AEROSPACE

SAFETY • MAGAZINE FOR AIRCREWS

DECEMBER 1979

We

in the Directorate of Aerospace Safety

wish you a glorious Christmas and a safe and successful New Year

Garry A. Willard Jr.

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Brig Gen, USAF
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UNITED STATES AIR FORCE

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BACK COVER

Taken from an idea suggested by Lt Col Ralph C. Jensen, 128th TASW Chief of Safety with help from MSgt Bill Winter, SSgt Fred Freeman and Sgt Carla Erwin of the 115th CSS Photo Lab and Graphics Section.

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SPECIAL FEATURES

REGULAR FEATURES

DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, USAF

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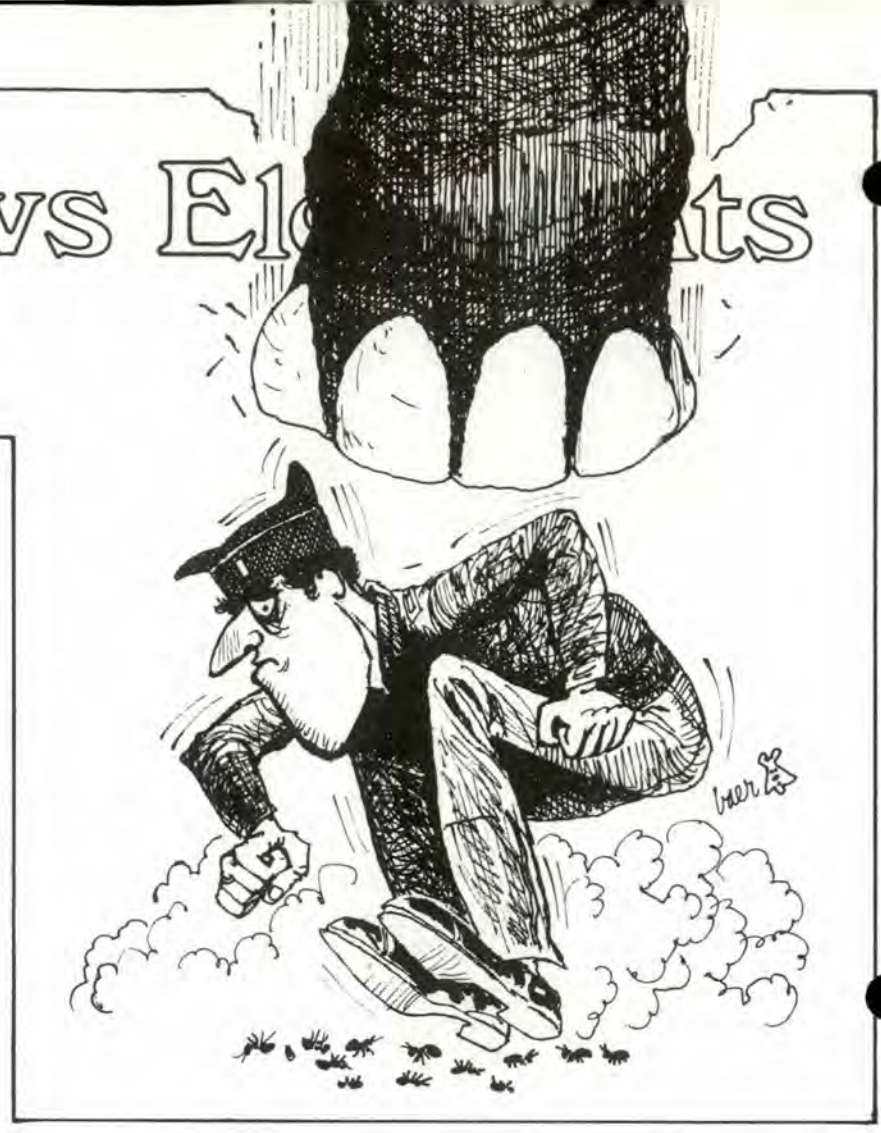
Ants vs Elephants

MAJOR GARY L. SHOLDERS
Directorate of Aerospace Safety



■ There I was, hanging on the wing, fat, dumb, unhappy, in the thickest goo in the world. All of a sudden, ZAP!! The leader pulled a disappearing act. What now? Let's see, was it 30 degrees away for 15 seconds, 15 away for 30, what am I, nr 3 or nr 4? Okay, I guess I'm out of his way now, what comes next? Look at that hud, what's all that junk trying to tell me? Where's that ADI anyway? Let's see, Brown is down. . . .

Imagine yourself for a moment in the above situation trying to recall your lost wingman procedures. Being a fairly standard fighter jock myself, I have a difficult time getting motivated to remember all that gobbledegook about which way I turn for how many seconds, etc. I suppose that it's easy to sanctimoniously sit back in your easy chair and say, "A good pilot will mentally review his lost wingman procedures prior to penetration into known or suspected visible moisture conditions" or some such bureaucratic pronouncement like that; but in fact, it just isn't done. Why not?

Let me share a little personal philosophy to answer that question. First of all, how many fighter jocks that you know will ever admit that they fell off the wing? I certainly won't. Why the heck should I worry about that lost wingman thrash when I know in my heart that I'm good enough to hang on in a seven G night weather Immelmann? In other words, the best lost wingman procedure is to be good enough to prevent it in the first place. That, folks, is an elephant.

What I'm talking about here is an attitude that I suspect is consciously or subconsciously shared by a lot of people in the fighter community. I suppose you could call it an attack of "it can't happen to me" disease. Pride tends to effectively quell any burning desire to retain knowledge that only counts in stan/eval tests. Attitude notwithstanding, I think that other little gremlins at work here add to our problems.

Returning now to my lost wingman example, let's suppose that I was hanging on the wing and my leader decided to fly through some black paint. I will concede that under these circumstances even I, the world's finest fighter jock, just *might* have to go single ship. In the time compressed environment that is present during a lost wingman situation, I have to be able to separate ants from elephants. I doubt if any one in the whole world is capable of instant and total recall of every little procedure that applies to every situation. After all, the book is on the ground; when action is required right now, one can get himself in real trouble vainly trying to remember what it says. There are a couple of things that you can do, however, that will keep your slim, trim body in one piece.

I have a friend who draws a

There is an old adage which states that "elephants tend to stomp on you while you're stomping on the ants."

