flying

SAFETY

NOVEMBER 1987

Self-Medication is Dangerous

New Life For The T-37

I Saw Him . . . Too Late

GPWS Saves Another One

THERE I WAS

■ Monday morning. It was a beautiful day! I was scheduled to lead a four-ship of F-4s to the range. A great way to start the week! The pilot of No. 2 was just back from RTU and had never seen the range. The pilot of No. 4 was a low-time lieutenant who hadn't been to the range in 3 weeks. No. 3 and I were IPs and full-time guardsmen, and all four WSOs were instructors.

I decided to fly straight to the range to concentrate on range orientation and bombing for the lieutenants and to keep the cosmosity factor very low. There shouldn't have been any problems. All I had to do was keep a close eye on the youngsters, and I had plenty of help to do that.

Just after engine start, No. 4 called and said he was aborting for an altimeter problem. (Well, there's one problem gone.) Just after takeoff, No. 2 called and said his stabilator trim had stopped working. Since I could still see the field, and he had the ops officer with him, I sent him back alone.

Now things were really getting relaxed. Four high-time instructors with six bombs to drop on a clear day. What could go wrong?

We got to the range a few minutes early and had to hold for a preceding flight. We were cleared on after a couple of circuits in the holding pattern and started inbound. We were at medium altitude and in route formation. I soon realized that either I had started inbound from the wrong holding point or my heading was off, because I was well left of course. My WSO confirmed the INS said the range was to the right. We started a right turn and suddenly my wingman flashed past much too close for comfort. He had also been looking right and had not seen me start the turn. It was also my fault because I should have been watching him to see that he picked up the turn.

If we had collided, how could anybody have ever explained it? How could four instructors in clear weather, at medium altitude in route formation in two good jets find a way to run into each other?

After landing and debriefing, I sat down and thought about it for a while. I have flown jet fighters for over 15 years and have been in units when 5 friends were killed and 5 fighters were lost in 4 separate mishaps.

In three of the mishaps, the mission was very low demand. In all four of the mishaps, an IP was in the aircraft involved. In three of the mishaps, the crash occurred during a very simple maneuver, well within even the most inexperienced pilot's capability. Three of the four mishaps occurred when the fighter hit the ground or water after starting to maneuver above 2,000 feet AGL.

By now, some of you are saying you've heard all this before. The question is do we really apply it every time we fly? It is so nice to relax on a nondemanding mission for a change, especially if we've got over 1,000 hours in the jet and everyone else thinks we are the expert.

So the bottom line is this: No matter how much time you have in the jet, no matter how easy the mission is, don't ever relax! I can guarantee you there is *always* something out there that can ruin your day. ■

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SPECIAL FEATURES

REGULAR FEATURES

DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, USAF

Self-Medication

PEGGY E. HODGE
Assistant Editor

■ The pilot of a single-seat fighter was flying as No. 3 in a 4-ship DACT mission. He made a formation takeoff and closed to one NM behind the lead element. Passing 4,000 feet in a right 30-degree turn, the mishap pilot turned his head to watch his wingman cross under from right to left.

When he brought his head forward, the pilot experienced tumbling vision followed by uncontrollable, rapid eye movements. He immediately informed lead of his problem, turned the autopilot on, and selected 100 percent oxygen. After 15 to 20 seconds, his vision returned to normal. He declared an emergency, dumped fuel, and returned to base for an uneventful straight-in landing.

The flight surgeon met the pilot at the aircraft and took him to the clinic for an evaluation. The flight surgeon learned the pilot had been suffering from symptoms of upper respiratory infection for approximately 48 hours prior to the flight. Instead of going to the flight surgeon, the pilot took an over-the-counter cold tablet approximately 6 hours before the mishap flight.

During the physical examination, the flight surgeon discovered the pilot had ear blocks in both ears. The doctor's opinion was that the tumbling vision and vestibular disorientation were most probably aggravated by these ear blocks combined with the effects of the cold tablet.

This is only one example of the dangers of self-medication by fliers. This pilot was lucky. What if he had experienced the disorientation during the DACT portion of the flight? During close formation? On short final? I'm sure you can conjure up many visions of potential disaster in this situation.

All crewmembers should be aware of this potential safety hazard. Some medicines commonly used from time to time may have a devastating effect on us. This article will remind us of some of the pitfalls of seemingly innocent over-the-counter medicines, offer helpful guidelines, and review current Air Force policy.

Over-The-Counter Medicines

Self-medication not only involves the risk of unexpected drug effects but also the possible hazards to flying associated with the underlying illness. The possible dangers of drug side effects may not always be obvious. The precautionary advice on the container does not take into consideration the special problems associated with flying high performance aircraft.

Here is a brief discussion of some over-the-counter drugs which will show this point more clearly and also highlight the more dangerous medications:

■ Antacids — Some contain sodium bicarbonate which liberates carbon dioxide. At altitude, this may give rise to acute pain due to distention of the stomach on top of the original upset. Calcium-based antacids can be a great source of calcium, but an hour or two after taking them, there is a rebound stomach acid secretion. This could be a heightened distraction if your stomach was already insulted.

■ Antihistamines — These may cause drowsiness, dizziness, dry mouth, headaches, nausea, and muscular twitching. The drowsiness can be a particular hazard because it may not be recognized and because it may recur after seeming alertness.

■ Cold Cures — Many of these contain antihistamines, often in sustained release form. Drugs included in these compounds can diminish visual efficiency. Some drugs used in the treatment of colds or influenza contain quinine which can, in large quantities, adversely affect hearing and cause dizziness. One might also consider routinely avoiding quinine water in mixed drinks.

■ Control of Diarrhea — Many of the tablet agents contain opiate-type compounds which have a depressant effect on the brain. Some may also cause nausea. Powder agents are best. In any event, if diarrhea is present, it's best not to be in the cockpit. A little dehydration reduces "g" tolerance.

■ Nasal Decongestants — Either in drop or inhaler form, these usu-

Is Dangerous

ally contain stimulants, and care should be taken not to use them indiscriminately.

- Stimulants — Drugs such as caffeine, benzedrine, and dexedrine cause not only wakefulness but also nervousness and seriously impaired judgment in some individuals.
- Tranquilizers — These not only cause sleepiness, but also nausea, depression, and visual disturbances, in some cases. Some of them produce intolerance to alcohol and may cause quite severe mental disturbance.
- The "in" thing among some super athletes is the anabolic steroid. A summary statement is that of all self-abuse drugs, these are some of the most dangerous. Their use can result in irreversible effects in bone growth and reproductive organs, among other problems.

This list is by no means complete, but it does highlight the possible effects of some of our more common drugs — drugs that could be mistaken as an innocent and quick cure.

Preventive Guidelines

Self-medication is a potentially hazardous undertaking at best. Liberalized over-the-counter sales of medication increase the risk. With crewmembers, in particular, it can endanger others as well as ourselves. So, we offer a few helpful guidelines:

- If you are on flight status, remember that taking self-prescribed medicine can impair flying performance with possible tragic consequences.
- Only fly in optimal health. The illness is likely worse than the self-cure and may quickly progress. Decisions regarding these matters are best made with medical guidance.
- Doctors who are not flight surgeons can be well trained, but few of them are aware of all the medical problems peculiar to aviation. Seek the advice of your flight surgeon.
- If you are taking medication, you should be under the medical supervision of a flight surgeon. Some medications can be taken while flying with a waiver.
- Under no circumstances should you ever take medicine originally prescribed for someone else. It is not always smart to take some you may have had for yourself! A new illness may be quite different, and self-medication can seriously confuse matters.

Air Force Policy

Air Force policy states that aircrew members taking any medication will be temporarily disqualified from flying (grounded) until the drug is no longer required and all possible effects of the illness are dissipated. Fliers requiring chronic medications, even without side effects, will be temporarily grounded pending a 30-day test period and then approval (waiver) from appropriate higher headquarters. If significant side effects should occur, the flier will be disqualified from flying as long as the medication is required or a suitable alternative is initiated. **SIMPLY STATED — DON'T SELF-MEDICATE!**

There is very good reason for this policy. Apart from the primary purpose for which drugs are intended, it is generally true that most of them also have some unwanted side effects. People also vary to some extent in the way the drug affects them. In a few cases, there is a personal idiosyncrasy to a particular drug which means that the individual reacts in an unusual way and can be made very ill by it. It is also a plain fact that disease may unexpectedly get worse!

For this reason, it is essential that crewmembers only take medicine prescribed by their flight surgeon. A few aspirin or tylenol on occasion is acceptable practice, but it is safest to assume that *no one* who is under treatment by drugs of any kind is fit to fly *unless* specific clearance has been given by a flight surgeon.

Self-medication is dangerous and can lead to mishaps. Leave the diagnosis and treatment of physical disorders to those who are trained for it — the flight surgeons. If you don't do it for yourself, do it for your fellow crewmembers. They don't need to catch what you may be coming down with. ■

Partially adapted from *Aeromedical Handbook for Aircrew* by T.G. Dobie

An Organization Called SAFE

Objectives for Survival

CMSGT AUGUST W. HARTUNG
Directorate of Aerospace Safety

Flying Safety is aware of an organization whose goal is to stimulate research in the field of human safety and to provide for the exchange of ideas for the future of man. It is, therefore, our privilege to share some information on this association with you. — Ed

Purpose

■ SAFE, a nonprofit professional organization with chapters throughout the United States and abroad, is an association of concerned individuals dedicated to survival and the preservation of human life. Headquartered in California, SAFE provides a common meeting ground for the sharing of problems, ideas, and information.

SAFE's formal statement of purpose reads: "The primary objective of the SAFE Association is to stimulate research and development in the fields of safety and survival, and to disseminate pertinent information to concerned individuals in government and industry. In addition, the objective is to establish and maintain a meaningful relationship between the SAFE Association and the scientific communities related to safety and survival."

Membership

Membership is not restricted by academic background, experience, or specialty. Rather, SAFE members represent the fields of engineering, psychology, medicine, physiology, management, education, industrial safety, survival training, fire and rescue, law, human factors, equipment design, and the many subfields associated with the design and operation of aircraft, automobiles, buses, trucks, trains, spacecraft, and watercraft.

Individual and corporate members include equipment manufacturers, college professors and students, airline flight attendants, government officials, pilots, and military people. This broad representation provides a unique meeting ground for the basic and applied scientist, the design engineer, the government representative, the training specialist, and the ultimate user or operator to discuss and solve problems in safety and survival.

SAFE's Goals

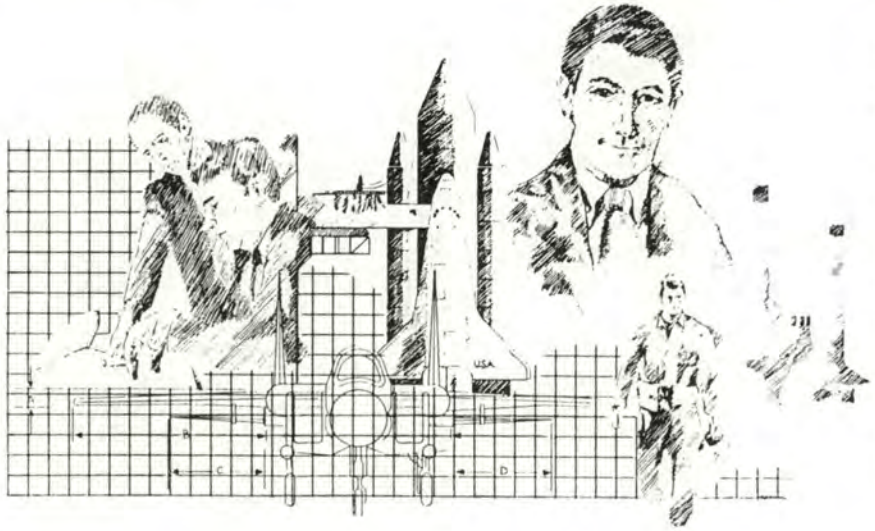
SAFE's regional chapters sponsor meetings and workshops that provide an exchange of ideas, information on members' activities, and presentations of new equipment and procedures encompassing governmental, private, and commercial application in the field of safety and survival.

