving days coming to enjoy with my family. Now I prefer to miss one of these days in my life instead of missing my life in one of these days. ■

The Hump Airlift And Flight Safety

DR ROGER D. LAUNIUS
AFSC Office of History
Andrews AFB DC

■ The airlift over the Himalayas between India and China during World War II was some of the toughest flying in the world. It all began when the Japanese cut China off from her allies during the spring of 1942. To keep Chiang Kai-Shek's nationalist army in the war, President Franklin D. Roosevelt announced in February 1942: "The Japanese may have cut the Burma Road, but I want to say to the gallant people of China that no matter what advances the Japanese may make, ways will be found to deliver airplanes and munitions to the armies of China."

The way Roosevelt found required the expenditure of enormous resources to airlift equipment, supplies, and personnel from British-held India 500 miles over the Himalayan Mountains into western China. It was the first practical exercise of the possibilities airlift had for military operations and represents an important first step in the development of airlift doctrine.

The Hump, as the airlift was called in what must rank as an understatement of first magnitude, grew slowly at first. But as the Army Air Forces allocated more resources to the operation, tonnage delivered to China increased markedly. By December 1943, airlift forces were delivering more than 10,000 tons per month, and at the end of the war, the figures had risen to more than 50,000 tons by August 1945.

Difficult Safety Conditions

Always this airlift was accomplished under exceptionally difficult conditions. Although most transports operating on the airlift were not attacked by Japanese fighters, several instances of aerial combat have been documented.

On one occasion, a C-47 transport flying the Hump actually scored a victory over an attacking Japanese Zero. When two enemy fighters attacked, the pilot dove between mountain peaks to elude them. The aircraft lost one Zero but the second stayed with it. "That character must have been trying to ram us because he never swerved," the pilot recalled. He just missed the C-47 but afterward the Zero "kept right on going, and we watched him explode as he hit the side of the mountain."

More important than periodic enemy attacks, the nature of the terrain and the weather made the airlift treacherous. The Himalayan mountains are some of the tallest

and most rugged in the world. Peaks commonly reach 15,000 feet and some of the highest protrude more than 20,000 feet. Most of the transport aircraft of the period were built for cruising altitudes not much higher.

Weather also contributed to the danger. It was not uncommon for sudden winds reaching almost 250 miles per hour to create turbulence so great that a transport aircraft heavy with cargo might flip, roll, or plummet 3,000 feet a minute as if it were a dinghy in a typhoon. Six months out of the year, Hump aircrews contended with monsoons that drenched the countryside, created turbulence, and made operations practically impossible.

Colonel Edward H. Alexander, Commander of the India-China Wing (the unit with overall responsibility for the Hump airlift), wrote to a superior about the weather problem in 1943: "The weather here has been awful. The icing starts at 12,000 feet. Today a C-87 went to 29,000 feet on instruments, was unable to climb higher, and could not get on top. It has rained 7½ inches in the past 5 days. All aircraft are grounded."

The C-47 was one of the principal aircraft flyng the hump. They were forced to fly in nearly impossible conditions with young, inexperienced crews. As a result, the early safety record was dismal.

The Losses

In spite of these impediments, the men involved in the Hump airlift demonstrated an ability to accomplish the mission. Steadily throughout the war, tonnage increased, but, unfortunately, so did the loss of aircraft and aircrews. Between June and December 1943, for instance, there were 153 major aircraft accidents on the Hump route, and 168 aircrew fatalities resulted.

Brigadier General Cyrus R. Smith, Deputy Chief of Staff for Air Transport Command (ATC) explained that the price of increased tonnage delivered to China was more accidents. He wrote in December 1943:

"We are paying for it [increased tonnage over the Hump] in men and planes. The kids here are flying over their head — at night and in daytime and they bust up for reasons that sometimes seem silly, however, for we are asking boys to do what would be most difficult for men to accomplish; with the experience level here we are going to pay dearly for the tonnage moved across the Hump."

Improved Safety Efforts

To ensure greater pilot proficiency, ATC immediately instituted more flight checks, a flight safety awareness program, and other safety efforts.

These efforts were moderately successful, especially in building greater safety awareness. Captain Bliss K. Thorne commented on some of the informal safety precautions he witnessed on his very first trip over the Hump in 1943.

As the aircraft reached cruising altitude, the pilot, who was a veteran of the airlift, gave Thorne the controls and went to the cargo compartment to check the 55-gallon fuel drums they were carrying. When he found three drums leaking noticeably (a common problem in the unpressurized aircraft at the high altitude needed to fly over the Himalayas), he jockeyed them back to the cargo door and pushed them out into the jungle below.

The meaning of this incident was not lost on the new arrival. Thorne took elaborate care to ensure his cargo was safely loaded and would remain intact throughout the flight.

In spite of this awareness, sometimes grisly accidents took place. Sergeant Lloyd S. Gray, an engine mechanic and flight engineer working the Hump airlift from Sookerating, India, reported, for instance, that a C-47 from his base exploded just after takeoff, killing the entire crew.

Those at the runway, according to Gray, said "She was loaded with gas and ammunition, and the pilot almost refused to take off because he did not think the loading was properly done." Later, Gray added that because of the accident, "Morale is at an all-time low here. The new men especially are practically refusing to fly."

This accident did not stop the airlift, however. Gray probably summarized most of his comrades' feelings when he wrote in his diary, "I don't want to go [over the Hump], but duty is duty. If I had wanted to win the war from behind a desk, I would have stayed in the States."

More Effective Safety Procedures

What accidents such as this, and other similar ones, did was move Hump airlift commanders toward the institution of more effective safety procedures. Brigadier General William H. Tunner, who became

continued

The Hump Airlift and Flight Safety continued

The hump airlift was very costly in both aircraft and crews lost. Unlike this one, most of the crashes were not survivable. Crew morale was very low, and some men were practically refusing to fly.

commander of the unit managing Hump operations on 3 September 1944, forcefully moved to increase flight safety programs.