"tactical parallel" for everything that he does in an airplane. In the traffic pattern, for example, he doesn't turn base; he rolls in on the runway. The tactical parallel is one of his ways of separating ants from elephants. Basically, all he is doing is reducing every problem to manageable size by defining the important stuff. In one way or another, every good pilot uses similar devices. When your mind has just reached computer overload, the common sense, "KISS" (keep it simple, stupid) approach is the only way to fly an airplane.

A tactical parallel for the lost wingman bit might be: You have just gunned down a MIG-21 and are trying to jink away from the exploding debris and duck into a nearby cloud to escape an Atoll that is threatening your tailpipe. Far out, I guess, but it effectively illustrates the actions that will keep you from killing yourself; namely: Get separation and simultaneously get on the gages as you find yourself alone in the weather. Now that you've avoided your Leader – avoid the world – maintain aircraft control. These two things are the elephants.

Well, what about all that other jazz? If you can remember degrees and seconds for every conceivable situation while under pressure, more power to you; you're a better man than I. In the context of the situation that we are talking about, however, degrees and seconds are ants. Suppose you were to turn 60 degrees for 20 seconds or (God forbid) use 45 degrees of bank? I can tell you what will happen 99.99999 percent of the time. As long as you don't ignore the elephants, your wing stan/eval or local coroner will never know.

I'm not trying to teach anybody how to go lost wingman. After all, since I won't admit to any practical experience on the subject, I'd be a poor teacher. The lost wingman situation does provide a timely example to show my own personal philosophy on sorting out the important stuff. There is a considerable amount of evidence (mostly in the form of smoking holes) that shows that there are plenty of jocks around who have forgotten (or perhaps never learned) how to do that.

And that lack has been costly: Crews have run themselves into mountains because they were trying to stay VFR under the weather. I guess they thought that they would instantly vaporize if they went into a cloud without a clearance. One troop somehow managed to run into a grain elevator on a low pass. I wonder what was on his mind? About a million jocks have pulverized themselves looking at a pipper instead of the ground. And, last but not least, what about all of those low-level skip hits that have been going on? I'll bet a buck that some of those dead folks were gazing at a radar altimeter or some such device instead of the ground. I personally find it hard to believe that anybody could clobber something that he's looking at. And so it goes. . . .

Well, what can we do about it? Let me sign off with a few thoughts:

1. TO THE JOCK: Teach yourself to recognize the difference between ants and elephants. During every flying task that you perform, basic airmanship "elephants" will stomp on you unless you deal with them as first order of priority. By using the tactical parallel or some other "horse sense" logic device, you can effectively define one or two central actions from every written procedure or flying task that will represent the basic thing that you are trying to accomplish. Hang on to these one or two actions. They are usually vital to your continued well being.

2. TO THE INSTRUCTOR: You are singlehandedly capable of shaping the attitudes of your students. Concentrate your teaching energies to make sure that each one knows how to recognize and cope with the flying pitfalls that can kill him. Encourage him to think his way through every flying situation instead of merely reciting things and flying airplanes by rote.

3. TO THE STAFF TYPE: Remember where you once were and will be again. Does that syllabus, procedure, mission profile, test, or employment tactic that you are writing up adequately describe the elephants? Or does it assign equal weight to the ants? I really do wonder sometimes whether we are responsive to the needs of our jocks in this respect; it seems like an awful lot of our written work serves to confuse rather than clarify.

The bottom line – we all care – make sure we *do* separate the ants from the elephants. ■

U.S. NAVAL TEST PILOT SCHOOL ALUMNI

An effort is underway to update the USNTPS Alumni Records. To ensure your receipt of a Reunion/ Symposium invitation, please send your current address to:

Administrative Officer
U.S. Naval Test Pilot School
Naval Air Test Center
Patuxent River, Maryland 20670

Have you heard about this one?

MAJOR ROGER L. JACKS
Directorate of Aerospace Safety

"Statistics are like a bikini. What they reveal is suggestive, but what they conceal is vital."
Aaron Levenstein

■ Statistics show that since 1976 over 65 percent of the "heavy" (B-52, C-135, C-141, C-5 and C-130) Class A mishaps can be attributed to the operations area as opposed to logistics. Within that grouping we can identify a variety of crew and supervisor shortcomings. What we can't do in most cases is to identify the motive that caused the mishap to occur.

As noted management consultant, Peter Drucker says, "We know nothing about motivation. All we can do is write books about it." And, that is what we in the safety business have been doing; writing on the numerous factors that adversely motivate the aircrew member, i.e., stress, complacency, fatigue, mind sets, physiological and psychological limitations. A verbal shotgunning action in hopes of changing a few attitudes and preventing an aircraft mishap.

Recently, I came across an article by Marine Major C.L. Bacon in *Safety Sentinel* entitled the "Wild Hair Syndrome" that was another attempt to explain aircrew motivation. Major Bacon asks the question "Why in the world do sensible men, seasoned aviators, all of a sudden do something that they know is wrong, stupid or unnecessarily dangerous?" Bacon says the answer may be the Wild Hair Syndrome; giving in to an impulse to be reckless, irrational, lazy, unprofessional, or any number of other states of mind that are hazardous to your well being.

All of us at one time or another have been faced with the Wild Hair Syndrome, and I would venture to say we have all succumbed to its inviting challenge. It may not have happened to you in an aircraft yet, but odds are you have experienced its magnetism in your daily activities.

As fliers, we must avoid its devastating results. How? Major Bacon says by "realizing its symptoms, its onset, its characteristics; and, just as a bad case of hypoxia, take corrective action to avoid its fatal results."

"The most important factor is to remember that no one is immune to this syndrome – no one." Occasionally, a supervisor will have a crew member who is a "chronic crazy." It's the duty and responsibility of supervisors to get this person out of the cockpit. He'll be doing the crew member, our aircraft, and our mishap rate a favor.

A good hedge on the Wild Hair Syndrome is to read and heed the mishap lessons of days gone by. When an urge starts tingling one's skin to take an unnecessary and risky short cut or an impulsiveness to be reckless prevails, it pays to keep in mind all those things that have been tried before with a miserable success rate.

We very seldom come up with a really unique way of wiping

ourselves out in aircraft mishaps. It is generally just a variation of a tried and true method. George Bernard Shaw once said, "If history repeats itself, and the unexpected always happens, how incapable must man be of learning from experience." Unfortunately, our recent "heavy" Class A mishaps support Shaw's position. Let's review some of the "heavy" Class A's.

A C-135 was making an approach in weather and failed to level off at minimum approach segment altitude and impacted on the ground killing all persons on board. Crew coordination, checklist procedures, forgetting to reset the altimeter and channelized attention all contributed to this one.