To keep everyone informed of its activities, SAFE publishes a quarterly journal, a periodic newsletter, and an annual Proceedings of the SAFE Symposium. These publications are valuable reference sources for any person or activity involved in safety and survival.

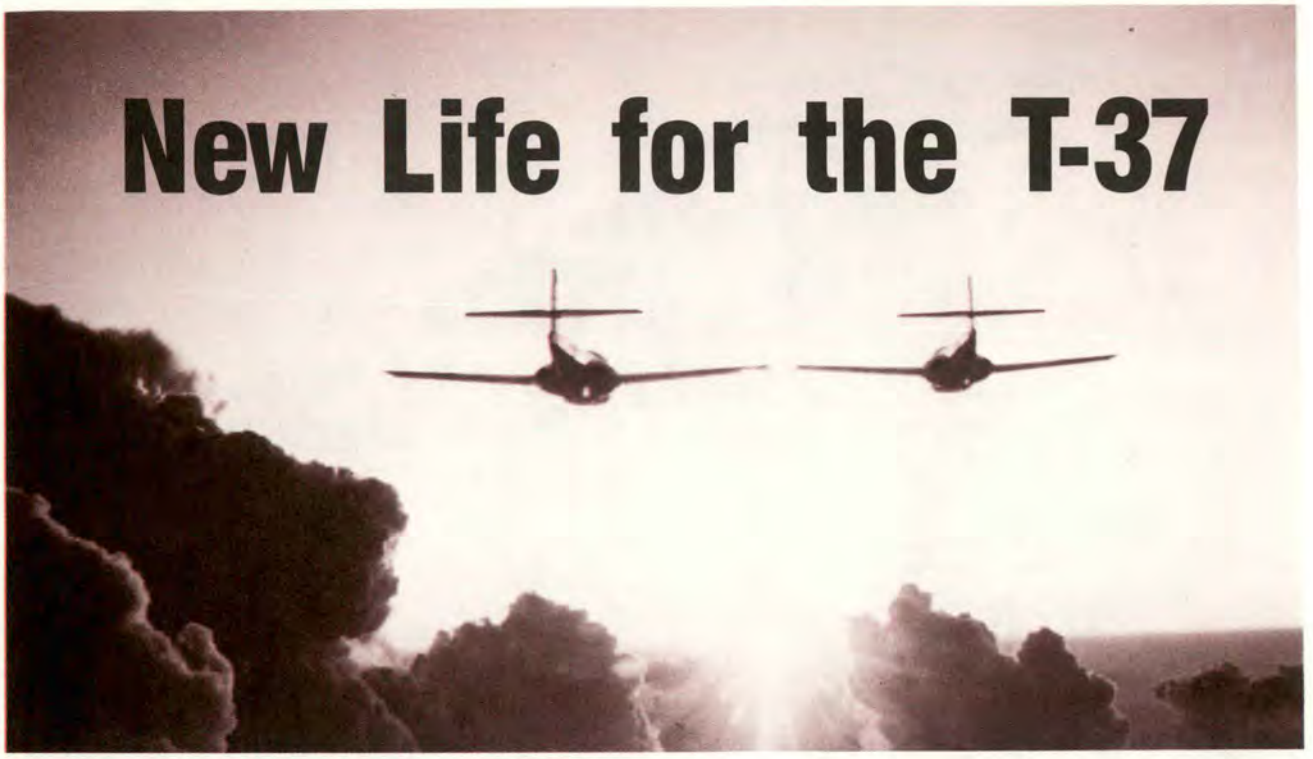
SAFE culminates each year's activities with the Annual SAFE Symposium, which is attended by an international group of professionals who are there to share problems and solutions in the field of safety and survival. Presentation topics range from desert survival to the latest aircraft passenger egress aids, cockpit designs, and restraint systems.

SAFE also recognizes individual achievements and outstanding contributions in the fields of safety and survival. One of the highlights of the Annual SAFE Symposium is the presentation of the SAFE awards to deserving individuals.

If you would like more information on the SAFE Association or want to contribute to their goals as a member, you can write them at SAFE, 25044 Peachland Ave., Suite 205, Newhall, CA 91321. ■



New Life for the T-37



CAPTAIN BRIAN J. DUDDY
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■ Now that the T-46 replacement aircraft has been canceled, a question on many people's minds lately is: What's going to happen to the T-37?

In the search to find a new primary trainer for the Air Force, the venerable T-37 was "left behind" for a few years, supposedly to be phased out. Well, to paraphrase Mark Twain, "Rumors of its death are greatly exaggerated." The T-37 airframe is getting new life, and it's happening at a time when burgeoning techniques for structural analysis are gaining widespread acceptance in the Air Force. To answer some of the questions about the aircraft, and at the same time outline these new techniques, we'll walk through the structural history of the T-37 and describe a changeover in the thinking about the USAF Aircraft Structural Integrity Program (ASIP).

Safe Life

Prior to 1970, the Air Force's approach to protect aircraft structural integrity was based on the concept of "Safe Life." The idea was to design an aircraft to static strength requirements using a fatigue design criterion. Usually, a fatigue test using cyclic loading was done on a full-size aircraft. However, this cyclic loading was not necessarily representative of the type of loading or usage the aircraft would see in service. These fatigue tests assumed flaw-free structure (no existing cracks in any components) and generally ran from two to four times the number of hours that were designed to be the life of the aircraft. This "scatter factor," or safety factor, was assumed to account for:

- The effects of initial quality (manufacturing defects).
- The effect of environment (usage).
- The effects of varying material properties, for example, different batches of aluminum. As part of this concept, there was no crack growth analysis required on individual components.

This pre-1970 approach to design had some major shortcomings. One area of concern was that the safety of the fleet was not necessarily protected by the "safe life" approach. A particular aircraft that was manufactured with a flaw in a critical area was not represented by the fatigue test article. That particular aircraft might fail well before it reached its "safe life," as we shall see.

A second weakness was that this concept allowed aircraft to be designed with areas that could not be easily inspected. A fatigue-critical location with an unsuspected short life could be buried in an inaccessible area.

A third shortcoming of this approach was in the timing of the fatigue tests. Normally, fatigue tests were conducted during full-scale production, but then the results of the testing were too late for production decisions.

And lastly, the aircraft were not flown or used the way the test was conducted, that is, the originally forecasted usage (frequency of high level "g" occurrences, for example) changed to accommodate a new mission.

T-37 Safe Life

The T-37 was designed in the early 1950s using the "safe life" concept. The original goal was a life of 8,000 flying hours and 20,000 landings. This goal was revised by the Air Force in the early 1960s to 15,000 flight hours and 37,500 landings, us-

continued

New Life for the T-37

continued

So you thought the T-37 was on its way out? It has received a new lease on life, thanks to a program called Damage Tolerance Allowance.

ing a fatigue testing scatter factor of 2 to try to account for any unknowns. In 1965, it was decided to increase the testing goal to 15,000 "safe life" hours using a scatter factor of 4, or 60,000 hours of full-scale fatigue testing. Subsequent testing was eventually carried out to 72,000 hours, resulting in a structure considered safe to fly for 18,000 hours.

The fatigue testing program for the T-37 was not without incident, however. Throughout the testing, several cracks and failures occurred in certain components which were identified during periodic inspections of the test articles. These failures led to the development of repairs and modifications to the structure which would allow it to reach the target life. Subsequently, fleet aircraft had to be modified based on the results of these tests. Some aircraft received the modifications on the production line, while some were modified after they had accumulated several thousand hours of service usage. This resulted in a wide range of "service lives" for the modified components based on their times of installation.

Then, in 1968, a wing spar on a T-37 failed in flight. At the time of the incident, this aircraft had only 6,000 flying hours. This resulted in a major inspection program for the entire fleet. This incident, coupled with the failure of a large steel forging in a low-time F-111 a year later, were precipitating factors in a major rethinking of the USAF philosophy for achieving structural safety and durability.

Damage Tolerance Allowance

In 1972, the Air Force completely revised the ASIP's requirements, and the "safe life" approach of assuming a defect-free structure was abandoned. Instead, a new policy of damage tolerance analysis (DTA) was introduced, which relied on new principles of "fracture mechanics" and crack growth analysis, backed up with testing. This philosophy was to cause a whole new way of doing business in the ASIP world.

The damage tolerance design philosophy assumes all fabricated structures contain cracks or flaws of certain minimum sizes which must not be permitted to grow to a critical size during the expected life of the aircraft. These "initial flaw" assumptions are set forth in military specifications and handbooks to be used as guidelines for current and future aircraft systems. In fact, the phrase, "damage tolerance," refers to the maximum extent of damage (a flaw or crack) the structure will tolerate prior to catastrophic failure.

T-37 Damage Tolerance Allowance

New aircraft, such as the B-1 and the C-17, were designed from the ground up using the DTA concept. But what about our T-37? Can we update this early 50s design and ensure its safety through the 1990s?

The old Safe Life Program didn't allow for the fact that the testing was different from actual usage. As a result, the service life was a generalization.

The Damage Tolerance Allowance data are based on actual fleet usage. The result is very accurate safety limits for the various structural members.

The answer is "Yes!" A full-scale DTA is now in progress for the T-37. When it's completed, in February 1988, it will tell us a great deal more about this aging, but reliable aircraft.

The T-37 DTA is a typical example of the application of this new concept to an airframe originally designed and developed under the service life concept. The DTA uses actual fleet usage data gathered from the aircraft in its role as the standard USAF primary trainer. These data, combined with a computer analysis of the entire structure, will allow us to identify those areas of the aircraft that are the most fatigue critical. Then the time to grow from the initial flaw, which may come from production or in-service use, to critical crack size is determined and is called "safety limit" for the particular area being analyzed. This information will help establish inspection intervals for those areas and will ensure detection of any cracks long before they grow to a critical size.

Large complex components may also have an "economic life" or "limit." That is, components that may be replaced as cheaply as inspected or repaired, will be replaced. Using this technique, the current 18,000-hour "service life" limit will no longer have meaning for the T-37 fleet. In place of the service life limit, at which point aircraft should be grounded, the DTA moves the T-37 fleet into an inspect-and-fly mode. Presuming the critical area is economical to inspect and the inspection reveals no indication of flaws, the aircraft may continue to fly until the next scheduled inspection. The DTA can be constantly updated using current fleet usage information to account for any changes in the way the aircraft is flown. These and other advantages make the damage tolerance philosophy a marked improvement over the "safe life" concept.

T-37 Structural Life Extension Plan

In conjunction with the DTA, a Structural Life Extension Plan (SLEP) is programmed for the T-37 fleet. It addresses replacements and modifications of those structural components of the aircraft that are not economical to inspect. Data from the DTA will be used to focus on those critical areas that need to be modified for increased durability, reliability, and inspectability.

The DTA/SLEP combination will ensure the structural airworthiness of the T-37 for years to come. It will keep the aircraft flying safely and training pilots just as it has done since the 1950s. So the next time you see a T-37, you'll know it's given a lot, but it still has a lot more to give. ■

Thanks to the Structural Life Extension Plan and the Damage Tolerance Allowance concept, this will be a familiar scene at Air Force pilot training bases for many more years. The T-37 success story continues!

REX RILEY'S CROSS-COUNTRY NOTES

REX RILEY
Directorate of Aerospace Safety

INITIAL EVALUATIONS

■ **Wake Island, WQ** Wake Island is a true jewel in the Pacific, both in appearance and service. As Detachment 4 of the 15 ABW at Hickam AFB, Hawaii, the people at Wake Island do all they can to make your visit both efficient and enjoyable. Maintenance capabilities are limited due to the island's remote location 2,000 miles west of Hawaii, and normal published operating hours are limited by personnel availability.