- First, he reviewed the reasons for accidents and sought to institute procedures directed toward their elimination, while at the same time not degrading the airlift's tonnage delivery capability.
- Second, he went after larger numbers of personnel and more advanced aircraft that could operate on the route more efficiently and safely. He was successful on both counts, and the acquisition in large numbers of such high-altitude aircraft as the C-54 and C-87 transports (the latter a modified B-24 Liberator) proved especially important in this regard.
- Third, General Tunner instituted a much more efficient maintenance program which ensured the aircraft operating on the Hump would suffer from much fewer mechanical difficulties. To increase aircraft reliability while decreasing maintenance time, Tunner introduced production line maintenance (PLM).

This procedure required that aircraft be towed through a succession of seven maintenance stations where specially trained crews performed specific maintenance operations. To make this feasible, each Hump base specialized in one type of aircraft repair; consequently, maintenance operations could be more efficient and effective. At Tezgaon Field, in the Assam province of India, for example, crews specialized in C-54 aircraft and could move each through a comprehensive PLM program in 22 hours.

- To ensure the maintenance crews had sufficient spare parts, Tunner also inaugurated an impressive express aerial delivery service that supplied them with required materials from the United States in a matter of days.

Because of such innovations as these, daily utilization rates rose sharply from 7.51 hours per aircraft in April 1945 to 11.65 hours in July 1945.

- Finally, Tunner developed a comprehensive safety program. His staff prepared a statistical tracking program to determine the causes of aircraft failures, the airfields where most accidents took place, the type of weather involved, the model of aircraft most prone to an accident, maintenance deficiencies, and a host of other questions. Tunner remarked in his memoirs, "To answer these and many other questions, Captain Kenneth Stiles, the India-China Division's Flight Safety Officer, set up statistical systems which were certainly the best in effect in any theater at the time, and are still good today."

Putting It All Together

This information, coupled with more rigorous flight checks, aircrew physicals, an efficient safety awareness program, more advanced aircraft, and more effective preventive maintenance all played an important role in reducing the number of accidents on the Hump.

During Tunner's command, the accident rate declined rapidly. Still the Hump airlift had been costly. In almost 4 years of operation, nearly 400 aircraft were lost and more than 1,000 men were killed. General Tunner was able to organize efforts more efficiently, channel activities along certain lines, and thereby create a more efficient safety program toward the end of the war.

The lessons learned on the Hump about flight safety, and airlift in general, have proved themselves repeatedly since 1945. The operation represents an important step forward in understanding how to accomplish an important part of the Air Force mission. ■

EMERGENCY — BLOWN TIRE

CMSGT AUGUST W. HARTUNG
Directorate of Aerospace Safety

After the two aircraft depart their parking spots, they taxi to the end-of-runway (EOR) checkpoint. During the maintenance checks, a member of the EOR team notices a low left main tire on one of the jets.

"Excuse me, sir," he interrupts over the ground intercom, "but it looks like this left main tire is really low."

"Gosh, chief!" returns the pilot. "We're already running late, and now it looks like my wingman over there is ready to go. Any suggestions?"

"Well, sir," the crew chief replies, "there's a hipac unit nearby, I'll grab the unit, shoot some air into that tire, and get you going on your way!"

"Thanks, chief!"

■ Underinflated aircraft tires demand attention, especially at the EOR checkpoint. If air pressure is lost during taxi from the aircraft parking spot to the EOR, it could have resulted from either foreign object damage, such as a nail puncture, or a not-so-obvious defect in the tire. Whatever the cause, the loss could mean danger.

Take a look at the following series of events that led to a deterioration in safety and, ultimately, a blown tire incident at one of our tactical Air Force bases.

While performing his preflight on the morning of the mishap, the aircraft crew chief serviced the left main tire. The aircraft was flown once without incident, then preflighted for a second go. During this preflight, neither the aircrew nor the crew chief noticed any underinflation of the left main tire. All ground operations and taxi to EOR were normal. No problems so far.

During the EOR inspection, maintenance people informed the aircrew the left main tire was low, but they would inflate it to the proper pressure with a nearby hipac unit. With the servicing completed, the pilot taxied the aircraft to the runway to line up with his wingman. During the takeoff roll, at approximately 150 knots, the crew felt a large bump followed by a series of heavy vibrations. The crew continued the takeoff and kept the gear and flaps extended. After the wingman visually confirmed the left main tire had blown and separated from the wheel rim, the aircrew in the mishap jet accomplished checklist procedures and made a successfull approach-end arrestment.

So now you're probably saying to yourself, "So what? Just another blown tire mishap. Why would a simple incident like this appear as an article in a safety periodical?"

Let's back up for a minute and review some procedures by the EOR maintenance crew in our mishap story. During the check, the EOR crew chief noticed the left main tire was low and serviced it with the hipac. Since the tire was normal prior to taxiing, we assume the tire lost pressure during taxi to EOR. Now, here's the lesson to be learned. Many people think it's OK to service tires at EOR. After all, "It's just a matter of inflating the tire." Read on.

Here's what TO 4T-1-3, "Inspection, Maintenance Inspection, Storage, and Disposition of Aircraft Tires and Inner Tubes," states regarding underinflated tires. "A tire is underinflated when its pressure drops below 95 percent of the required pressure." This same TO further states if an aircraft is taxied or towed with an underinflated tire, the wheel and tire must be condemned. The reason is obvious. Underinflated tires will be exposed to deflections or heat generation they cannot tolerate, resulting in possible tread loss or complete failure.

Investigation of this mishap revealed the EOR crew did not use a tire gauge or servicing checklist, but grabbed the hipac and simply shot some air into the tire until it looked about right. Therefore, it's very possible the tire may not have been serviced to the correct pressure. It wasn't long ago when one of our new airmen, performing almost the same procedure, was fatally injured when the tire exploded.

Also, the EOR launch checklist directed tires to be only inspected. The EOR supervisor did not detect the EOR crew chief's unauthorized procedure and failure to comply with the instructions of TO 4T-1-3.