Or, how about the "heavy" that after taking off from home station lost its radar. Weather at the destination airfield was predicting thunderstorms for their arrival time. The crew pressed on. While enroute, they were advised that thunderstorms were in progress and were forecast to remain in the area for their arrival time. The crew pressed on. In the vicinity of the destination airport the ground radar controller advised the aircrew that he could not provide vectors through or around the weather. The crew pressed on. The aircraft encountered extreme turbulence, crashed, and killed all onboard.

How about a mishap with a combination of supervisory and operational shortcomings. This crew was behind the power curve before the aircraft even took off. A newly upgraded aircraft commander was teamed with an inexperienced copilot and then sent to an unfamiliar destination with a visually deceptive runway. Add to this scenario, a copilot who had violated crew rest regulations and was in a questionable state of health to effectively assist the aircraft commander and you have an accident in the makings. During landing, the aircraft commander experienced a visual illusion, mistook the length of runway remaining, tried to initiate a go-around, stalled the aircraft and crashed.

Other human factor mishaps included the illegal use of antihistamines, poor or nonexistent crew coordination, using unauthorized methods for mission accomplishment, violation of the maximum flight duty period, IP's allowing students to exceed their capabilities and then not taking timely corrective action, inadvertently raising the landing gear, allowing unqualified crew members to perform crew duties and several incidences of improper supervision.

Do some of these sound familiar? Sure, they have occurred more than once in the past, and chances are they will cost us more aircrews and airplanes in the future, unless each aircrew member and supervisor makes a commitment to collectively attack the human factor mishap. A step in the right direction is guarding against the Wild Hair Syndrome.

A point to keep in mind is that the Wild Hair Syndrome has two modes of operation. It can be active or passive. We've discussed the active, here are a couple of examples of the passive. The supervisor who sees an unsafe act being committed, knows he should do something about it, but for some reason does nothing to stop the event from occurring. A passive action capable of producing deadly results. The same passive mode applies to aircrews. The crew member who is supposed to be monitoring the pilot's approach, and by all outward appearance it looks as though he is as he stares at the instrument panel. In reality he is in dreamland, blissful complacency, planning his weekend activities.

We've talked about the problem and its potential for being hazardous to a person's health. What we haven't discussed is how to avoid the Wild Hair Syndrome. The first step is being aware there is a phenomenon that entices people to do "off the wall" things. The second step is to believe it can infect anyone's thinking. In other words, we're all candidates. The next step is to recognize the onset symptoms. From this point on it is a matter of determination. Determination not to be one of its victims. ■

REFERENCES

Bacon, Major C.L., "Wild Hair Syndrome," Fourth Marine Aircraft Wing Safety Sentinel, *Vol VII No 4 Jul/Aug 1979.*

X-COUNTRY NOTES

This trip we visited about a dozen USAF installations and came across some items worthy of mention.

IDEAS AND NOTES

■ PPR—The PPR status is being used as a management tool by many airfield managers. This is not necessarily bad but needs to be closely monitored. If a condition or situation exists which calls for a prolonged PPR status, make sure that it doesn't turn into a crutch. If you really need to reduce the numbers of transients because of operational commitments or safety problems, you may want to think OBO instead of PPR. Bottom line—PPR used for sequencing or servicing priorities will not automatically make you ineligible for the Rex Riley award.

NOTAMS—Five out of ten bases I checked in one week had the hourly update NOTAM summary at least 45 minutes old and still posted. Something needs to be done with them—check it out! Those NOTAMs are the current status to the crews and going into a weather situation, they could mean land, divert or. . . . By the same token—crews need to spend more and more preflight time checking NOTAMs (effective time), IFR supps, FLIP documents and approaches prior to takeoff. There is a wealth of info about destinations, routes and alternates spread between many documents. Protect thyself!

MANNING—I don't pretend to know the intricacies of the personnel system, but I do know that something is wrong when you walk into Base Ops and the one dispatcher on duty is trying to answer PTD, process flight plans and manifests, and inspect pax at the same time. Although austerity is rampant, the Base Ops counter should carry a high priority for well-qualified personnel because they not only are the life blood of your transient program, but they also affect your local base aircraft and mission accomplishment. This is one area in which you cannot afford to stand short or inexperienced!

HIGHLIGHT NOTAMS—Something neat that a lot of folks used to do seems to have dropped by the wayside. It only takes a moment but really saves crew time, if someone will underline or highlight the names of the states on the NOTAM sheets. (Folks at AFCC say it's not taboo and it sure helps.)

MARSHALLERS—We had several instances where the TA personnel either put power on the aircraft or pulled chocks without being signaled. It's critical that the ground and cockpit folks communicate safely and correctly either by interphone or visual signals. It's probably a good time

REX RILEY
Transient Services Award

for both aircrews and ground personnel to review AFR 60-11. ALSO—those who do any aircraft marshalling need to remember that they are the eyes and ears of the crew! It's not a position that can afford a half-hearted effort. By the same token, the aircrew has the responsibility of briefing the groundcrew as to procedures desired for preflight, start and taxi. Ground personnel can't read your mind and may not be familiar with your aircraft or local signals.

ATC SERVICES—We rarely say much about the approach control, tower, and ground control services at bases. We by no means want to slight the outstanding efforts by these folks, but we don't really know the nuts and bolts of their business. When we transit a base, we put down comments about service and communications, but if there seems to be a deep-seated problem, we holler for help from the experts in AFCC at Scott AFB.

RETAINED AWARDS

McCLELLAN AFB—Probably the most "together" place we stopped this trip. TA really tries; billets are good, Base Ops super, on and on. A good stop or RON. Watch the traffic—super high midair potential in the area!

FAIRCHILD AFB—Not enough time for a full check, but what we saw was good. Base Ops folks are conscientious and TA gave us outstanding service. Winter weather, strange fogs, and distant alternates make planning and weather checking good insurance.

OFFUTT AFB—Still lots of traffic and only one runway, but a good place to stop. Possible refueling delays for VIPs, but I've never seen the two hours as advertised. Dangerous crosswinds through the buildings and close taxi distances make vigilance a must.

ANDREWS AFB—Still climbing! New flight plan room and TA's working toward good service for all! They still have priorities and procedures that boggle the mind at times, but the attitude toward regular non-code transients is one of service.