Most tasks are performed by contract people employed by INTELCOM, but this in no way detracts from the services provided. A PPR (available through Hickam Base Operations) is required for transient aircraft; however, the facilities are on 24-hour call for emergencies. The billeting staff has made every effort to stock the quarters for the crewmembers' convenience, and the contract mess hall serves food with a Thai flare (in addition to the normal American dishes).

Beach and barbeque facilities are available next to the quarters, and supplies can be bought in a small, but well-stocked quick-stop store. Trans-Pacific crews should strongly consider Wake Island when planning their next crossing. Rex Riley certainly looks forward to another visit.

Johnston Atoll Another Pacific stopover that Rex recommends is Johnston Atoll. Like Wake Island, transient services are provided by a contractor who makes every effort to provide the best possible support. Johnston Atoll is a joint-use facility where Air Force, Army, and civilian people are involved in the disposition of munitions. Holmes & Narver, the prime contractors at Johnston Atoll, are ready to meet your every need.

During Rex's visit, his aircraft encountered APU difficulties, and the transient people had external power on the aircraft before the checklist could be run. Johnston Atoll is also PPR for scheduling purposes, and their UNICOM provides a good interface with Oakland Oceanic Center for departure information.

For those who crew rest on Johnston, their three-hole par-3 golf course and driving range are the best for miles around. The base has numerous recreational facilities, including a well-stocked marina (sailboards, sailboats, fishing equipment, etc.). The dining hall takes great pride in the bill-of-fare, and all in all, Johnston rates high on Rex's list.

HONORABLE MENTION

Bucholz AAF, Marshall Islands While Rex Riley evaluations are limited to USAF, AFRES, and (AF) ANG bases, the excellent services received at Bucholz AAF, Kwajalein Atoll, must not go without acknowledgement. This Army installation, located 2,000 miles southwest of Hawaii, easily meets the criteria to receive Rex Riley recognition.

Global Associates provides the transient services and logistics support for Kwajalein and takes great pride in providing superior service to transient aircrews. Kwajalein is the base for a detachment of Army SD-330s (C-23s), and very limited maintenance is available.

Like most small Pacific locations, PPR is required for scheduling purposes. Facilities are open 24 hours per day, and the only negative point is their 6,673-foot runway which can

cause operating limitations when wet. Rex Riley salutes the Army and contract people at Bucholz AAF.

NO AWARD

Base Z Most facilities and people met or exceeded Rex's criteria; however, operating procedures fell well short of the mark. On one occasion, Rex's aircraft was delayed after passenger luggage had to be removed because a no-show's luggage was loaded on the aircraft. Pax service was aware of the no-show before the luggage was loaded, and failed to inform the crew of this fact.

Ground people tried to pressure the crew into carrying the bags to the destination; however, security precautions and common sense mandated the removal of the extra bags. The process was halted when transportation people found many of the bags did not have name tags as required by MACR 76-1, Vol I, *Miltary Airlift Transportation,* Para 15-5a. All passengers present then reclaimed and rechecked their bags. The two extra bags were turned over to passenger service.

On five of six arrivals at Base Z, ground marshalers failed to position themselves in front of the left wing as required by AFR 60-11, *Aircraft Operation and Movement on the Ground or Water,* Atch 2. Base operations has material under the glass on the flight planning tables that dates back to the air traffic controller's strike of 1981.

While Base Z should be complimented on their strict security measures, overzealousness on the part of one of their flightline troops overshadowed the successes of his colleagues. Rex validated flight orders with his true signature in the presence of the security troop, but unfortunately, Rex's signature didn't meet the legibility requirements of the airman. The signature was verified from Rex's line badge; however, this too failed to meet the security troop's standards. Finally, Rex was forced to print his name on the flight orders, and the crew was released from the flightline. A little common sense and thought would eliminate the described deficiencies and result in Base Z being upgraded to the Rex Riley list. ■

FSO'S CORNER

On Unit Conversion

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■ Is your unit planning to change aircraft? If so, you've probably considered the safety problems associated with the new aircraft. But have you considered the errors that unit people might make during the conversion itself?

People have a curious way of erroneously generalizing old habit patterns to new situations. This is not necessarily bad. In social situations, an erroneous generalization can result in a faux pas. In the aircraft operating environment, one can result in a Class A mishap.

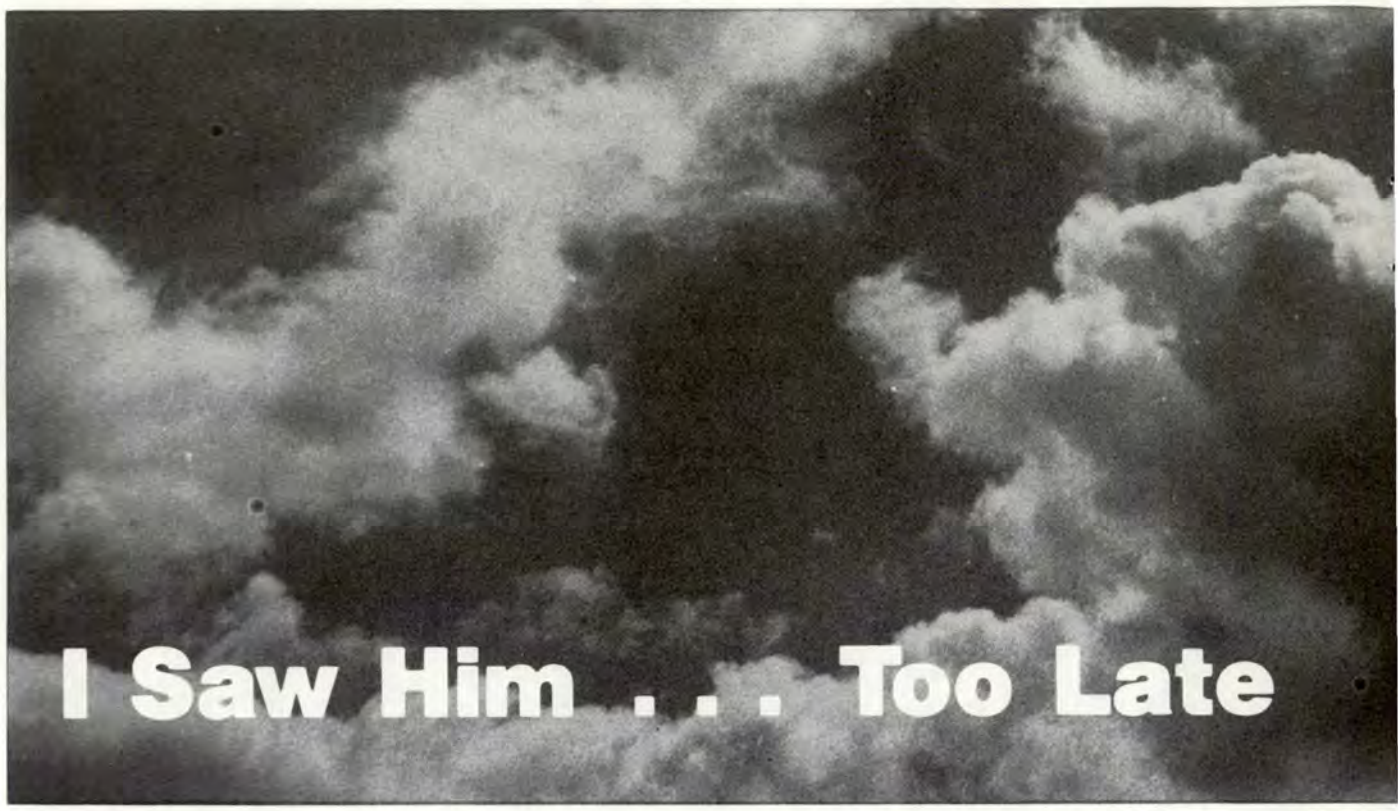
Some units have regarded the probability of such an occurrence quite seriously. Here are two examples of unit preparations made to reduce the probability of mishaps during the conversion process.

- The F-16 is notorious for gobbling up dearm people. To minimize this hazard, the folks at Moody AFB painted F-16 warning cones on their dearm spots while they were still flying F-4 aircraft. This gave the local dearm people a chance to get used to operating around the F-16 intake hazard before the hazard actually arrived on base.
- The size and weight of the C-5 aircraft prevent it from being operated safely on some Air Force taxiways and ramps. To educate unit C-130 aircrews regarding this problem, for several months prior to the arrival of their new C-5 aircraft, the folks at Westover AFB, Massachusetts, had their aircrews do C-5 weight and balance, check taxiway weight limits, check ramp parking clearance, etc., when making cross-country flights in their C-130s.

These are but two examples of how the hazards associated with the conversion process can be reduced through early planning and action. Each unit going through the conversion process will have its growing pains, but this type of early action can go a long way toward minimizing the pain.

Lt Col Denny Vargo provided this month's FSO's Corner idea. He's the Headquarters Air Force Reserve Chief of Flight Safety at Robins AFB, Georgia.

The FSO's Corner is a cross-tell program. Its purpose is to enable all Air Force FSOs to share their good ideas with all other Air Force FSOs and thereby enhance flight safety programs Air Force-wide. To make an input, call me (Dale Pierce) at AUTOVON 579-7450 (SMOTEC) or send your name, AUTOVON number, and a brief description of your program idea to 919 SOG/SEF, Eglin AFB Aux Fld 3, Florida 32542-6005. ■



I Saw Him . . . Too Late

CAPTAIN JACK MANGAN
32d Tactical Fighter Squadron

■ It was one of those rare days in Central Europe when the sun shines brightly, and you can almost see forever beneath a 3,000-foot scattered layer of motionless clouds. I had just descended our flight of two Eagles to work some low-altitude tactical intercepts with our GCI controller, when I caught the "glint" from his wing out of the corner of my eye.

Too late to even think about reacting, I watched the soaring glider pass dangerously close below my aircraft. As I looked back, I remember thinking that rather than being just another "close call," we could have been one of those gruesome statistics published every January after the annual mishaps are tabulated.

Even though I thought I had cleared my flightpath, and assumed the glider pilot did the same, what kept us both from using the same piece of sky at the same time was pure luck. What could I have done differently to pick up the traffic?

This late in the afternoon, I should have known we were flying in the vicinity of a gliderport, with ideal soaring conditions (I have a soaring license myself), and expected to share the airspace with others. Maybe I could have searched the sky better for other traffic, or maybe I should not have been at low altitude in this area under these conditions.

Based on the number of HATRs filed each year and "shop talk," I think most USAF pilots have come uncomfortably close to another aircraft sometime during their flying career. Fortunately, the number of near midair collisions involving at least one USAF aircraft has decreased steadily since 1980, even though the total number of airborne platforms has been increasing.

Midair collision avoidance (MACA) has received a great deal of attention in the commercial aviation industry, attributable to the alarming number of recent midairs. The USAF has also increased its emphasis on MACA between military aircraft, after 1986 proved to be one of the worst years in recent history for midair collisions in the Tactical Air Forces.

The Air Force is still supporting efforts to reduce the midair collision potential between military and civil aircraft. While there have been only six midair collisions between USAF and civil aircraft in the past 10 years, the Air Force Inspection and Safety Center reported over 2,000 near midair collisions over the same period, with an alarming 75 percent of these occurring between USAF and general aviation aircraft. Of these 2,000 reported near midair collisions, roughly 60 percent were directly attributed, by the Air Force, to the pilots' failure to "see and avoid."

The Federal Aviation Administration reports that most midairs occur in daylight, clear weather, with half of all collisions resulting when one aircraft overtakes another. Obviously, the slower aircraft has a very limited opportunity to actually "see and avoid" the overtaking airframe. Since 70 percent of all midairs also take place below 3,000 feet AGL, in minimally controlled airspace, USAF aircraft spending more time at low altitude have the greatest potential for collision.

While the FAA and AFR 60-16,

General Flight Rules, require the use of external lights during flight, some airframes such as sailplanes, hang gliders, and hot air balloons are not equipped with any lighting. This increases chances they may go undetected by a converging aircraft.