What all this means is a low tire at EOR may be trying to tell us something is wrong. Everyone involved in performing EOR inspections needs to understand the procedures of TO 4T-1-3 regarding underinflated tires, and perhaps include this information in their launch checklist. Also, aircrews who taxi through an EOR checkpoint need to understand the potential hazards associated with operating an aircraft with an improperly inflated tire.

Remember, according to TO 4T-1-3, if an aircraft is taxied with an underinflated tire, the wheel and tire assembly must be removed and replaced. Like the aircraft they carry, tires must be properly maintained to operate efficiently. ■

FSO's CORNER

CHECKING UP ON CHECKLISTS

CAPTAIN DALE T. PIERCE
919th Special Operations Group
Eglin AFB Aux Fld 3, Florida

■ When was the last time you reviewed your initial response checklist for an aircraft mishap? Does it have everything you think should be in it? How about an item referring to the cockpit voice recorder that might erase itself if it isn't retrieved quickly enough? What about the contents of geographical area? The status of your initial response checklist and mishap response kit will have a significant impact on your readiness in the event of an aircraft mishap.

Let's look at the initial response checklist. It should detail the immediate responsibilities of the interim board members. Captain Alan W. Henry, FSO at the 1550th Combat Crew Training Wing at Kirtland AFB, New Mexico, recommends it be placed in a three-ring binder so individual pages can be passed out. He also recommends a second three-ring binder with a copy of all checklists for the board president. His mishap response checklist is provided below. Does he have anything in his checklist that you don't have in yours?

A good checklist can keep investigators from missing an important step in the sequence of necessary actions. The checklist must be prepared beforehand so it will be immediately available if a mishap occurs.

Board President

NOTE: Before *anyone* goes digging through the mishap site, E.O.D. must be afforded the opportunity to *safe* explosive items!

- Ensure cockpit voice recorder is removed from the aircraft as soon as possible.
- Assume control of mishap scene upon completion of crash, fire, and rescue phases.
- Provide access list.
- Coordinate with public affairs for news release.
- Ensure OPREP has been sent out.
- Ensure 8-hour preliminary report is sent out. (Brief statement of facts — no privileged information.)
- Prepare inbrief for permanent board.

Investigating Officer

- Ensure cockpit voice recorder is removed from the aircraft as soon as possible.
- Coordinate investigation and assign priorities.
- At the mishap site:

— Supervise still/video photography.

— Request aerial photography as required.

— Supervise wreckage. You should take inventory (state and identify parts) to include tips (wings/rotors), engines (props/blades), surfaces (elevators/ailerons/flaps), tail, external stores, and doors (windows/canopy/seats). Also making a diagram of the mishap site (use civil engineering support whenever possible) could prove most helpful.

Maintenance Member

- Remove the cockpit voice recorder from the aircraft as soon as possible.
- Impound aircraft records to include:

— 120-day AFTO Form 781 history.
— Recent 781s at flight line branch.
— TCTO status.
— Phase package.
— JOAP log.
— Corrosion log.
— NDI log.
— Engine history.
— AF Forms 278 — debrief package.
— FCF history.
— Servicing records.

- Contact unit where the aircraft was last serviced. If appropriate, request fuel truck be impounded and samples taken. (Include LOX and oil samples.)
- At the mishap site:

— Secure aircraft records.
— Obtain samples of fuel, oil, hydraulic fluid, and oxygen.

Pilot Member

- Impound aircrew records to include flight plans; training records; flight records (AF Forms); flight evaluation records; 30, 60, and 90-day flight time history; flight authorization; and FCIF cards.
- Contact weather and obtain a previous 24-hour weather report and current observation.
- Secure ATC tapes, when applicable, from RAPCON/tower.
- At the mishap site, secure maps, TOLD cards, and document cockpit switch positions.

Flight Surgeon

- Interview survivors.
- Initiate toxicology testing.
- Coordinate with mortuary affairs and civil coroners as required.
- Begin compiling 72-hour histories.

Board Recorder

- Coordinate for permanent board. This should include:

— Workplace facilities (must be secure).
— Communications support.
— Billeting.
— Transportation.
— Administrative support including secretarial staff and word processor.
— File system.
— Off-base messing requirements (box lunches).
— Special climatic clothing (parkas, snow boots, etc.).

With regard to the mishap response kit, Captain Henry has specific recommendations regarding its contents. Figures 1 and 2 show a sampling of his mishap response kit. He recommends the following detailed list of contents:

Individual members of the mishap investigation board need separate checklists tailored to their assigned functions. This will help ensure maximum efficiency during the investigation.

Essential Items

- Magnetic compass
- Flashlights
- 25-foot measuring tape
- Nylon fluorescent flagging (four rolls)
- Magnifying glass
- Microcassette recorder (two each with extra batteries and cassettes)*
- Wire flags
- Nylon rope
- Photo ID board
- Graph paper
- Notebooks
- Paper tags (100 minimum)
- Blank address labels
- 12-inch ruler
- Nonwater-soluble markers
- Grease pencils
- JOAP kit**
- Plastic bags***
- Backpack

* Recorder should be compatible with base dictation equipment to enable transcription.
** JOAP kit is inadequate for fuel samples. When tasked, POL can supply 5-gallon containers for fuel.
*** A wide assortment of plastic bags is useful. Include several large trashbags to secure maps, charts, and other perishable equipment.