No new additions to the list, but we stopped at some "not so shiny" places. The big items that busted these places have all been said before and if you go for a sum total, they add up to "attitude." Big or little, busy or not, regardless of MAJCOM, North, South, East or West—the key element is *attitude*. If the folks at a base can empathize with aircrews and work at providing safe, efficient service, the result is generally success! Good turns or bad . . . write Rex Riley, AFISC/SEDAK, Norton AFB, CA 92409. ■

LORING AFB	Limestone, ME
McCLELLAN AFB	Sacramento, CA
MAXWELL AFB	Montgomery, AL
SCOTT AFB	Belleville, IL
McCHORD AFB	Tacoma, WA
MYRTLE BEACH AFB	Myrtle Beach, SC
MATHER AFB	Sacramento, CA
LAJES FIELD	Azores
SHEPPARD AFB	Wichita Falls, TX
MARCH AFB	Riverside, CA
GRISSOM AFB	Peru, IN
CANNON AFB	Clovis, NM
LUKE AFB	Phoenix, AZ
RANDOLPH AFB	San Antonio, TX
ROBINS AFB	Warner Robins, GA
HILL AFB	Ogden, UT
YOKOTA AB	Japan
SEYMOUR JOHNSON AFB	Goldsboro, NC
KADENA AB	Okinawa
ELMENDORF AFB	Anchorage, AK
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RAF MILDENHALL	UK
WRIGHT-PATTERSON AFB	Fairborn, OH
CARSWELL AFB	Ft. Worth, TX
HOMESTEAD AFB	Homestead, FL
POPE AFB	Fayetteville, NC
TINKER AFB	Oklahoma City, OK
DOVER AFB	Dover, DE
GRIFFISS AFB	Rome, NY
KI SAWYER AFB	Gwinn, MI
REESE AFB	Lubbock, TX
VANCE AFB	Enid, OK
LAUGHLIN AFB	Del Rio, TX
FAIRCHILD AFB	Spokane, WA
MINOT AFB	Minot, ND
VANDENBERG AFB	Lompoc, CA
ANDREWS AFB	Camp Springs, MD
PLATTSBURGH AFB	Plattsburgh, NY
MACDILL AFB	Tampa, FL
COLUMBUS AFB	Columbus, MS
PATRICK AFB	Cocoa Beach, FL
ALTUS AFB	Altus, OK
WURTSMITH AFB	Oscoda, MI
WILLIAMS AFB	Chandler, AZ
WESTOVER AFB	Chicopee Falls, MA
McGUIRE AFB	Wrightstown, NJ
EGLIN AFB	Valpariso FL

HATR PERSPECTIVE

■ What do you think about AFR 127-3, The Hazardous Air Traffic Report (HATR) program? Your job in the Air Force may have a lot to do with how you look at it. If you are an aircrew member, you might say:

1. What's an HATR?

2. It's a good way to tell people when someone else really screws up in the air.

3. It's a good near midair collision reporting system.

MAJOR JOSEPH YADOUGA
Directorate of Aerospace Safety

4. It's not worth a _____!

If you are an Air Traffic Controller you might think:

1. It's pilot oriented and out to get the controller.

2. It's a good way to retaliate and get even with a pilot.

If you are a safety officer, you might think:

1. It's a pain in the _____!

2. There is too much work involved. I've got more important things to do than answer some pilot's complaint.

3. It is an effective way to identify and correct problem areas.

If you are a CATCO (Chief, Air Traffic Control Operations), you might think:

1. An HATR is a good way to get in trouble with the Wing Commander or with your area HQ.

2. Your OER is affected by the number of HATRs that your facilities receive.

If you are a headquarters safety or air traffic type, you might view it a little differently:

1. It's a good way to measure the effectiveness of the safety program at base X.

2. The number of HATRs at a particular base tells me a lot about that base's air traffic control system.

3. The number of HATRs can tell me a lot about the relationship between flying safety and air traffic control.

There are others, too. This list is by no means exhaustive. In 2½ years of working with 127-3, I have heard many other comments about it. Here is the way I see the HATR program.

During the program's infancy (it began in June 1976), I was working with the FAA at Kansas City Center. As a result, when I arrived at the Air Force Inspection and Safety Center in the summer of 1977, I couldn't even spell HATR. I quickly learned how.

1. The HATR program is a good near midair collision (NMAC) reporting system, but is is more than that. It is a system for reporting and investigating all NMACs and air traffic conditions considered to be hazardous. NMAC's are a big part of it, but we want to attack these other problems early – before they result in a near midair or, even worse, a midair collision.

Improve aviation safety by identifying and correcting deficiencies in the air.

2. The goal of the HATR program is to improve aviation safety by identifying and correcting deficiencies in the air traffic and airspace system. These reports are not misdemeanors; therefore, they should be used for mishap prevention and not for disciplinary action.

3. The end product of an HATR investigation is not what is done to the controller or pilot, but what is done for the system. The actions taken must clearly be system improvements and readily perceived as such by all involved. The managers and supervisors involved must take pains to ensure that their actions fall within this context and are not misconstrued to be anything else.

4. By itself, the number of HATRs that base X has versus the number at base Y is meaningless. A high number of HATRs may be a positive indication that there is an extremely aggressive safety program at that base and that people are working together to solve their problems, and they are getting the word to the people who are in the position to do something about them.

5. An absence of reports is not necessarily proof that all is well and the operation is flawless. It could indicate a general lack of awareness of the HATR program and a lack of confidence in the capabilities and desires of supervisors and managers to correct the deficiencies without retribution to those responsible for making them known.

6. HATRs can tell us a lot about the effectiveness of the safety program, the ATC system, and the relationship between ATC, safety, and the flying organizations. But, it is not the number of HATRs that tells us these facts. It is the substance, the investigation, the manner in which problems were handled and corrected, that give us this information.

7. The HATR program does require hard work. It takes time to properly investigate a report. It takes time to prepare and send out messages. It takes time to effect changes in procedures or to educate people.

No matter how you look at it, it's worth the effort. ■

Pilot's Role in Collision Avoidance

AIR FORCE COMMUNICATIONS COMMAND
Scott AFB, IL

■ During 1978, 34 midair collisions (MAC) occurred in the United States resulting in 190 fatalities. Of the 190 fatalities, 144 resulted from the collision between an airliner and a light airplane and included fatal injuries to seven persons on the ground. Most of the midair collisions occurred in good weather during the hours of daylight. During the same period, the FAA reported there were 495 near midair collisions (NMAC) in the US; a 29 percent increase over 1977.

Several significant programs designed to reduce the potential for midair and near midair collisions have been introduced (i.e., altitude readout, traffic conflict alerting, TCAs in highly congested areas). The need also exists for all pilots to recognize the human factors associated with near midair conflicts.