The lack of a significant radar return from these platforms to onboard radar systems or ground radar sites also limits detection. Additionally, slow-moving airframes have a very low rate of movement across the horizon, making them difficult to see even with a good visual search.

Even in today's modern fighter aircraft, equipped with bubble-type canopies designed to increase visual acquisition, blind zones still exist. While the F-15 offers a tremendous "cockpit view," the Eagle driver will always be limited by the capabilities of the human eye.

As demonstrated by the simple test at the end of this article, the eye has inherent blind spots which can only be corrected with an effective visual scan. In an FAA study, researchers showed visual acuity and aircraft recognition decreased significantly based on the number of degrees the converging aircraft is offset from the center of your field of vision. Simply stated, the more you rely on peripheral vision to detect an aircraft, the less time you will have to avoid a collision after recognition.

Peripheral Vision

Angle off Line of Vision	Approximate Visual Acuity	Distance (nm) Aircraft Identified
0°	20/20	2.7
5°	20/60	0.9
10°	20/100	0.5
15°	20/133	0.4
20°	20/200	0.3

With our current technology, today's fighter pilot has an increased cockpit workload. Modern electronics enable us to do more. In a single-seat aircraft, we can now fly lower and faster, yet still practice sound tactics, use the onboard radar, fly solid formation, and maintain precise ground tracks. Unfortunately, this increased cockpit workload causes channelized attention, distraction, increased "heads down" time, task saturation, and misplaced priorities.

So how can the USAF pilot avoid a midair collision or a near midair collision? First, we must realize many airframes are competing for the same piece of airspace. If high risk conditions are present (clear weather, minimally controlled airspace, in the vicinity of civil airfields, high task mission), USAF pilots should consider flying above 3,000 feet AGL, if the mission and training objectives allow, until clear of the threat. While 3,000 feet appears to be a "magic number," FAA statistics also show that four times as many midairs occur below 1,000 feet than from 2,000 to 3,000 feet.

Most importantly, you must perfect your visual scanning techniques. A cursory sweep across the horizon with the false belief you are clearing your flightpath is as ineffective as staring at your ADI. A good scan consists of first focusing your eyes on a distant object, then spending 1.5 to 2 seconds looking at each 20 to 30 degree sector of airspace as you clear the area. After four or five sectors, refocus your eyes on another distant object.

Obviously, it is easier to detect objects with a rate of movement across your canopy than an object which remains stationary. As you know, however, the object which does not move on your canopy is the one with the converging vector. Also, continually force yourself to look above and below the horizon for potential conflicts.

Of course, these techniques work equally well in multiplace cockpits. These aircraft typically have larger blind zones, so scan patterns have to be adjusted accordingly.

Finally, while flying in the high threat environment, pilots should spend as much time looking out of the cockpit as possible; use all available external lights, including landing lights if able; use ATC radar monitoring if available; prioritize cockpit tasks according to the mission and environment; and always use effective "see and avoid" techniques so you won't "see him — too late." ■

THE HUMAN BLIND SPOT test from the Institute of Safety and Systems Management, University of Southern California.

1. Close your left eye, or keep both eyes open, and cup your left hand over your nose, simulating an oxygen mask.

2. Hold paper in your right hand with the cross directly in front of your right eye, 2 inches away.

3. Move paper slowly straight ahead while staring at the cross until the dot disappears.

4. Move paper in increasing circles while continuing to stare at the cross.

+ •

GPWS Saves Another One

CAPTAIN BEN RICH
Directorate of Aerospace Safety

■ I think everyone who drives airplanes has had that sinking feeling when air traffic control descends you below the minimum sector altitude depicted on the instrument approach procedure. That is one reason we remain position oriented through the use of maps, NAVAIDS, and good old-fashioned *eye-balling* whenever possible.

A recent airliner incident reinforces the need for position awareness and trust in your equipment, especially the ground proximity warning system (GPWS) for those lucky enough to possess such equipment in their aircraft.

A commercial Boeing 727 was descending in instrument conditions when it was cleared below the minimum sector altitude, and in this case, it was also mistakenly cleared below the controller's minimum vectoring altitude. This resulted in the activation of the aircraft's GPWS system and the "Whoop Whoop-Pull Up, Whoop Whoop-Pull Up" signal in the cockpit. As the crew applied thrust and pulled up (they didn't question the alarm), they broke out and saw the ground momentarily an estimated 200 to 600 feet below the aircraft. The flight climbed to a safe altitude and completed an uneventful approach and landing at Spokane, Washington.

This incident occurred approximately 22 miles east-northeast of Spokane VOR following an approach control descent clearance to 5,500 feet. The crew was aware of the approach chart's 6,300-foot minimum sector altitude in that quadrant, but *assumed* the minimum vectoring altitude (MVA) was lower. (The MVA is designed for use by the air traffic controllers and is usually divided into smaller sections than the simple sector altitudes displayed on the approach procedure.) In this case, the crew made a near fatal mistake in assuming the controller's actions were correct.

As with most mishaps and near mishaps, this was a repeat of a nearly identical incident which occurred at a southwestern fighter base in 1981. In this case, an aeromedical airlift C-9 was descended below both the minimum sector and vectoring altitudes and was vectored directly towards a hill. Fortunately, in this case, visual conditions existed, and the crew quickly questioned the controller's actions and was reissued climb instructions.

Like every experience, there are lessons to learn from this incident:

- Know your position at all times.
- Remain positionally aware of any obstacles in your area.
- When you hear the GPWS activate, *believe it!*

Your life could depend on it. ■

"And the Winners Are . . ."

Congratulations to the winners of GUNSMOKE '87! Held from 4-17 October, GUNSMOKE is a biannual Air Force-wide tactical gunnery and bombing competition. It is sponsored by the Tactical Air Command and hosted by the US Air Force's Tactical Fighter Weapons Center at Nellis AFB, Nevada.

GUNSMOKE '87 Overall Team Title
388 TFW
Hill AFB Utah

TOP GUN — Major Danny Hamilton
419 TFW (AFRES)
Hill AFB Utah

AIRCREW AWARDS

• *A-7 Aircraft Top Gun*	**Captain Dean C. McDavid**	140 TFW Buckley ANG Base Colorado
• *A-10 Aircraft Top Gun*	**Major Patrick J. Hoy**	51 TFW Suwon AB Korea
• *F-4 Aircraft Top Gun*	**Captains Ted Brewer Pilot and Richard LaVelle WSO**	37 TFW George AFB California
• *F-16 Aircraft Top Gun*	**Major Danny Hamilton**	419 TFW Hill AFB Utah
• *Top A-7 Team*	**121 TFW**	Rickenbacker ANG Base Ohio
• *Top A-10 Team*	**81 TFW**	RAF Bentwaters United Kingdon (USAFE)
• *Top F-4 Team*	**37 TFW**	George AFB California
• *Top F-16 Team*	**388 TFW**	Hill AFB Utah
• *Top Gun 30-Degree Dive Bomb*	**Captain Thomas L. Wingo**	388 TFW Hill AFB Utah
• *Top Gun 20-Degree Low Angle Low Drag*	**Major Alan G. Harding**	8 TFW Kunsan AB Korea
• *Top Gun 10-Degree Low Angle High Drag*	**Lt Col Thomas W. Pape**	121 TFW Rickenbacker ANG Base Ohio
• *Top Gun Strafe*	**Major James R. Phillips**	51 TFW Suwon AB Korea
• *Top Gun 200-Foot Level Bomb*	**Major Alan D. Minnich, Pilot and Captain Mathew G. Mills WSO**	37 TFW George AFB California
• *Top Gun Navigation/Attack*	**Captain Luis F. Jordan**	401 TFW Torrejon AB Spain (USAFE)

MAINTENANCE AWARDS

• *Overall Top Maintenance Team*	**926 TFG**	New Orleans Louisiana (AFRES)
• *Top A-7 Maintenance Team*	**140 TFW**	Buckley ANG Base Colorado
• *Top A-10 Maintenance Team*	**926 TFG**	New Orleans Louisiana (AFRES)
• *Top F-4 Maintenance Team*	**187 TFG**	Montgomery Alabama (ANG)
• *Top F-16 Maintenance Team*	**419 TFW**	Hill AFB Utah

TOP LOAD TEAM

• *Overall Top Load Team*	**51 TFW**	Suwon AB Korea
• *Top A-7 Load Team*	**140 TFW**	Buckley ANG Base Colorado
• *Top A-10 Load Team*	**51 TFW**	Suwon AB Korea
• *Top F-4 Load Team*	**4 TFW**	Seymour Johnson AFB North Carolina
• *Top F-16 Load Team*	**388 TFW**	Hill AFB Utah

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.

SECOND LIEUTENANT
Roy T. Wiering

CAPTAIN
Gene W. McCormick, Jr.

27th Tactical Fighter Wing
Cannon Air Force Base, New Mexico

■ On 21 July 1986, Lieutenant Wiering, aircraft commander, was performing F-111D qualification upgrade training with Captain McCormick, squadron instructor weapon systems officer. While flying at 1,000 feet AGL, in night IMC conditions, using automatic terrain following radar, they encountered heavy rain. This caused a computer generated fly-up into heavy clouds between two large thunderstorms.

Lieutenant Wiering selected minimum afterburner and swept the wings forward, while Captain McCormick used the attack radar to find the best route out of the thunderstorms and assisted with the fly-up and recovery to level flight. They leveled the aircraft at 16,000 feet, approximately 9,700 feet AGL.

Shortly after level off, the crew encountered heavy rain, hail, and lightning. A bright flash occurred, followed immediately by a loud bang. The crew felt a loss of thrust and saw the right engine had failed, and the RPM was rolling back through 80 percent. Within 5 seconds, the left engine also failed and its RPM began rolling back.

Lieutenant Wiering started a 270 knot glide and began a cross-check of the standby instruments, realizing that if the engines continued to decay, the generators would drop off the line. Then, all lighting and primary flight instruments would be lost. Both engines had decayed to 60 percent RPM and would not respond to inputs.

Captain McCormick initiated double engine failure and airstart checklists, and Lieutenant Wiering successfully restarted both engines and reset the generators. The crew declared an emergency and recovered the aircraft without further incident with an ILS full stop landing. WELL DONE! ■

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.

FIRST LIEUTENANT

David S. Chuhran

32d Tactical Fighter Squadron

■ On 21 July 1986, First Lieutenant David S. Chuhran was No. 2 of a two-ship F-15 BFM sortie. The weather was poor with a low, ragged ceiling at 400 to 500 feet and 2 miles visibility. Shortly after takeoff, he experienced a left engine FTIT overtemp warning. Lieutenant Chuhran noted the FTIT gauge read 1,100 degrees. At the same time, he entered the weather at 400 feet. Immediately after the overtemp indication, the left engine fire warning light illuminated.

He initiated a climb to take care of the emergency. With the throttle in idle, the fire light stayed on, so he completed the engine fire in-flight procedures. Looking back, he saw some trailing smoke. Realizing the aircraft might be on fire, he decided to land immediately.

At this point, Lieutenant Chuhran was single engine, heavy weight, in the weather descending from 3,000 feet to 1,500 feet, and turning to intercept ILS final at 5 miles from the field with a possible engine fire. At this same time, he noticed his hydraulic gauges fluctuating and the AMAD fire warning light flashing. Thinking he might lose the right AMAD, which would result in total hydraulic failure, he decided to fly a 200 KIAS approach so he could level off and eject, if necessary, as well as speed up the recovery of his failing aircraft.

While prepared to eject, if required, Lt Chuhran flew a precise, difficult approach and broke out at minimums. He made a perfect landing and stopped the aircraft just short of the departure end arresting cable. WELL DONE! ■

There I Was . . . I Think!

EDITOR'S NOTE:
While the following incident refers to a very specific maneuver in the T-38, the author has a message for all instructors and crewmembers. Hint: It's in the last paragraph.