Optional Items

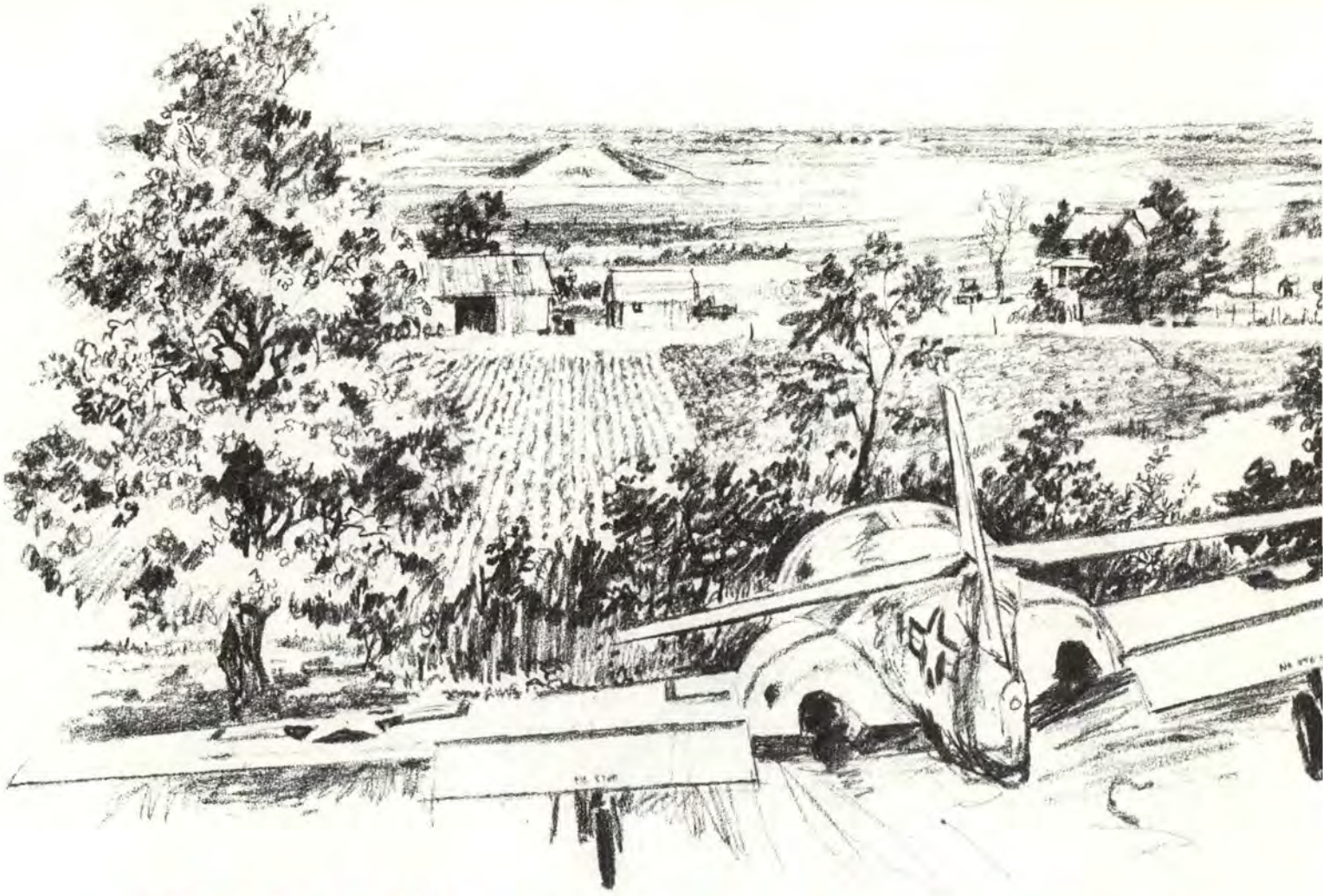
- Magnifying flashlight
- Inspection mirrors
- Metal 3-foot stakes
- Hatchet/hammer
- Duckbill pliers
- Needle-nose pliers
- Visegrips
- Adjustable wrenches
- Assorted screwdrivers
- Razor blades
- 100-foot tape measure
- Calipers
- Camera kit****
- 35mm SLR camera
- Macrolens
- 28mm wide-angle lens
- Electronic flash
- Photo logbook
- Spare batteries
- Black-and-white print film
- Color slide film

**** Camera kit may not be critical, depending upon the support available from the base photo laboratory.

Recommended Items for Personal Comfort

- Leather gloves (four pair)
- Rain gear/ponchos (four each)
- First aid kit
- Mosquito repellant
- Sunscreen
- Chapstick
- Whistles
- Sunglasses
- Earplugs

The FSO's Corner needs your ideas. What are you doing in your program that could help other FSOs if they knew about it? Call me (Dale Pierce) at AUTOVON 579-7450 or send your name, program idea, and AUTOVON number to 919 SOG/SEF, Eglin AFB, Aux Fld 3, Florida 32542-6005. ■



No Problem . . . Just Another Routine

MAJOR JAMES M. NICOL
Directorate of Aerospace Safety

■ The narrative stated, " . . . The pilot failed to ensure the mission was accurately planned. The crew took off unaware they would be approaching an emergency fuel state. A low fuel level was finally recognized about 2 hours into the mission. Following indecisions on diverting, the mishap pilot flew an indirect route and descended early. The aircraft ultimately ran out of fuel, crashed 1 mile short of the runway, and was destroyed."

Another mishap narrative read, " . . . An instructor pilot and student were on a spin demonstration flight. The instructor pilot violated regulations by not descending to verify cloud tops in the area prior to the spin. Both pilots became disoriented during the attempted spin recovery in the clouds. The crewmembers ejected successfully."

Common Factors

What do these mishaps have in common? Complacency was one of the contributing factors cited in both instances. Is complacency a significant problem in the USAF mishap experience? This is not an easily answered question. A great part of the difficulty stems from the fact that complacency has an insidious, unknown, but undeniable effect on aircrews and their performance.

We see examples of complacency in many mishaps — most of which are categorized as readily preventable. Researching data from the last 10 years, there were 304 instances of complacency documented as a cause in Class A mishaps, with factors ranging from overconfidence to violations of regulations and procedures.

What Is Complacency?

But before we talk about complacency, we need to define it. Is complacency some convenient catchall label that makes the investigator's job easier when identifying causal factors? Each of us may have our own opinion based on our past experiences and thought processes.