The following nine areas warrant special attention and continuing action on the part of all pilots to avoid the possibility of their becoming involved in midair conflicts:

"See and Avoid" Concept

The flight rules prescribed in AFR 60-16 and Part 91 of the Federal Aviation Regulations (FAR) set forth the concept of "See and Avoid." This concept requires that vigilance shall be maintained by each person operating an aircraft, when weather conditions permit, *regardless* of whether the operation is conducted under Instrument Flight Rules (IFR) or Visual Flight Rules (VFR). Pilots should always keep in mind their responsibility for continuously maintaining a vigilant outlook regardless of the type of aircraft being flown. Remember that most midair collision mishaps and reported NMAC incidents occurred during VFR weather conditions and the hours of daylight.

Visual Scanning

Pilots should look out in all directions and periodically scan the entire visual field. Remember that performance capabilities of many aircraft, in both speeds and rates of climb/descent, result in high closure rates limiting the time available for detection, decision, and evasive action.

The probability of spotting a potential collision threat increases with the time spent looking outside, but certain techniques may be used to increase the effectiveness of scan time. The human eye tends to focus somewhere, even in a featureless sky. In order to be most effective, the pilot should shift glances and refocus at intervals. Most pilots do this in the process of scanning the instrument panel, but it is also important to focus outside to set up the visual system for effective target acquisition.

Effective scanning is accomplished with a series of short, regularly-spaced eye movements that bring successive areas of the sky into the central visual field. Each movement should not exceed 10 degrees, and each area should be observed for at least one second to enable detection. Although horizontal back-and-forth eye movements seem preferred by most pilots, each pilot should develop a scanning pattern that is most comfortable and then adhere to it to assure optimum scanning.

Peripheral vision can be the most useful in spotting collision threats from other aircraft. Each time a scan is stopped and the eyes are refocused, the peripheral vision takes on more importance because it is through this element that movement is detected. Apparent movement is almost always the first perception of a collision threat and probably the most important, because it is the discovery of a threat that triggers the events leading to proper evasive action. Visual search at night depends almost entirely on peripheral vision. In order to perceive a very dim light in a certain direction, the pilot should not look directly in this direction, but scan the area adjacent to it. Short stops of a few seconds will help to detect the light. Lack of brightness and color contrast during the daytime and conflicting ground lights at night increase the difficulty of detecting other aircraft.

Pilots are reminded of the requirement to move one's head in order to search around the physical obstructions, such as door and window posts. These

posts can cover a considerable amount of sky, but a small head movement may uncover an area which could be concealing a threat.

Clearing Procedures

Prior to taxiing onto a runway or landing area for takeoff, a pilot should scan the approach areas for possible landing traffic by maneuvering the aircraft to provide a clear view of such areas. It is important that this be accomplished even though a taxi or takeoff clearance has been received. During climbs and descents in flight conditions which permit visual detection of other aircraft, execute gentle banks left and right at a frequency which permits continuous visual scanning of the airspace about you. Execute appropriate clearing procedures before all turns, abnormal maneuvers, or aerobatics.

Airspace, Flight Rules, and Operational Environment

Pilots should be aware of the type of airspace in which they intend to operate to comply with the flight rules applicable to that airspace. Aeronautical information concerning the type of airspace is disseminated by three methods: aeronautical charts (primary); the Flight Information Publication (FLIP) and Airman's Information Publication (AIM); and the Notice to Airman (NOTAM) System. The general operating and flight rules governing the operation of aircraft within the United States are contained in AFR 60-16 and Part 91 of the FAR. General operating and flight rules governing the operation of aircraft outside the United States follow the guidelines and procedures of the respective countries and the International Civil Aviation Organization.

Pilots should use current aeronautical charts for the route and area in which they intend to operate. They must note and understand the aeronautical legend and chart symbols related to airspace information depicted on the charts. They should develop a working knowledge of the various airspace segments, including the vertical and horizontal boundaries. A working knowledge of the specific flight rules governing the operation of aircraft within the various airspace segments should be developed.

Use the FLIP/AIM. Airspace segments and basic pilot responsibilities for operating in the airspace are described in these manuals. New aircraft and related equipment require frequent FLIP updates. Operating procedures are revised to meet these new requirements. An example of new information is the airborne sketches that were developed and modified to meet the demands of new navigational guidance systems. Pilots must keep abreast of the latest changes in FLIP. Always obtain NOTAMs pertinent to your area of operation.

Pilots should also be familiar with, and exercise caution in, those operational environments where they may expect to find a high volume of traffic or special types of aircraft operation. These environments include airport traffic patterns, particularly at airports without a control tower; airport traffic areas (below 3,000 feet above the surface within five statute miles of an airport with an operating control tower); terminal control areas; control zones, including any extensions; federal airways; vicinity of VORs; restricted areas; warning areas; alert areas; military operating areas; military low-level high-speed training routes; instrument approach areas; and areas of high density jet arrival/departure routings, especially in the vicinity of major terminals and military bases.

Use of Communications Equipment and Air Traffic Advisory Services.

One of the major factors contributing to the likelihood of NMAC incidents has been the mix of known arriving and departing aircraft with *unknown* traffic in terminal areas with operating control towers. The known aircraft were in radio contact with some function of the tower (local, approach, or departure control) and the other aircraft were not in two-way radio contact and unknown to the tower at the time of the NMAC. This precluded the tower from issuing traffic advisory information to either aircraft.

Although pilots should adhere to the necessary communications requirements when operating VFR, they are also urged to take maximum advantage of the air traffic advisory services available to VFR traffic.

Flying in Formation

During 1978, several midair collisions occurred which included two aircraft on the same mission with each pilot aware of the other's presence. Pilots who are required by the nature of their operations to fly in formation are cautioned to recognize the high statistical probability of their involvement in midair collisions. They must make sure that adequate preflight preparations are made and the procedures to be followed are understood by all pilots intending to participate in the mission. Always keep the other aircraft in sight, despite possible distraction and preoccupation with other mission requirements.

Instructors and Flight Examiners

The role played by flight instructors in training pilots to conduct flight operations in today's increasing air traffic environment with maximum attention

continued on page 20

OPS topics

Shock Treatment

■ Recently, a loadmaster received a shock through his headset when lightning struck in the area. A static discharge traveled through wet ground and the interphone cord, which was laying on the ground. He had some temporary hearing loss. A weather advisory did not reach the flight line until five minutes after the loadmaster was shocked. A similar incident several months ago reportedly resulted in permanent hearing damage to another loadmaster.