■ Let's talk about a relatively easy but potentially dangerous phase of T-38 ops — the aerobrake! I've been flying the T-38 for over 3 years now, and I continue to learn more and more about flying. Sometimes it's something simple I never really noticed before, and sometimes I get blindsided (usually by innocent-looking students).

The situation I want to tell you about occurred about 3 months ago. Lt Studley was on his second airplane ride when I was added to his continuity, and we went out to fly. The sortie was fairly uneventful, with the standard landing difficulties (that is, he scared me every time we got close to the ground).

Then came the full stop! We landed safely — about 10 to 15 knots fast — not too bad for a new student. Shortly after the aircraft was safely on the ground, the ol' brain cells reminded him it was time to aerobrake, to which he replied, "OKAY!" Now about this time, yours truly in the backseat was saying, "Boy! Am I glad to be on terra firma again!"

The series of events that follows occurred in a period of about 3 seconds.

- The student's right hand responded to brain inputs by abruptly pulling the stick into his lap (remember the extra 10 to 15 knots?)
- I swallowed my seat cushion.
- The runway supervisory unit (RSU) controller, controller-upgrade, and the observer all swallowed their mikes.
- The airplane leaped about 10 feet into the air, with approximately a 15- to 20-degree nose high attitude.
- I grabbed the controls (I didn't ask for them!) and pushed full forward to get the nose tracking down. I keyed the microphone, and in my best John Wayne voice proclaimed, "I have the jet." The RSU was glad to hear this. I started to select MAX, but realized it was too late. In retrospect, I should have gone to MAX anyway to cushion the subsequent landing.
- The aircraft fell (it didn't settle) to the runway with a bone-jarring crunch. I felt both main struts bottom, so I elected to clear the runway and call for tug and pins.

Fortunately, maintenance investigation found the aircraft was not damaged. We were lucky this time. The RSU upgrader said that if the nose of the aircraft had not been forced over, we would have landed on the tailpipes when we came back down — that would not have been fun (think about it).

Now, I'm sure every one of you intrepid aviators has been in a similar situation, and we all know flying with students is inherently dangerous. But what is the real problem here? Sometimes we instructors overlook the simple things because "that's the easy part." We figure if a guy can land the jet, the aerobrake is a piece of cake. Well, remember Lt Hamhocks has not attempted the aerobrake in the T-38, and a thorough prebrief may keep you out of a similar situation.

FLY SAFELY — AEROBRAKE CAREFULLY! ■

Could You SURVIVE?

USAF Survival School
Fairchild AFB, Washington

■ When you bailed out of your crippled jet several days ago at high altitude, you expected a quick rescue. But, that was before you lost your survival gear and found your radio was inoperative. Not only that, but your aircraft finally went down many miles from where you landed. Consequently, the searchers have been unable to locate your position.

You have decided you must try to hike out of the area to a major highway you saw from the air. You estimate the highway is about 10 to 15 miles northeast of your position. Unfortunately, you lost your compass with the rest of your survival gear. How can you navigate to the highway?

Nature provides many reliable aids for determining direction. One of the most reliable is the sun, which you can use to find the cardinal points of direction to help navigate your way out of a survival situation.

The sun follows a general path from east to west. You can quickly plot this east-west movement with the shadows cast by a straight stick perpendicular to the ground surface. Once this stick has been embedded in the ground, mark the end of the shadow it casts and wait until the shadow has shifted with the sun's movement. Mark the end of this second shadow and connect the marks with a straight line. This is a true east-west line. Using more than two shadow marks will increase the accuracy of your east-west line. Remember, the direction the line is moving is east. The starting point on the line points west.

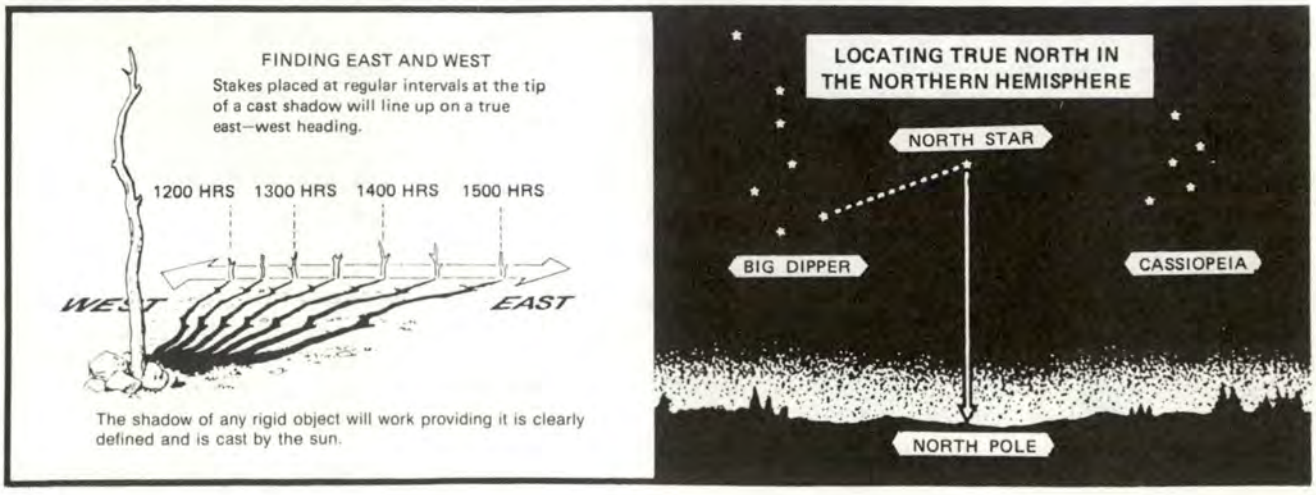
A line perpendicular to the east-west line will indicate true north and south. In a few minutes, you have determined the cardinal points of direction.

In the northern hemisphere, you can determine cardinal directions at night without a compass by using the North Star. The North Star is not difficult to find.

The two stars on the front of the constellation, Big Dipper, are "pointers," and a straight line drawn through these stars and extended will point to the North Star. Measure the distance between the pointer stars and extend this measurement five times along the pointer line to find the North Star.

This technique can be very helpful on nights when the North Star may be hidden from view by clouds. You can get a fairly accurate estimate of the North Star's position, even if it's hidden, as long as you can find the "pointer" stars in the Big Dipper.

Draw a line up from the pointer stars to the North Star, then down to the right side of the pointer line at a 45-degree angle to make a north-south line. Once you have determined which way is north, you are able to determine cardinal directions. ■



Safety Warrior

mustang memories

MAJ GEN F.C. BLESSE, USAF (RET)

■ I was in the 56th Fighter Group right after World War II. There were probably 8 or 9 pilots in the outfit who were aces in the war and all but a few had combat flying experience. No matter what you did in a fighter in those days, if you hadn't been in combat, the guy would just shrug his shoulders and say, "That's all right, but that's not how we did it in combat." He wouldn't tell you how they did it; he would just say, "that's not it."

When the Korean war came, I wanted to make sure I was in it. I was flying F-86s in June of 1950 when they came through with one assignment for a P-51 pilot. I volunteered because General MacArthur was already saying he was going to have everyone home by Thanksgiving, and I figured I had to get over there. I was excited because I was finally going to get into combat. It had been a long wait.

I was assigned to the 18th Fighter Group at Pusan. When I arrived about noon, a captain and a sergeant from the squadron met me. (You can start thinking about supervision and how you would do this if you were the ops officer.) The captain, who was to be my flight commander, said, "Give your bags to the sergeant and he'll take them along to the tent. We're kinda pushed on time.

"You're scheduled on the mission tomorrow morning, and you have to get 3 hours and 10 landings before you can go. We've got about 16 or 17 airplanes, but we've only got 8 pilots. We really need you. We'll go get a quick bite to eat, and I'll give you a briefing. You're scheduled for a P-51 flight at 1 o'clock.

During lunch, I told him I wasn't a very experienced P-51 pilot. I said "I really only flew the P-51 one weekend in 1945 and three or four times in 1948. I was AO (Airdrome Officer) in Savannah one weekend when a Major landed in a P-51. He said I could fly it over the weekend and I got about 4 hours in it. I never flew another P-51 until I got to Selfridge AFB in 1948. We had one in our F-80 squadron, and as maintenance officer, I flew it a few times."

The captain said, "Well, you never flew it with . . . " I said, "No, I never flew it with drop tanks or anything else, never been on the gunnery range, never did anything. About 7 hours, that's it; just what I told you." He said, "Well, that's OK. We all have to start somewhere.

You take off about 1 o'clock, and about 2 or 2:30, I'll come up and join you. I just want to make sure you know how to fly formation and that sort of thing. We'll do a few acrobatics and then you can shoot some more landings."

So the afternoon went as planned, and I flew formation with him and convinced him everything was OK. He seemed to be satisfied, so we came back and landed.

At 5 o'clock that night as we were sitting in the mess tent, he was briefing me on the next morning's mission. He said, "Now don't get excited, but about 3 o'clock, they'll come around and wake you up so you'll get all your briefings. But, don't worry, we don't fly at night. We have never flown a night mission in the P-51. We just don't do that. It has a gyro that tumbles at 60 degrees. If you get in any rough air, it's no use to you at all. If you get in the soup, you're going to be needle, ball, and airspeed after the first bump you hit.

"The Detrola we have for navigation will only tell you if the station is left or right. It won't tell you if it's ahead of you or behind you — just left or right, that's all.

"So, we don't like night flying and we try to avoid all flying in weather. Not only that, but we're not going anywhere tomorrow morning because the weatherman says we're going to have about a 400 foot ceiling and rain. You'll get your briefings, however, and maybe we can get the mission off later in the day."

The war was being accomplished on time and at precisely 3 o'clock in the morning, the guy came around and shook me. By the time we finished the briefings, I expected the mission to have been called off.

But, for some reason, they were late calling it off that morning. The Flight Commander, Joe, said to the other three of us who were going with him, "Well, they're a little late. I guess they're not on the ball down there at JOC (Joint Operations Center) this morning. This will be good, though. Get your flashlight and we'll go on out to the airplanes and preflight them. You won't get a chance very often to preflight one of these in the dark and it will be good experience. It's not raining very hard, it's just kind of a mist."

Capt Blesse was flying the F-86 in 1950 when the call came for a volunteer to fly P-51s in Korea. They got one volunteer — Capt Blesse, who had about 7 hours in the P-51.

So, we went out to the airplanes. We took a good look at them and flashed the lights in all the places we were supposed to flash them, got in, and turned the radios on. The flight lead was still trying to call JOC to get someone to tell us it was called off so we could go back in, but nobody was telling him that.

The people in Ops said "You guys are not going to go, but go ahead and start 'em up and you can taxi around a bit." So, we did that, and all this time, it never occurred to anybody (and I'm sure last of all to the flight lead, who in 80 missions had never started an engine in the dark) that we might actually go on this mission.

So, we got the engines started and we taxied the aircraft. We got out close to the takeoff point, and I noticed the flight commander's voice had gone up about 2 octaves. When that happened, I thought "This is not looking very good." He tried to call JOC again and couldn't get them. So, he called back to our squadron ops and they got on the land line to JOC.

Squadron Ops came back and said "You guys . . . " then stopped and said "Joe, can you hear me?" Joe said "Rog, go ahead." And Ops said "Well, there's a lot of trouble up north today and they really need you. The mission is a go. You're supposed to go about 25 miles north of Pyong Yang and contact Boxcar."

continued

I've heard it said, "Any landing you can walk away from is a good landing." But, I don't think this is what was meant.

Safety Warrior:

Mustang Memories

continued

Nobody knew anything about night flying because, as I said, this was the first night flight that had occurred in the 67th squadron during the war, to the best of my knowledge. So, the leader taxied out on the left side of the runway and left me the right side. I was in the No. 2 position because that is where the weakest guy goes. I didn't have any combat time.