Webster's defines complacency as, "A feeling of quiet pleasure or *security*, with an individual satisfied with his merits and situation, often while unaware of some potential danger or defect; smug *satisfaction* with an existing situation or condition." In this definition, some important words appear. *Security*, "freedom from danger;" *satisfaction*, "content

Mission

with the existing situation or conditions." The Air Force's definition of complacency, as outlined in one of the Air Force safety investigation booklets is, "a state of reduced conscious attention due to an attitude of *overconfidence* or *overmotivation*."

Most of us have seen examples of this type of behavior in flying units at one time or another. The act of being satisfied with existing conditions and circumstances permeates all units, from the active duty Air Force to the Reserve forces. Many units fly canned routes with the same mission profiles to the same areas, and bomb the same ranges every day and have been doing so for many years. This type of training works well, but also tends to lull people into overconfident attitudes and lack of motivation in preparing for these sorties. A common statement might be, "We've flown that mission 30 or 40 times; we don't need to review the mission profile. Let's go fly!"

Results of Complacency

Let's look at some more examples of what this type of complacent attitude has led to.

- In one example, to impress his friends on the ground, "A pilot performed an aileron roll while flying a low-level route. He intentionally violated regulations by descending below 200 feet AGL. The maneuver turned out to be a real show stopper; the pilot lost control of the aircraft, crashed, and was fatally injured." Remember the old saying, "Death is a small price to pay for looking Sierra Hotel."
- A pilot violated the altitude rules of engagement twice and continued to maneuver aggressively until the aircraft descended to a point from which recovery was not possible.
- A pilot flew an unplanned low-level route after aborting the planned route and stayed low level. He proceeded low altitude in unfamiliar terrain without adequate or properly prepared maps or briefing. The aircraft entered a canyon flying at 300 to 500 feet AGL. Due to the deteriorating weather conditions and rising terrain, the pilot attempted a climbing turn to clear the area, stalled, and crashed.

A Look Inward

These mishap narratives are examples of preventable mishaps caused by overconfidence or a lack of motivation. Did you ever do something careless in an airplane, either from lack of motivation or overconfidence; and by some stroke of luck "got away" with the episode? If so, did you do some serious soul searching after the incident?

When was the last time you had a no-notice check ride, and you thought to yourself, "I wish I had reviewed local procedures and dash-one emergencies on a more consistent basis; I'd be much better prepared for this ride?" You may have felt compelled afterward to get back into the books. However, the good intentions seemed to fall by the wayside as the days between each incident grew further apart.

How many times have you heard of mishaps occurring for reasons which could have been rectified by slight changes in operating procedures? Everyone, from the commander to the line crewmember, was so satisfied with the existing conditions at the unit that no one recognized the potential weaknesses. The solutions to these weaknesses seem so obvious and simple after the mishaps have occurred.

The Remedy

These mishap examples are hard indicators of complacent attitudes and provide real-world examples of the definition: "A feeling of self-satisfaction accompanied by unawareness of actual dangers of deficiencies." If we agree that complacency has contributed to Air Force mishaps, our next task is to suggest a remedy. One remedy is education. We must make people aware of the fact that complacency is a problem and not easily detected by ourselves or our supervisors.

Vigilance and motivation are two important ways to reduce the tendency for complacency. The dictionary defines *vigilance* as, "keenly watchful to detect trouble or danger." *Motivation* is defined as "a person's internalized drive or incentive." We must always maintain the incentive to keep ourselves and the organization keenly watchful to detect trouble, danger, or deficiencies to keep a safe flying operation. We must not allow ourselves to be drawn into a self-satisfied condition.

On occasion, all of us, from the commander to the line crewmember, must stand back from the repetitive daily routine and closely scrutinize the way we and the organization are accomplishing the job. Maybe something can be changed in the day-to-day operations that will not only increase our training effectiveness but make it even safer. ■

Update On The Automatic LPU

MAJOR JESSE F. JENKINS
Life Support Air Operations Officer
Directorate of Aerospace Safety

■ The antidrown triad being implemented by our Air Force has reached another milestone. The end of July 1987 has now passed, and 2,227 of the new LPU-9P life preservers have been delivered.

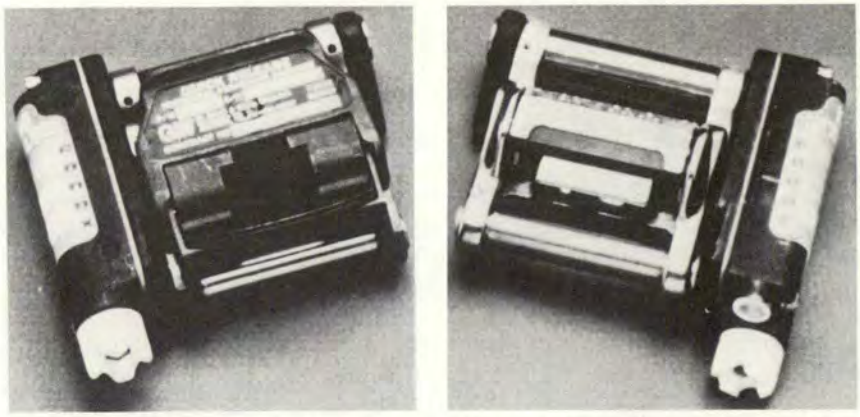
These automatic LPUs are the second leg of the antidrown program with SEAWARS (Salt Water Activated Release System) and WAMRS (Water Activated Mask Release System) as the other legs.

The "big picture" is to prevent drownings caused by being dragged by a chute in the water (SEWARS), inability to manually activate the LPU (LPU-9P), and if unconscious, inability to remove the mask (WAMRS). There have been 44 fatalities in 25 years of USAF ejection history related to drowning in one of these three problem areas.