Snow Fall/Downfall

Fresh snow and a gray-white winter day make up dangerous conditions for flying. The pilot has no shadows with which to gauge depth while in the air, and when trying to take off or land may find the runway condition deceptive due to the covering blanket of snow.

One pilot attempting to land on a snow-covered runway failed to notice a two-foot rise, just short of the runway threshold, due to the camouflaging effect of the snow. The nose gear struck it and broke off, causing substantial damage to the plane as it slid to a stop 300 feet beyone the runway threshold.

In another instance, a pilot was unable to distinguish the runway terrain from the air and in landing, struck a 15-inch high, ice-crusted snowdrift and nosed over. – Alaskan Air Command.

Smoke and Fumes Checklist

Ever wonder why the IP always berates you for putting your checklist and other sundry goodies on the instrument panel glare shield?

Other than the fact that the checklist can slide off the panel during takeoff and inflict grievous injuries, depending on where it lands, here is a better reason for not putting anything on the glare shield.

During the final phase of a formation approach, the C-130 copilot placed his checklist on the glare shield above the instrument panel. In the landing flare the copilot noticed smoke coming from the area of the checklist and wind shield. He picked up the checklist and it immediately burst into flames. Quickly, he dropped it to the floor and stomped out the fire with his size tens. Smoke, fumes and no doubt some confusion followed, but the crew was able to complete the formation landing (as well as the smoke and fumes elimination checklist) without further incident.

What happened? When the copilot tossed the checklist on the glare shield, the wire binder on the checklist cover made its way under the rubber boot that shields the windshield heat electrical terminal. Contact! Current flowed through the wire, heated it up, and set the checklist binder on fire.

There is nothing proposed to make checklist binders out of Nomex, but we can tell you that the glare shield is not a good place to store anything. – Sqn Ldr John C. Griffiths, RAAF, Directorate of Aerospace Safety.

Double Check

Several F-4 units reported some defective two-way check valves on the escape system pneumatics. As a result, a number of the MAJCOMs directed their units to accomplish a one-time inspection of the system by doing a continuity check with air and suggested renewed emphasis on proper maintenance procedures. The air continuity check requires disconnecting pneumatic and ballistic components and then reconnecting them afterward.

An F-4 WSO initiated a sequenced ejection due to an apparent out-of-control condition below 10,000 feet in bad weather. His ejection was without incident, but the pilot's seat did not eject. Fortunately, the pilot was able to recover the aircraft and land it.

The connection between the two foregoing paragraphs is the fact that the pilot's seat did not eject because the canopy did not jettison. It did not jettison because a double-check valve in the system had been left disconnected. The fix? Another one-time inspection – visual only, though. – Mr. Delgado, Directorate of Aerospace Safety.

Switchology

The A-37 pilot was number 2 in a flight of three on a syllabus training bombing mission. The aircraft was configured with B37K-1 practice bomb containers. The Lead briefed to use the "manual" mode and "pairs" so as to pickle a bomb from each outboard rack on the first pass. Number 2 asked no questions of Lead, even though he later said he was unsure of the required switch settings. As the flight entered the range, number 2 calculated that the only way he could obtain the "pairs" function was to use the "drop" side of the mode selector. He set the switches and confirmed the lights. On the first pass – you guessed it – both outboard bomb racks departed the aircraft. Moral – if you don't know – ask. P.S. His score is not available. – Major James Gillespie, CF, Directorate of Aerospace Safety.

Disorientation

■ After flying 6 hours, crew was assigned a routine night flight. Both pilots were slightly perturbed over having to make the flight. Pilot was known to be apprehensive in the past about night flights. As the helicopter approached the field, pilots asked that tower lights be turned off because they blinded them. Tower obliged, with the only remaining light coming from flashlight held by ground handler. Pilot continued approach without turning on landing lights or searchlight. Aircraft hit ground 75 to 100 yards short of touchdown point, appearing to fly into the ground in a normal descent attitude. Terrain elevation at impact site was 30 feet higher than the area at nearby control tower. Seconds before crash, crew chief heard copilot ask pilot if he wanted the landing lights or searchlights turned on. Pilot replied, "Yeah, I guess so.

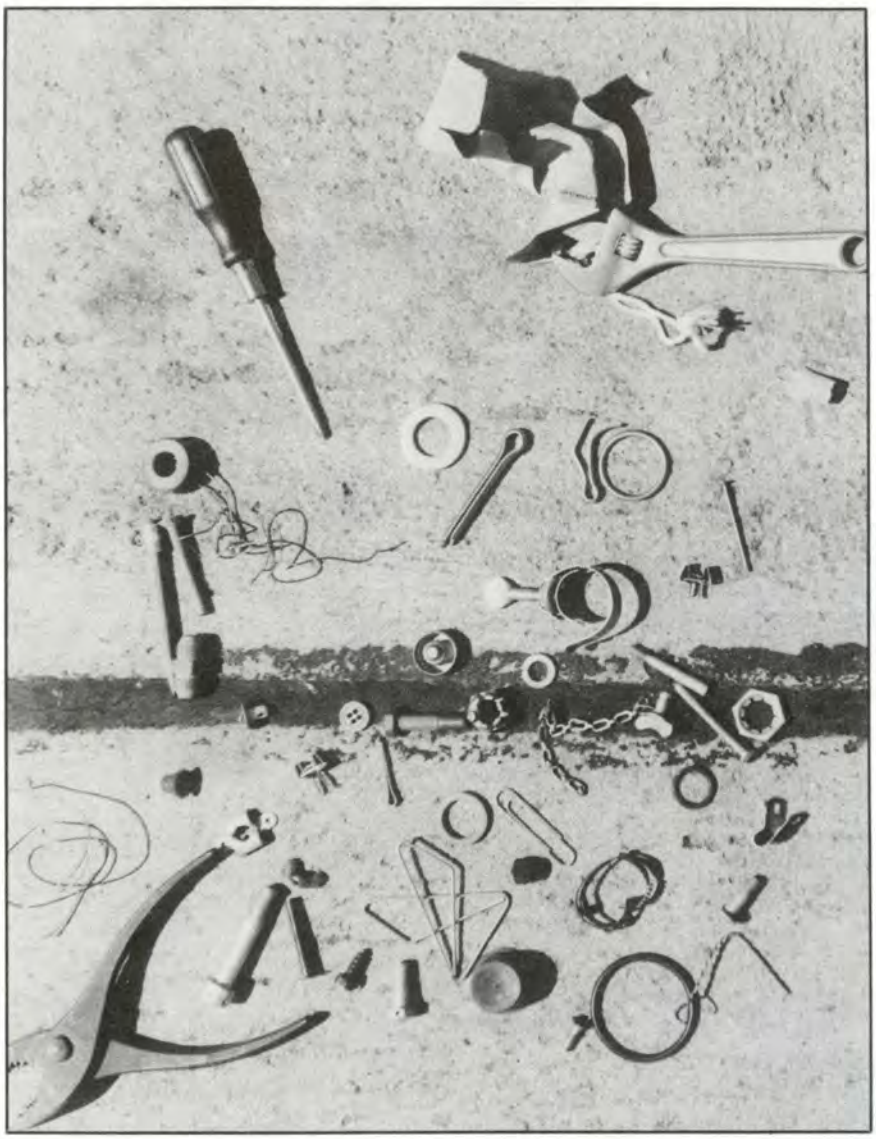
■ After refueling at night, pilot lifted aircraft to hover and moved toward a nearby tiedown, using the aircraft search light to maintain ground reference in the poorly illuminated area. Dust on the surface of the taxi strip was lifted into the rotor wash, resulting in IMC. With the searchlight still on and reflecting from the dust cloud, pilot tried an instrument takeoff. Aircraft hit ground in nose-low attitude, bounced, and went into right turn with rotor hitting ground at 45° angle. – Courtesy *Flightfax*.