Everything was fine except I could hardly breathe because my heart was up so high in my throat. Loaded with napalm, rockets, and .50 cal ammunition, the aircraft seemed heavy even taxiing. I hoped it flew better than it taxied. I was having trouble finding all the instrument lights. As we lined up, I thought "Boy, I wonder what the odds are of gettin' through a mission like this?"

The lead started forward, and he hadn't rolled more than 2-½ feet before I knew I had made the most serious error of my entire life. The P-51 had a 12-cylinder Merlin engine with an exhaust stack down the right side. When he pushed the throttle forward, a bright flame came out the exhaust stack. That wiped out my night vision, and for about the next hour and 20 minutes, I flew on a ball of fire. When that ball of fire went up, I went up. When it went down, I went down. When it got smaller, I moved in. When it got too big, I moved out. That was the worst sensation I have ever had.

Another thing — I didn't have the slightest idea how he was going to depart that field. We hadn't discussed anything about weather departures, or wing flying at night, or weather flying, or anything. None of that was discussed because it wasn't going to be done. I knew there were two significant hills to the south of Pusan, and I heard the controller give us a south departure.

I didn't know what he was going to do, but I knew wherever he went, I was going because I was in worse shape by myself than I was by staying with him. So, I glued myself on that ball of fire. About 45 minutes after takeoff, it started getting light. I remember the thought crossing my mind, "You know, there's some slim possibility I may live through this."

Finally, we broke out on top, and as we got close to Pyong Yang, the clouds started to thin out a little bit. It was getting light, too, and it was obvious things were getting a lot better. We contacted Boxcar and he gave us the target. Everything was going great until we got a weather recall on the radio.

The weather supposedly was setting in all over South Korea, and we were told to land immediately at our prebriefed base at Pyong Yang. It was kind of a misnomer to call it an airfield — it was a 3,900 foot cornfield. It had no tower, nothing but a group of people who were there to rearm and refuel us so we could go fly another mission.

The flight leader brought us over the field. You could see straight down, but you couldn't see on a slant because of the haze. When we got on final, we couldn't find the runway and had to go around. We did that about three times and it wasn't gettin' any better. They finally set fire to some oil in drums near the end of what they called the runway.

The black smoke was enough to let us find the approach end of the runway in the 1/16-mile visibility. I could just barely see the flight lead ahead of me as I was touching down, and then I saw a 6 by 6 truck 90 degrees to me on the left. A couple of guys with a North Korean on the back end of the truck were trying to go across the runway from left to right, knowing full well that no idiot would try to land an airplane in those conditions.

My first thought was "Joe is going to hit that truck." Then all of a sudden, I couldn't see Joe any more, but the truck was still there and we were on a collision course. I hate to tell you what I said, but it was a four letter word, and it became crystal clear to me who was going to hit that truck — it was me!

I was too slow to go around, and I was too fast to ground loop the aircraft, so I hit full right brake and full right rudder. All I really did was kind of cant the airplane to the right, and by that time, the truck

was there. I said, "Oh s___ " and reached over and turned off the battery switch and mag switch.

Immediately after that, I hit the truck with the left wing. That swung the airplane around and it tried to fly again as the right wing accelerated. It went way up and the next thing I knew, I was sittin' there holding on to the stick and looking straight down about 30 feet. The airplane hit on its nose, then it went nose, wingtip, tail about 3 times and flipped over on its back.

I had dirt in my eyes, and my head was pushed over to one side because the airplane was laying on top of me. For a minute I didn't know what to think. I moved a couple of fingers, then I moved my toes, and I kinda shrugged and said, "I'm not even hurt. All I've gotta do is get out of here." Fortunately, we had a crash bar across the top of the aircraft right behind the canopy, because that was holding the airplane up.

A sergeant and another guy saw the accident. They ran over to me and started to dig a hole to get me out. When they got it all dug, I released my safety belt and fell about 3 feet — right on the side of my head. I thought I had broken my neck. I slipped out of the parachute and got out of there running as fast as I could.

I turned around after about a hundred yards, which I had covered in about 4-½ seconds. The P-51 was just sitting there with clouds of 100 octane mist rising in a circular pattern above it. It never did explode or burn.

I didn't know what else was going on, so I walked over to a tent that was off to one side. There was a captain in there who was the operations officer. He was filling out a form and just kept writing without looking up. He said "I heard you had a little trouble out there." I said "It didn't go too good. I hit a 6 by 6 truck."

There was a silence and he still hadn't looked up. I don't think to this day he would know my face if he saw it. He said "Are you hurt?" I said, "No, I don't think so." Another silence and he said "Do you wanta fly?" I said, "Yeah, that's what I came for." He said, "OK, there's three in the tent next door briefing for a mission. We need a fourth for that. Go over there and join them. You'll go as soon as the haze burns off."

The P-51 Mustang was a formidable fighter in WW II, but it was rapidly being outmoded in the new jet age of 1950. However, with a combat range of up to 1,000 miles, six .50 caliber machine guns, and other ordnance, the Mustang was still effective.

Capt Blesse and his crew chief, Sgt Millwood J. Palmer, prepare for his 42d mission. Capt Blesse was one of the lucky few to have a helmet. It probably saved his life on his first mission.

This was about 12 minutes after my airplane flipped over on its back. So, I walked over to the tent next door and pulled the door flap back. The flight leader was briefing. "What do you want?" "I think I'm your fourth," I said. "Come on in and sit down, we're not finished yet." So I sat down and he gave the rest of the briefing, complete with aircraft numbers.

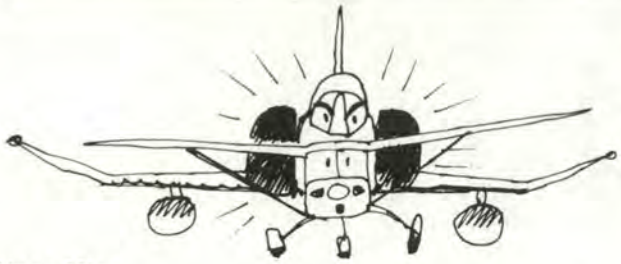
I told him I needed a parachute and he produced an extra one from someplace. That was it. The haze burned off and away we went. I don't think it was more than 40 minutes after that accident before I was in another P-51 joining up after takeoff.

It sounds a bit funny. Using today's standards, that 40 minutes would have been stretched out over probably about a month to 6 weeks while the accident board met, and while I had doctors pouring over me to see if there was anything wrong.

Korea was an entirely different war, but that's the way things were done in those days. That's why we had some 20,000 accidents in 1943 and that same approach to flying was still there. This was 1950, but none of the thinking had changed. It was a mentality created out of necessity.

People got the job done, but we had never come to grips with the real price of getting it done at any cost. It was at tremendous cost in lives and aircraft in those days. But, as I found out, that's the way we did it in combat. ■

OPS



Near Miss

■ Two F-4 aircraft had been cleared into the range area and were level at 1,200 feet MSL. The wingman was in a fighting wing position to the left and slightly below lead.

Suddenly, the wingman saw a Cessna 172 pass from right to left approximately 500 feet below the lead aircraft. The wingman had to take evasive action to miss the Cessna.

The Cessna was in a published restricted area and was not being tracked on anyone's radar. This is again graphic proof that you can never relax your vigil for other aircraft.

Any time you're in VFR conditions, you can expect to see VFR aircraft, even if you're in a restricted area or under radar control. Always expect to see other aircraft and you won't get hit by the one you didn't see.

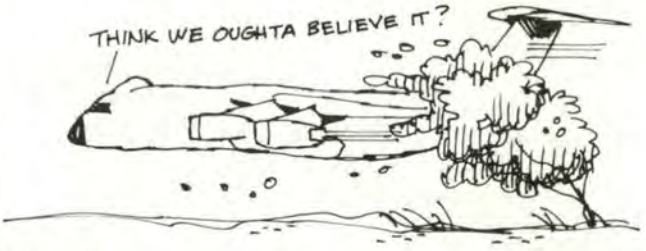
Just a Little Bit

As the F-4 was receiving its end-of-runway inspection prior to takeoff on an incentive flight, the pilot told the supply specialist in the rear cockpit to lower the canopy. When the specialist replied the canopy wouldn't close, the pilot tried to talk him through the proper procedure for closing the canopy. After about 10 minutes of confusion, the pilot decided the canopy couldn't be closed and taxied back to parking. (Yes, the specialist had received proper training before the flight.)

After shutting down the aircraft in the chocks, they found the canopy emergency jettison handle had been pulled and the face curtain ejection handle had been pulled out several inches. In his attempt to lower the canopy, the specialist pulled the emergency canopy jettison handle. When the canopy jettison initiator has been fired, with the canopy up, the canopy will not jettison or close. The specialist also stated that while adjusting his helmet, he accidentally pulled the face curtain handle "a little bit."

In spite of the training received, the specialist didn't realize the possible life and death consequences of arbitrarily actuating switches and handles in a fighter cockpit. When training people for incentive flights, be sure they really understand the consequences of their actions.

Also, the pilot should not have taxied the aircraft with a known canopy malfunction. If you have a problem, stop and call for maintenance. Don't take a chance.



Pull Up!

A C-141 was handed off from center to approach control at 9,000 feet MSL in the weather. The GCA controller then cleared the 141 to descend to 4,000 feet MSL. While passing 4,800 feet, the ground proximity warning system (GPWS) activated and gave a "pull up" warning to the crew.

The pilot saw the radar altimeter was reading 300 feet and initiated an immediate climb to 5,000 feet MSL. He confirmed the altimeter setting and the copilot asked the controller what the minimum vector altitude (MVA) was. The controller said the MVA was 4,400 feet MSL and told the crew to level off at that altitude.

After landing, they found the radar altimeter was malfunctioning. They had actually been approximately 1,500 feet above the ground when the GPWS gave its warning.

But, the crew reacted correctly. Rather than trying to analyze the "pull up" warning, they took positive action to get away from the ground. It's much better to react to a false warning than to have someone sifting through the wreckage trying to figure out why you flew a good aircraft into the ground.

TOPICS

Pay Attention!

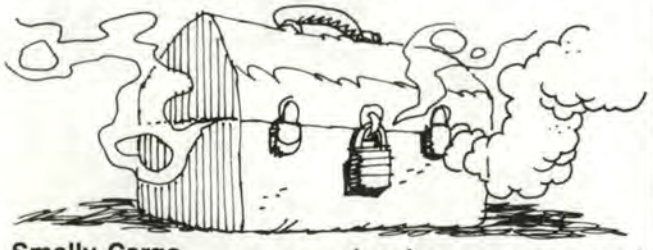
The F-16 pilot made a normal landing after an uneventful mission. After the aircraft crossed the parallel runway, the pilot noticed the dearm crew attempting to flag him down.

Since he didn't need dearming, the pilot taxied around them and continued to parking. As he approached the first row of parked aircraft, the pilot saw maintenance people running toward him with a fire extinguisher.

Now, they had his attention. He applied brakes and nothing happened. He released the brakes and tried again, with the same results. He switched on the parking brake and it grabbed momentarily and failed.

The pilot then noticed a large amount of smoke coming from his left wheel well. He shut down the engine and the Falcon coasted to a stop. The pilot quickly ground egressed, and maintenance chocked the nose tire. The brake continued to smoke for 15 minutes, but there was no fire.

The moral to this story is, don't ignore someone who is trying to get your attention. They just might be trying to save your hide.



Smelly Cargo

A C-130 was en route with 42 passengers and 2 pallets of tool boxes. The loadmaster noticed an odor like "Bondo" or polyester resin coming from one of the locked toolboxes. No one had a key to the toolbox.

Passenger reactions ranged from burning eyes and headaches to active airsickness. As the odor reached the flight deck, the crewmembers began to have headaches. The crew went on oxygen, declared an emergency, and ran the Smoke and Fumes Elimination checklist.

After the aircraft landed, maintenance and fire department people cut the lock off the toolbox. Inside they found 35 cans of various materials including polish, grease, adhesives, polyester resin, and plastic filler. Two cans were open, two were leaking, and two others were hot to the touch.