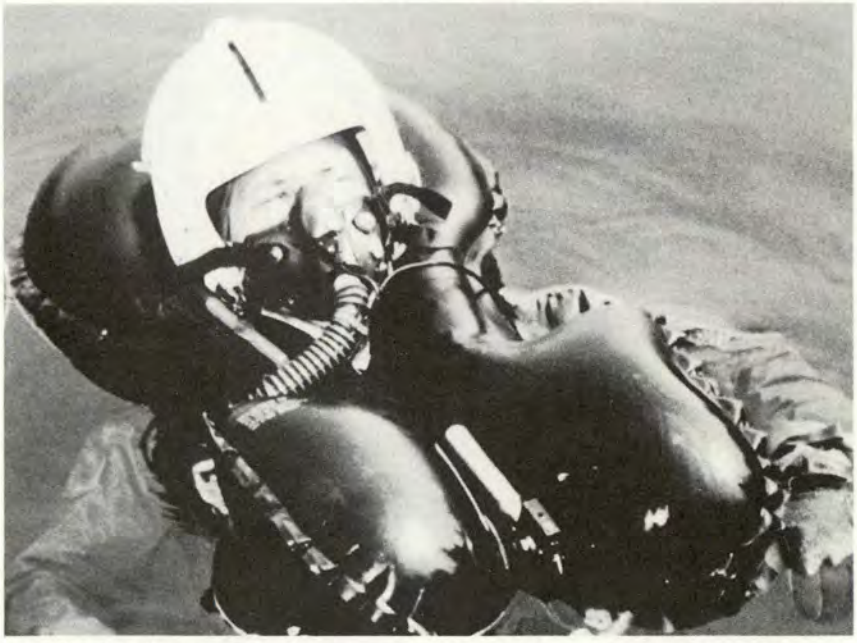
The manufacturer will continue 2,500 additional deliveries to the field in November 1987. A follow-on contract of over 10,000 units will be awarded sometime in 1988. The technical orders are scheduled for release 1 August 1987.

The new LPU-9P is similar to the Navy "horse collar" type preserver. It has been extensively tested at the USAF Tactical Air Warfare Center, Eglin AFB, Florida. Compatibility testing with numerous airframe types, configurations, and mission scenarios has been successfully completed. The LPU will provide adequate buoyancy to float an unconscious person's head above the water. It has two connected, but pneumatically separate, cells (upper and lower); each cell has an inflation system which can be operated automatically, orally, or manually.

This new equipment could save your life. Don't say, "It can't happen to me. I won't have to use an LPU on ejection." The Air Force has had approximately 75 overwater ejections. Play it smart. Use the best equipment available. ■



SEAWARS' salt water-sensing electronics activate the cartridges which release risers from your harness.



While SEAWARS requires salt water to activate, *any water,* except rain, will inflate your automatic LPU.

As with your LPU, *any water* except rain, will activate the WAMRS system to release one side of your oxygen mask.

OPS TOPICS

■ Who's Minding the Store?

I had to take the middle seat when I gave a supervisory evaluation on an H-3 flight. We had been flying for about 3 hours when the instructor pilot (IP) decided to have the student do an instrument approach to a full stop. Everyone was getting pretty tired, and we all knew it was just about over when approach control called with a traffic advisory. There was a light twin aircraft at our 2 o'clock position, and it was closing in on us.

All the eyes stopped doing the instrument approach and began to scan for the incoming twin. Finally, the IP said he had the aircraft. I thought he was saying he had the twin aircraft in sight, but the student pilot thought he was asking for the controls of the H-3.

Like a well-trained student, he relinquished the controls without question. Then the student continued to watch the twin aircraft approach without looking to see why or *if* the IP had ever taken control!

The IP didn't realize the student had given up the controls, and he, too, kept a close watch on the twin aircraft approaching from the right. It didn't take too long for us to get off course, and the approach controller notified us of just that. That's when we all realized no one was flying the aircraft — and with a helicopter (that doesn't want to fly anyway), that can be a dangerous situation to get into.

That is why precise verbiage needs to be agreed upon by all the crewmembers on an aircraft prior to takeoff. If the circumstances had been a little different, we may have gotten into a really bad situation before someone noticed the airplane was flying on its own!

Capt John H. Fitzgerald
Chief of Safety
Kirtland AFB, NM

ARSA or TRSA?

We have just learned a thing or two at our wing — it has to do with the difference between airport radar service area (ARSA) and terminal radar service area (TRSA). I've always thought they were pretty much the same type of environment and only the requirements for ATC changed.

Boy, was I wrong! When we changed to the ARSA, it was easy to see the small changes, the necessary radio calls, and no more stage three. But, something we didn't see right away was the "see and avoid." We all talk about the need to use see and avoid procedures, but it wasn't until one of our own yelled, "They just missed us," that we began to realize what the big deal was.

In ARSA, there is no separation requirement such as 500 feet above or below. You simply see and avoid. If ATC has time, they will issue a traffic advisory, but they aren't required to do so. If you decide to fly a GCA type of approach, you will probably get even less traffic advisories. The GCA scope is a narrow band radar, and unless the other aircraft is close and stays there for a second or two, the GCA controller may never see it.

The bottom line is — don't depend on getting normal spacing or traffic advisories. You are the one and the only one who can keep you out of trouble.

The actual incident occurred when a Huey was about 5 miles out on a GCA approach, and approach control cleared a twin Cessna to cross from the 5 o'clock position over the Huey. The Cessna was cleared to descend once he had a visual on the Huey. He did get a visual when he was about 1½ miles out, so he descended to within 150 feet over the Huey.

Everyone screamed, but the only thing we can find legally wrong is the Cessna pilot's judgment (FAR part 91.9, Careless and reckless operation).

Capt John H. Fitzgerald
Chief of Safety
Kirtland AFB, NM ■

MAINTENANCE Matters

■ ENGINE COUGH

As an F-15 was undergoing a maintenance engine run at a deployed location, one of the deployed Eagle maintainers decided to cross under the aircraft. He crossed just aft of the right intake while carrying his field jacket over his shoulder. With the engine operating at 80 percent, the worker's field jacket was drawn from his hand and ingested into the engine. Damage cost to the F100 engine totaled $29,930.

Those of you who work around F-15 aircraft are probably wondering if the intake antipersonnel guards were installed. Although they weren't, the guards would still not have stopped a field jacket.