Near Midair

The USAF aircraft was on final when the pilot was issued a traffic advisory for traffic at 11 o'clock. The pilot, however somehow fixed 3 o'clock in his mind. Surprise! Several seconds later he saw a civilian twin pass under him from left to right about 200 feet away. This is a case of that classic term, channelized attention. Sometimes it is an altitude (descending to 2,000 the aircraft struck a hill at 6,000). In this case the pilot apparently locked on 3 o'clock and didn't scan much elsewhere, even tho there was no traffic at 3 o'clock. ■

Battle status report...
USAF versus FOD

MAJOR PHILIP M. McATEE • CAPTAIN WILLIAM E. KOHLENBERGER • Directorate of Aerospace Safety



■ Engine foreign object damage is nothing new to us; however, recently, use of our total repair cost reporting coupled with the ever increasing cost of new materials have highlighted the consequences. We now see more clearly the high dollar cost of this preventable damage and its effect on our mission capability.

The battle against FOD has been on for some time now with action continuing on several fronts. But, how are we doing? Are we winning? The answers to these questions are not clear-cut!

In Figure 1, we see the dollar cost of FOD for 1977, 1978 and through August of 1979. Several rule changes make the table a little difficult to interpret. First, in 1978 we began to use a table in AFR 127-4 which depicts average overhaul costs for engines returned to the depot for repair. Formerly, we had used 17 percent of the engine's cost. Also in January 1979, we changed the lower limit for Class B mishaps from 10,000 to 50,000 dollars which is reflected in the shift from Class B to Class C mishaps.

But still you can see that FOD is continuing to cost us a lot.

Which aircraft causes us the most FOD? As you can see in Figure 2, the principal ''players'' remain similar from year-to-year. Fighter/attack/trainer aircraft always take the lead, mainly due to the fact that there is a lot of structure and, therefore, a lot of maintenance going on *in front* of the intakes. However, there has been a really significant reduction in F-4 FOD this year which is very encouraging. It looks like many of the MAJCOM's programs

Figure 1

FOD COSTS

	1977	1978*	JAN-AUG 1979**
CLASS A	NONE	NONE	NONE
CLASS B	6,201,750	5,357,823	1,167,336
CLASS C	925,216	557,986	2,165,286
GROUND	1,959,100	1,511,398	1,212,916***
TOTAL	9,136,066	7,427,207	4,545,538***

*Actual cost for depot overhauled engine by AFR 127-4 Table—Jan 73
**Mishap cost categories changed—Jan 79
***Incomplete due to ground mishap time limit.

Figure 2

FOD RATES (HIGH A/C)
(INTENT FOR FLIGHT ONLY)

MDS	(1977) NUMBER MISHAPS	RATE*	MDS	(1978) NUMBER MISHAPS	RATE*	MDS	JAN-AUG (1979) NUMBER MISHAPS	RATE*
F-4	154	18.34	F-4	167	21.00	F-4	67	12.57
F/FB-111	35	38.31	F/FB-111	36	22.57	T-38	30	6.89
F-15	12	14.16	C-130	30	2.15	F/FB-111	29	23.07
A-10	4	11.96	A-10	23	25.80	F-15	22	17.75
F-5	3	5.78	F-15	19	13.76	F-5	10	23.31
			F-5	8	13.08	C-130	9	.93

*Rate per 100,000 engine hours.

Figure 3

FOD CAUSES (HIGH A/C) 1978

	UNDETER.	BOLT, SCREW, NUT RIVET FASTENER	A/C HARDWARE (OTHER)	METAL OBJECT	TOOLS, FORMS, RAGS, HEADSETS, FLASHLIGHT	ASPHALT, ROCKS, CONCRETE	SAFE PINS, GROUND WIRES	AGE, COVERS	RICOCHET	TOTAL	ICE (NOT IN TOTAL)
F-4	43	67	10	27	11	2	7	0	0	167	0
F/FB-111	11	10	3	4	3	1	1	0	0	33	3
A-10	4	10	4	0	0	0	0	0	0	18	5
F-15	8	4	3	2	0	1	0	0	0	18	1
F-5	1	4	0	0	2	1	0	0	0	8	0
F-105	2	1	0	1	0	1	0	0	0	5	0
TOTAL ALL AIRCRAFT	117	119	22	38	27	15	9	1	0	348	18
MISHAPS	117	141				90				348	
%	33.6%	40.5%				25.8%					

Figure 4

FOD CAUSES (HIGH A/C) 1979 (THRU AUG)

	UNDETER.	BOLT, SCREW, NUT RIVET FASTENER	A/C HARDWARE (OTHER)	METAL OBJECT	TOOLS, FORMS, RAGS, HEADSETS, FLASHLIGHT	ASPHALT, ROCKS, CONCRETE	SAFE PINS, GROUND WIRES	AGE, COVERS	RICOCHET	TOTAL	ICE (NOT IN TOTAL)
F-4	34	19	7	6	0	0	0	0	1	67	1
T-38	15	1	5	1	5	1	0	2	0	30	0
F/FB-111	9	8	2	5	1	3	0	1	0	29	0
F-15	10	8	1	0	1	1	0	0	1	22	0
F-5	4	1	0	3	1	0	1	0	0	10	0
C-130	9	0	0	0	0	0	0	0	0	9	0
TOTAL ALL AIRCRAFT	109	50	19	16	8	8	2	3	2	217	25
MISHAPS	109	69				39				217	
%	50.2%	31.8%				18.0%					

are beginning to prove their worth. On the other side of the coin, several aircraft rates, including the T-38 and F-5, have increased – showing a need for more attention.