None of the hazardous materials were listed on the cargo documents. They were simply hidden in the toolbox. It is essential that TMO and aerial port people know what is in cargo and ensure hazardous material is properly packaged and documented.

Also, the aircrew must know what is being loaded on their aircraft and make sure it is properly handled and packaged. The crew must *never* accept locked containers without a key. The potential for disaster is frightening. See "Six Minutes to Eternity," *Flying Safety* magazine, July 1987.

Birds Will Be Birds

About 15 minutes after takeoff, the B-52 crew noticed the cabin altitude was climbing and they were unable to regain control of it. With everyone on 100 percent oxygen, they leveled off at Fl 250. The cabin altitude finally reached Fl 230 and stabilized.

The crew decided to continue the mission at lower altitude. But, as the aircraft descended through 16,000 feet, the navigator experienced a sinus block. The mission was aborted and the Buff made an uneventful landing 3.7 hours later.

Maintenance records revealed a chronic pressurization problem dating back 3 months. After each problem, the system was troubleshot and defective parts changed. Each time the system checked good on the ground. During this time, practically every part in the air conditioning system was changed, but the problem kept recurring.

Finally, unit maintenance crews began a teardown of the entire system. They found a large collection of debris in the left wing root ram air transition ducting halfway to the air conditioning pac. When removed, the debris filled a USAF clear plastic trash bag and consisted of nesting material placed in the duct by small birds.

To prevent this from happening in the future, the unit is installing plugs in this duct any time the aircraft are going to be on the ground for extended periods. Watch for openings in your aircraft that might be attractive to birds. ■

MAINTENANCE Matters

F-4: STUCK THROTTLE

■ Entering the low-level area during an air-to-ground mission, the F-4 aircrew encountered right throttle resistance at 85 percent. The throttle worked fine between 85 percent and afterburner, but would not retard below 85 percent.

After dumping fuel and returning to base, the pilot shut down the right engine with the master switch, and the investigation began. A quick check of the cockpit area revealed a freshly torn insulation blanket forward of the throttle arm.

Once the front throttle quadrant access panel was removed, it was easy to find the culprit. Directly in front of the right engine throttle arm lay an "antiskid inop" warning light lens cover.

This story actually began 10 sorties earlier when the same aircraft aborted for a missing cockpit antiskid light lens cover. It seems the lens cover was in place during the morning maintenance preflight, but was discovered missing by an aircrew who stepped to the jet later in the day. Although the missing lens cover was written up in the 781A with a Red-X symbol, things got a bit complacent after that.

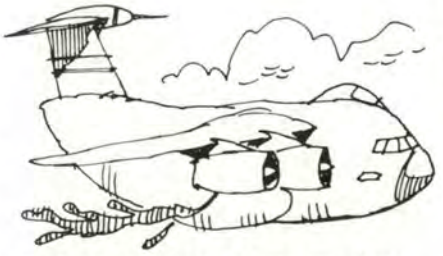
The crew chief conducted a brief search and signed off the forms as "No FO Noted" after not finding the lens cover. The unit NCOIC then added "Previously Removed" in the forms and signed off the Red-X.

While installing a new lens cover, the crew chief found the lens holder assembly defective, so he replaced it and the aircraft was released for flight.

It all seemed very basic — but then doesn't it always? A missing cockpit lens cover that couldn't be found.

It appears that an important answer to the mishap prevention question is discipline. The best brand of discipline is produced by requiring strict compliance with established and approved procedures.

Take a look at how you get others involved in looking for lost items, and make an honest evaluation of your FO clearing procedures. The last thing a pilot wants to face is a stuck throttle or stick. Think about it! Be responsible for your actions.



C-141 IN-FLIGHT EMERGENCY

A recent in-flight loss of a C-141 aircraft hydraulic system highlights the need for ensuring the proper hardware is used during repairs of aircraft components.

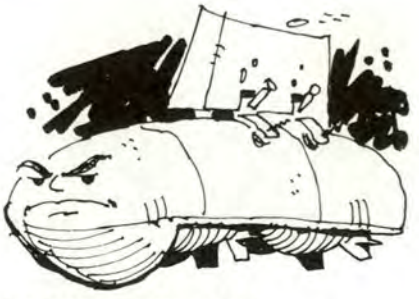
After approximately 3 hours of flight on a local mission, the C-141 lost the No. 2 hydraulic system. The aircrew complied with the Dash-1 procedures and landed uneventfully. A post-flight analysis revealed an incorrect rudder pack fitting on the input side of the No. 2 hydraulic system had failed, draining the entire system.

An aluminum fitting was used instead of the steel fitting called for in the technical order. Although an aluminum fitting may be used in the hydraulic return line, the fitting used in this incident was not of the approved specification. When the fitting was installed is unknown, but due to its green color coding, it may have been an oxygen or fuel type fitting.

A second problem points toward fitting failure through overtightening. In this case, the failure occurred in a very small area next to the rudder pack, making detection virtually impossible until the fitting separated during flight.

To lessen the chance of this error, the unit is now using steel fittings in both the input and return hydraulic lines. In addition, the maintenance folks were reminded not to tighten fittings excessively to stop hydraulic leaks when the problem might be a bad "O" ring.

This points out the importance of proper hardware. If a compatible substitution is used, annotate it in the aircraft forms so the proper part can be installed when available. Also ensure that fittings are tightened to technical order specifications. Putting that extra 1/4-turn on a fitting to stop a leak may only worsen the situation.



A BOY NAMED SUU

A qualified armament system crew was dispatched to an F-111E to troubleshoot a previous in-flight malfunction. The weapons crew chief instructed the first crewmember to perform the cockpit function of maintenance troubleshooting and the second member to check the aircraft forms and SUU-21s on board for status of bombs. When the latter member observed no safety devices, he assumed no bombs were loaded. So he applied electrical power to the aircraft and enabled the weapons system.

After depressing the bomb release button to verify an enabled

MAINTENANCE Matters

system, the cockpit member set all weapon switches for normal release and depressed the bomb release button again. When he did, a MK-106 practice bomb released from the SUU-21.

Investigation revealed the aircraft crew chief did not install safety devices in accordance with prescribed tech data, and the weapons crew did not adequately ascertain the status of the SUU-21 bomb load.

No matter how familiar you may be with an operation or how many times you've done it in the past, use the proper checklist or applicable technical directive. It's much safer using prescribed precautions when working around explosives. ■

TOO CLOSE FOR COMFORT

Since there have been a series of hazardous air traffic reports (HATR) involving runway incursions by vehicle operators, a few are worth mentioning.

The first HATR involved a vehicle driver, who after approaching the runway hold-line from an access crossing road, failed to stop due to inattention. Consequently, he proceeded past the hold-line and stop lights. Realizing his error, the driver quickly stopped and then backed up to where he should have halted, but not before the control tower initiated a go-around for an approaching aircraft.

The second runway incursion forced a flight of two F-15s on short final to go around. Here's what happened.

The control tower had received a call from central security control (CSC) requesting permission for a vehicle to cross the runway. Although the tower advised CSC to have the vehicle hold short and call back in a minute, the vehicle still pulled onto the runway.

So what happened? An investigation uncovered the following facts. Immediately after the intruding vehicle called for runway clearance, another vehicle called CSC. The CSC controller answered the second vehicle operator by saying "Go ahead," meaning to continue with the radio transmission. Although the intruding vehicle operator didn't hear the second vehicle's radio transmission, he did hear CSC say "Go ahead." The intruding vehicle acknowledged the radio call and proceeded to cross the runway until suddenly hearing CSC say "Negative, negative on the runway crossing." The intruder then moved back to the runway edge.

You might think this second HATR was a case of misunderstanding and poor communication, and perhaps it was. Looking back, few would argue that the phrase "proceed across runway (number)" might have been the words preferred instead of "go ahead." Communication, from the standpoint of ordinary understanding, is one of the most underestimated problems facing us today. We have warning lights to signal us of an active runway and radios to communicate the proper crossing clearance.

Yet warning lights and proper radio transmissions are only the beginning. How they are interpreted is just as important.

Training and instruction on proper runway crossing procedures should be stated so clearly that there can be no chance of misunderstanding. Published procedures should be so exact that there can be no possibility of individual interpretation. The supervisor can then concentrate on checking the work, rather than correcting the worker and answering questions from the unit safety office.

The bottom line on crossing runways is to understand the procedures and use caution. Don't contribute to a potential mishap by crossing a runway unless you have a clear authorization to do so.

ASSUME NOTHING — CHECK EVERYTHING!

A subcrew was dispatched to an A-10 to perform an aircraft weapons functional check. After dearming the left side of the aircraft and assuming his partner had dearmed the right side, crewmember one entered the cockpit to operate the switches.

Using the aircraft intercom system, crewmember one asked his assistant if station 8 had been dearmed. Hearing no answer, our man in the cockpit assumed it was completed and depressed the weapons release button, firing the carts. They later found the assistant's headset was inoperative.

Have you ever thought about the number of maintenance mishaps that result from personnel error because someone assumed the wrong thing? Some of the excuses that are offered for these incorrect assumptions include: "I thought he had done it . . . In all the rush, I forgot the last step . . . I've done this task a hundred times and just can't see how I could have missed that step."

The bottom line is *don't assume anything*. Effective communication among aircraft maintainers can prevent mishaps such as this. ■

MAIL CALL

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

What Would You Do?

■ The article, "What Would You Do?" on page 28 of the June 1987 issue stated, "There is no peacetime mission that can't be flown another day." To this I reply with three words: Search and Rescue.

I'm sure other readers can think of other peacetime missions which can't be "flown another day."

PAUL B. RICE, 1Lt, USAF

You have a point. There is a basic difference between a routine training flight and an operational search and rescue mission. Thanks for making that distinction clear.

However, the basic point we were trying to make is still valid. You must minimize the risk on any flight. While you might accept more degradation on a rescue mission than on a training flight, you still have to make sure the risk is acceptable. You will only complicate the rescue problem if you add another downed aircraft and crew to the situation because you took an aircraft that wasn't capable of completing the mission.

Perhaps it would have been more accurate if we had said, "There is no peacetime mission that can't be flown on another day or in another aircraft." Thanks again for your letter and for helping clarify the point of the article.

"HEAT STRESS"

I have been a reader of *Flying Safety* since my days as a UPT student at Webb AFB, and have always found the magazine to be of interest and value. Although I am now a "Squid" flying the C-9 in the Navy Reserve instead of my trusty Phantom, I still read *Flying Safety*.

In the June 1987 issue, there are two items I take exception to — "Survival Tips" on page 13 and "Heat Stress" on page 15. Regarding "Survival Tips," presentation is the item I disagree with. The picture presented is referred to in the text as the *wrong* way to dry your boots. I feel quite strongly that the *wrong* way should never be the *sole* graphic presentation. If someone is not interested enough to read the entire accompanying text, the impression he could very easily get is that this picture represents the *correct* way to do things, as the correct way to accomplish an action is what is usually presented. It is also well established that a visual depiction is much more lasting than a textual description (the old "a picture is worth a thousand words" idea). Please consider this point in the future when choosing pictures to accompany your fine articles.

The second problem is a bit more involved. In discussing heat stress and preventive actions, both straight dehydration and salt loss were discussed. After reading the article, I spoke with a research physiologist at the University of Washington's University Hospital. The information I received from him differed from the article on two counts. First is "Increasing water intake to a point where you feel you will float away is beneficial when working in the heat." I was told that while drinking more than normal would certainly be needed, the body adjusts to such "water loading" by processing more water through urination, and that this could add to the depletion of electrolytes (salts) too rapidly. The guidance I received was to drink certainly more than normal, but not to just gorge myself on water.