The problem was that, while a coworker and supervisor were preoccupied with troubleshooting the engine and looking in the TO, no one kept the area clear of people!

A foreign object does not necessarily have to be an object picked up from the ramp, as has been shown here. Instances of FOD to engines continue to be recorded where items such as safety pins, communication cords, and headsets are sucked away from people who get too close to the intake of an operating jet engine. Remember, no jet engine is immune to damage when it is forced to swallow something that wasn't designed to go down its throat.

HEI THERE — BE CAREFUL

No, this is not a misspelled greeting. It is a serious warning. The HEI refers to high-explosive incendiary ammunition.

Although every effort is made to eliminate ammunition malfunctions, the fact remains they still happen. In fact, here are two recent explosive mishaps involving the accidental firing of aircraft guns.

The first involves the inadvertent firing of a 40mm cannon on an AC-130A aircraft. When the cannon malfunctioned on a live-fire mission, the airborne gunners safed the gun. The crew accomplished their hot gun procedures, landed uneventfully, taxied to the hot gun parking area, and shut down the engines. When the ground weapons technicians attempted to dearm the gun, it inadvertently fired.

Here's what happened. A stuck round of ammunition could not be removed from the gun until the breech block was lowered. The weapons supervisor believed if his helper held the hand-operating lever, he could remove the breech block safing pin. He figured this would allow some upward movement which might free the breech block for downward movement and allow removal of the chambered round.

To stop the breech block from going up and firing the round, the supervisor instructed his helper to hold the hand-operating handle in the down position. The supervisor then removed the breech block safety pin. When he did, the breech block rose into position and fired the round, which struck the ramp and ricocheted into a nearby woods. Pieces of concrete from the ramp struck the underside of the left wing, causing holes in the wing, flap, aileron, and external fuel tank.

Investigators determined the hand-operating rod was worn enough to allow it to pass the outer crank assembly and the breech block in a partially raised position.

Because the hand-operating slide malfunctioned, it was ineffective when the worker held it. Consequently, with the breech block safety pin removed, the breech block raised and fired the round of ammunition.

This unit not only inspected all aircraft guns for worn hand-operating rods, but also submitted a materiel deficiency report and tech order change for additional warnings, and expanded its training program to include infrequent malfunctions such as this mishap.

Another mishap involved a maintenance crew working on a GAU-8 gun in an A-10. Three rounds of 30mm target practice (TP) ammo were fired during a gun functional check.

Following a phase inspection and time compliance technical order (TCTO) on the gun control unit, the aircraft was towed to the flight line for a 36-round operational check. However, prior to this check, a load crew had uploaded 575 rounds of 30mm TP ammo.

MAINTENANCE Matters

When a maintenance crew arrived at the A-10 to perform the operational check, they were surprised to find the gun system partially loaded. So the crew supervisor decided to simply check the gun safing solenoid in lieu of the complete 36-rounds check, and backed approximately 10 rounds out of the gun, using electrical and hydraulic power with the gun safing pin installed. Failing to remove hydraulic power, he then directed his crewmember to remove the gun safing pin and to check the gun safing solenoid energized when the trigger was depressed to the second detent.

When the trigger was depressed, the gun rotated the 10 empty elements through the gun and fired 3 rounds of live ammo before the crew supervisor could release the trigger. The bullets impacted in a grassy area approximately 140 feet from the parking spot and ricocheted into an unpopulated area.

Although this mishap is still under investigation, it's very likely there were several procedural errors.

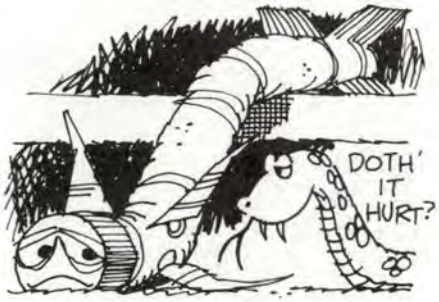
Perhaps these types of mishaps couldn't happen at your base. Let's hope not. But careless maintenance or loading procedures can lead to many aircraft problems. Just remember, HEI (is) there; (so) be careful.

UNSAFE AT ANY SPEED

When tasked to perform an operational bench/leak check of an aircraft environmental control system (ECS) fan unit using a hydraulic test stand, a pneudraulic technician placed the ECS fan in an adapter ring. But, contrary to established tech data procedures, he failed to secure the adapter to the rigid test stand. The worker simply hooked up the proper hydraulic and electrical connections and applied power.

Suddenly, as the ECS fan reached its peak speed of 12,500 RPM, it began to walk across the surface of the test bench. When the worker reached out to grab the unit, two fingers on his right hand contacted the exposed spinning fan blade. The result: The loss of one fingertip and the mangling of a second.

The painful injuries suffered in this case should be enough to emphasize the importance of securing components to their test stand before performing bench/leak checks.



FALLEN SIDEWINDER

Following the integrated combat turnaround (ICT), a weapons crew was downloading the last AIM-9L Sidewinder missile from an F-16. After placing the missile on the MHU-141 trailer Christmas tree adapter, two of the lead crewmembers returned to the aircraft while the third member remained at the trailer.

Wanting to reposition the umbilical cord on the AIM 9L, the third member attempted to spin the missile in the cradle. Instead of spinning, the missile rolled off the cradle, striking the ground.

This unit published a policy letter requiring three people to handle the AIM-9L missile any time it is to be repositioned on a trailer. Since this type mishap occurs with alarming frequency, perhaps all units possessing AIM-9 missiles may want to review their procedures and include this item at their next roll call.

C-5: JUST ROLLING ALONG

Following a main landing gear hydraulic manifold change, the C-5 was jacked to operationally check the gear retraction sequence. Once the retraction was complete, the jacking crew lowered the big bird without placing chocks fore and aft of the main tires. Once all wheels were on the pavement, the aircraft began to roll backward.

The jacking team supervisor sprinted to the crew entrance ladder while other team members tried to stop the aircraft by throwing chocks under the aft main bogies. The C-5 just rolled over the chocks. The supervisor, who had now arrived on the flight deck, stopped the big aircraft with the wheel brakes after it had rolled approximately 47 feet. Fortunately, the only damage occurred when the right forward fuselage and right main gear pod contacted a jack during the unexpected roll.

Supervisors in charge of jacking operations may want to review their checklists to ensure no step in the procedure is omitted. Planning and preparation will enable any maintenance crew to be ready for a potential roll after down-jacking. ■

MAIL CALL

EDITOR
FLYING SAFETY MAGAZINE
AFISC/SEPP
NORTON AFB, CA 92409-7001

"Taxi Tales"

■ Recently, you published an excellent article on "Taxi Tales." Although many valuable lessons learned were pointed out, an injustice was committed to the flight lead of the F-15 mishap.

It is true the flight lead may have prevented the mishap by advising his wingman of the fuel truck parked too close to the taxi line, or by stopping his aircraft and taking action to make the fuel truck move. However, an assumption was made by your article that the flight lead committed a violation of the 25-foot taxi rule without a wing walker. That assumption is untrue. In fact, the flight lead had plenty of room to maneuver around the parked fuel truck without the need for a wing walker. If the wingman had his priorities straight, the same taxi route would have been apparent to him.

As in any mishap report, the intent of the subject mishap report was to prevent aircraft mishaps. The only reason the flight lead was mentioned in the taxi mishap was to bring home the fact that flight leads are responsible for their flight members, from the start of the flight briefing until the debriefing is finished. Any deficiency a flight leader sees should be fixed on the spot if there is potential for disaster. The *"ASSUME"* principle is definitely a player here. This mishap made it obvious; things that are obvious to one may not be obvious to others. So if you see a hazard, point it out and take action!

Again, your article had many good lessons learned, but please don't make assumptions to sell your story. The pictures were convincing enough!

Phillip K. Ragan, Major, USAF
Wing Flight Safety Officer
HQ 33 TFW
Eglin AFB, FL

Ouch! You're right. I assumed there was not room for the F-15 flight lead to maneuver around the fuel truck and maintain safe clearances. However, it was a logical assumption and was not made to sell the story. I apologize to the flight lead for any injustice he suffered as a result. Thanks for setting the record (and me) straight. ■

What Would You Do?

EJECT OR LAND?

■ Just after a midair collision between two F-15s, I rejoined on the more severely damaged one. The young first lieutenant with 200 F-15 hours had chunks of metal missing from his right wing leading edge and his right horizontal stabilator. He also lost his right engine to FOD and had the entire gun assembly ripped out of the top of the right wing root. His PC2A, PC2B, and Utility B hydraulic indications were zero as well as his fuel gauge reading zero!

During the 30 nm RTB (about 8 minutes), a controllability check showed his minimum control speed to be 220 KIAS. While the left main and nose gear were normal, repeated attempts (normal and emergency) could not lower the right main gear. One approach barrier (BAK-14) and two departure end barriers (BAK-14 and MA1A) were available on the 12,000 foot runway.

What Would You Do?

a. Do a controlled ejection. You're too inexperienced to attempt a landing.

b. Raise all gear, lower the hook, and land on the empty centerline.

c. Leave the two gear down, lower the hook, and land. After snapping the first cable, you will use braking and rudder to maintain directional control until the second barrier.

What the Pilot Did

The pilot decided to leave both gear down and land (option c). He landed long and missed the approach cable. Despite reminders, he never reduced the good engine below MIL power. Just before the second barrier, the centerline tank burst and hampered the hook/cable engagement. He engaged the MA1A, left the runway just prior to a stop, and ended up 15 feet off the right side of the departure overrun (in the dirt).

This situation was not presented to point fingers at the pilot. He didn't do everything perfectly, but he did save a severely damaged aircraft. The purpose is to generate thought and discussion that might prevent future mishaps. Maybe you can think of a better option than the three we have listed. ■

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UNITED STATES AIR FORCE

Well Done Award

Presented for outstanding airmanship and professional performance during a hazardous situation and for a significant contribution to the United States Air Force Mishap Prevention Program.

CAPTAIN
Robert K. Umstaedter

CAPTAIN
Timothy C. Jones

509th Bombardment Wing
Pease AFB, New Hampshire

■ On 1 May 1986, Captain Jones and Captain Umstaedter were flying a low level Maple Flag sortie at 400 feet and mach 1.1 in an FB-111A when the wheel well hot light illuminated and the aircraft began spasmodic, uncommanded roll and yaw maneuvers. Captain Jones started a climb, retarded the throttles to military, accomplished the bold face procedures for the wheel well hot condition, and swept the wings forward to 26 degrees.

The severe roll and yaw gyrations continued as the aircraft entered a cloud deck at 1,000 feet. Captain Umstaedter placed his hand on the ejection handle, and the crew discussed the possibility of ejecting but reconsidered as they climbed above the clouds. The wheel well hot light went out, but the gyrations continued.

The gyrations were so violent the crew was unable to refer to tech data. Captain Jones turned off the flight control dampers with no result. Captain Umstaedter suggested the flight control disconnect switch was their last resort to regain control. After Captain Jones placed the switch to override, the aircraft entered one more violent roll and yaw maneuver. He regained control and leveled at 9,000 feet.

The crew declared an emergency with ATC, lowered the landing gear, and completed the rest of the wheel well hot checklist. Due to the possibility of damage to the landing gear from the wheel well hot condition, they decided to fly a visual approach and engage the approach end barrier at the nearest suitable base. Captain Jones flew a flawless approach to a successful cable engagement.

Captain Jones' quick reactions and flawless airmanship, along with Captain Umstaedter's indepth knowledge of emergency procedures, prevented the loss of a valuable Air Force aircraft and crew. WELL DONE! ■

BURROS DO IT . . .

CAMELS DO IT . . .

CAN YOU DO IT?

DESERT SURVIVAL