Second, and more important to my mind, are the statements that "To prevent heat exhaustion due to salt depletion, ensure an adequate intake of salt as well as fluid. Generally, *liberal salting of the food* is all that is required . . . . " Frankly, I was astonished to read this. Research has highlighted recently not only that most of us can get more than enough salt from the normal foods we eat, but that high sodium levels are extremely damaging to the cardiovascular system and a serious health threat in the United States today. During my discussions with the University Hospital, I was told that the normal diet's providing enough salt is especially true of Americans, who eat a large proportion of prepared foods, already containing an overabundance of salt. The idea that pilots might somehow be paying better attention to their diets and, therefore, would need additional (liberal?) salting, is somewhat ludicrous from personal observation (and participation) in "normal" aircrew eating habits. Also, they told me that while salt loss might be higher than normal on the first day of exposure to an abnormally hot environment (one to which a person was not acclimatized), by the third day, the body would have adjusted markedly to the environment, and such an increased salt intake would certainly not be necessary. *Please* consider publishing a further article in *Flying Safety* clarifying this point so that guys don't go out there and say "Ah, I always liked salt, and now the guys at the Safety Center are telling me it's good to add to my food, so watch out, french fries!" By the way, I was told that an excellent source, although it was written about experiences in Singapore during WW II, is *Heat Stress and Heat Disorders*, by Leithead and Lind.

Finally, I have a recommendation for the "What Would You Do?" section, which I think is an excellent addition to the magazine. My civilian job is in a manufacturer's safety department, and we are currently working smoke evacuation and persistent smoke problems in large jet transports. How about posing a situation like the one attached? I have put it in the form used in the magazine, but feel free to alter it as you see fit. We have become quite concerned that aircrews will not give proper credit to in-flight fires and may try to continue to destination because they *think* the fire is out without really knowing. Our current philosophy is developing toward "if you cannot *absolutely* ascertain the fire is OUT, divert to and land at the *nearest* suitable airport, using an emergency descent and possible max performance stop on the runway, followed by an evacuation.

Thanks for listening. I have tremendous respect for your magazine, and was really surprised to find these two

items — the first time in about 8 to 10 years of reading that I can recall finding something I disagreed with enough to write in about! I hope you will forgive the longwindedness of these comments, but I wanted to make sure my points were clear. And thanks, as well, for continuing to provide *Flying Safety* as the consistently high quality publication that it is.

ALAN H. GUREVICH
Lt, USNR-R

Thanks for your kind comments and for taking the time to write us about your concerns. You have some valid points and obviously spent some time in researching the subject. We'll try to answer your objections.

First, the easy one. Good catch on the survival tip. You're right about the importance of using the correct illustration to get a message across. We intended to do that but the small space available for the illustration made it look as if the boots were, in fact, over the fire instead of off to the side. We will be more careful in the future.

Now the complicated one. We got help from our life sciences people for the "Heat Stress" questions. The statement, "Increasing water intake to a point where you feel you will float away . . . " was made to emphasize the importance of drinking more than just enough to satisfy your thirst. Perhaps we could have worded the concept another way.

According to our experts, there is little probability that one would continue "water loading" to the point that frequent urination would severely deplete electrolytes. Depletion of electrolytes from "water loading" might more likely occur from vomiting. Not too many crewmembers will continue to overdo the water intake when that's the reward.

We agree that the statement, "Generally, liberal salting of the food is all that is required . . . " was not the best choice of words to use. You are correct in stating the normal *diet of* most *crewmembers contains* more than enough *salt.*

It's difficult to give general guidance on this subject. With the current concern for health, there are people who make a concerted effort to avoid salt altogether. Those people may need to add some salt in hot weather. We certainly don't intend to recommend increasing salt intake above prudent levels.

We believe our resident aerospace physiologist, Lt Col Freeman, summed it up best in this way. "When it's hot, everything in moderation *except water intake, and* nothing to excess, *including water and salt intake."*

Thanks again for helping us set the record straight. We enjoy hearing from our readers and appreciate your help. ■

What Would You Do?

IN-FLIGHT SMOKE

■ While in cruise over the CONUS, the pilots received a call from the cabin that smoke was coming out of the aft sidewall area, and crewmembers were attempting to find the problem. A report a couple of minutes later indicated that while it appeared the smoke had slowed down considerably, they had not found the actual source. Two halon extinguishers had been emptied into the general area where the smoke seemed to be heaviest, and there were no other problems indicated in the cockpit and no popped CBs.

What Would You Do?

a. Continue the mission to the destination, telling the cabin crew to remain alert for further problems.

b. Request a divert to the nearest military installation from ATC, and carry out a routine descent and landing there.

c. Declare an emergency and request vectors to the nearest suitable airport for the aircraft, executing an emergency descent and maximum performance stop, evacuating all passenger and crew as soon as the aircraft comes to a halt.

The correct answer is c. Perhaps one of the few things that can strike terror into the most intrepid pilot's heart is an in-flight fire because, simply put, there is nowhere to go to get away from it until the aircraft is on the ground. Even worse is the fact that the fire itself is not what will get you, so much as the toxic fumes that most fires produce. So when fire/smoke, especially from a hidden fire or unknown source, is discovered or makes its presence known, it is imperative the pilot acts quickly to first determine the extent of the problem, and second, take action to get the aircraft on the ground NOW, before passenger well-being is affected by smoke, or worse, smoke gets so dense you cannot see outside the aircraft. Your smoke goggles *may* keep the smoke out of your eyes, but won't help if the vis inside the cockpit is only 3 inches, a condition which can occur *very* rapidly. ■

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.

FIRST LIEUTENANT

Scott G. Walker

8th Tactical Fighter Wing

■ On 15 August 1986, Lieutenant Walker was flying an overwater redeployment mission. Lieutenant Walker was in IMC at flight level 260 and in contact position on a KC-10 when his F-16A experienced an engine flameout. He disconnected from the boom, started a descent, and performed the appropriate lost wingman procedures.

As the engine's RPM dropped below 60 percent, Lieutenant Walker, still in IMC, performed a successful unified fuel control restart. Leveling off at flight level 180, he realized his INS battery had failed when his engine flamed out. His INS platform dumped, and Lieutenant Walker was forced to use the standby attitude indicator to maintain aircraft control. He immediately started a climb to flight level 400 and turned towards the nearest alternate airfield.

Lieutenant Walker regained his INS platform; however, the navigation data to his alternate airfield were no longer available. Since his closest alternate was not TACAN equipped, still over 200 miles away, and his aircraft was perilously low of fuel, Lieutenant Walker coordinated for the tanker to turn around for a rendezvous.

Lieutenant Walker flew a flawless rendezvous to the tanker using his air-to-air TACAN and onboard radar to obtain bearing and range to the KC-10. He then received a full load of fuel and, accompanied by a flight lead, successfully diverted into an alternate airfield. WELL DONE! ■

U.S. GOVERNMENT PRINTING OFFICE: 1987 — 779-045/60003

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.

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John G. Jilke
Rodney E. Williams

SERGEANT
Steven W. Rucker
George H. Harman
Daniel L. Nelson

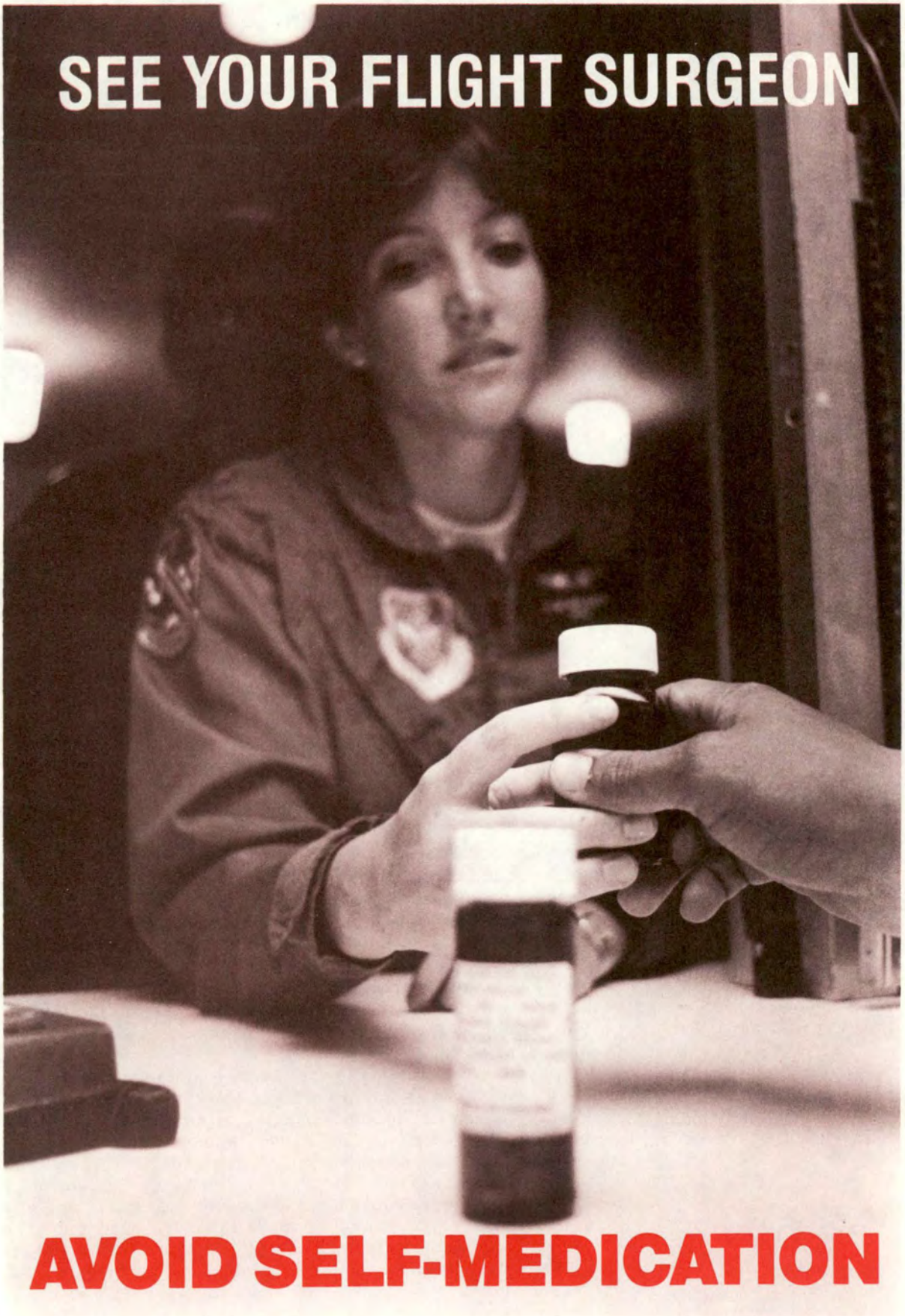
436th Military Airlift Wing
Dover Air Force Base, Delaware

■ On 15 August 1986, Major Minner and crew were to fly their C-5 to an airshow for static display. Immediately after takeoff, the crew heard a loud noise and the nose landing gear failed to indicate up. On visual inspection, the nose gear doors appeared to be partially open. Realizing they had a serious in-flight emergency due to the possibility the gear might not extend, Major Minner entered holding at the departure base for troubleshooting.

Technical experts recommended the crew try several procedures to lower the nose gear, but none were successful. As it became more and more obvious the nose gear would not extend, Major Minner directed the crew to prepare for an emergency landing.

Fuel had become critically low, so Major Minner requested the runway be foamed. He made one last unsuccessful attempt to lower the nose gear as they flew a low approach over the airport and pulled up into a closed pattern for the landing. The landing was normal through main landing gear touchdown approximately 1,500 feet from the approach end.

Despite the crew's detailed explanation of foaming requirements, the runway was not properly foamed, and the airplane quickly passed the foamed area. Major Minner used full aft elevator and nose up trim to keep the nose gear off until reaching 65 knots. At that time, he began to lose elevator effectiveness and smoothly lowered the nose to the runway. The aircraft slid approximately 1,500 feet before coming to a stop. The passengers and crew were evacuated without injury. WELL DONE! ■


SEE YOUR FLIGHT SURGEON
AVOID SELF-MEDICATION