In Figures 3 and 4, we show the aircraft with the highest number of FOD mishaps by cause for 1978 and through August of 1979. The lower part of each table shows the totals for each of our subjective causes for all USAF aircraft. We have broken the causes into three groups and each group's percentage of the totals:

- Undetermined.
- Hardware we believe came from the aircraft.
- Objects external to the aircraft.

Since FOD caused by ice is not included in the rates but is becoming significant, it is shown on the right of each table.

One area that really hurts, is the large number of undetermined FOD mishaps we have each year.

It appears that we are coming to grips with the aircraft hardware problems but still need to improve on the "carelessness" type of mishap. And the carelessness is not confined to

maintenance personnel. Aircrew hats, let-down plates, maps and pencils also are taking their toll.

In Figure 5, the significant increases and decreases by MAJCOM are shown. Again, note the improvement in the TAC and USAFE F-4 rate. We will let each reader draw his own conclusions about what caused the changes. However, we do know that in several of the improved areas, a lot of effort was expended.

One area that really hurts, is the large number of undetermined FOD mishaps we have each year. When we know what caused the FOD, we are able to take preventive measures, i.e., hardware modifications or procedural changes, but when the cause is undetermined, there is very little we can do. Our statistics tend to bear this out. On the undetermined mishaps, we have made no headway at all.

So we *do* need better FOD investigations. Often when we really try, a lot can be learned about the source of the foreign object. Such questions as: What maintenance was last performed? what panels were last removed? what was the aircraft's history since its last flight? are there any impressions on the blades? etc., will quite often give the investigator clues. Of course, a complete inspection of the aircraft for missing hardware (include a check of other aircraft on the same mission) should always be performed. The answer may not appear until the engine is opened and bits of residue are found.

But please make sure your investigation is as complete as possible before you give up. Make "undetermined" a cause of last resort because we all lose.

Well, the war is still on. What can you do to help? We have made a list of what we believe are the requirements for a successful FOD program:

■ *Attitude* – A concerned attitude from the commander on down.

■ *Education* – To ensure people are aware of the unique hazards.

■ *Motivation* – To keep FOD prevention on people's minds.

■ *Enforcement* – To ensure correct Ops and maintenance practices are being followed.

■ *Through Investigation* – To find the cause, correct it and prevent recurrence.

■ *Correct and Controlled Hardware.*

There are several practices which, if strictly followed, will go a long way to help us in our battle:

■ Adequate taxi intervals.

■ Effective sweeper program.

■ Effective tool control program (CTK).

■ Nondestructive inspection (x-ray).

■ Controlled bench stock.

■ Intake repair rivet accountability.

■ Use of bunny suits.

■ Protective covers for intake and openings.

■ Proper maintenance of intake screens.

So it appears that we are making progress, but the battle is far from over. Remember, FOD is preventable, but to win this war will take an all out effort from everyone starting with the commander and going down to the newest crew chief or technician. We *can* win! Now, let's all really start to fight! ■

Figure 5

FOD MISHAP COMPARISON
BY MAJCOM/AIRCRAFT
JAN-AUG 1978 vs JAN-AUG 1979

INCREASE				DECREASE			
ACFT/ MAJCOM	1978	1979	CHANGE	ACFT/ MAJCOM	1978	1979	CHANGE
ATC T-38	12	28	+16	TAC F-4	59	26	−33
TAC F-111	11	20	+ 9	AFE F-4	33	12	−21
TAC F-15	10	17	+ 7	TAC A-10	12	3	− 9
MAC H-1	1	8	+ 7	MAC C-130	14	5	− 7
ANG A-7	0	6	+ 6	SAC B-52	9	4	− 5
AFE F-15	2	7	+ 5	AFR C-130	5	1	− 4
TAC F-5	4	8	+ 4	LDG C-130	4	0	− 4
AFR A-37	0	3	+ 3	AAC F-4	9	5	− 4
ANG C-130	1	4	+ 3	AFR F-105	4	1	− 3
ANG F-4	3	6	+ 3	MAC T-39	5	2	− 3
ANG F-105	0	3	+ 3				

	1978	1979	CHANGE
TOTAL NR:	292	255	−37
TOTAL $:	$4,351,186	$4,545,538	+$194,352

letter to rex

■ Aircrews frequently have difficulties completing the DD Form 175 because they don't fully understand the form and subsequently, just what information is required. Here is a quick look at some of the problem areas:

■ Initial Cruising Altitude – The entry in this block of the 175 indicates the altitude or flight level requested for the first leg of flight. If there will be known altitude changes en route, you have the option of indicating the proposed altitudes and location in the flight plan remarks section, e.g., "FL350 at ABQ," or when airborne, request altitude changes by voice with the Air Route Traffic Control Center.

■ Standard Instrument Departure – The SID is designed to provide a safe, orderly transition from the departure end of the runway to the en route structure. When available, the codified SID identifier should be entered, or if there is no code, then enter the SID name and number. Some flying units collect SIDs from various bases and pilots going out on stopover flight plans use them when departing stopover locations. SIDs, like everything else, frequently change, and normally only the departing Base Ops can be counted on to have the up-to-date SID for that airfield. The bootlegged copy in the squadron could be noncurrent. When a Radar Vector or VFR climb type of departure is desired, the pilot will indicate this request in the remarks section of flight plan. Next to the SID data is the "TO" block. When a SID is used, you should enter "Termination Point" or published Transitional Fix using the coded transitional identifiers, if available. If a Radar departure or VFR climb is requested, enter the fix planned for entering the route structure.

■ Hours of Fuel on Board – For filing purposes, this block should reflect that enough fuel is available to cover every event shown on the 175 plus reserve. Events include, but are not limited to: ETE to destination, en route delays, ETE to alternate, time for required penetrations and other preplanned approaches and patterns at destination. If inflight refueling is anticipated, then additional flight time available will be shown.

■ Distance to Destination – If you file a VFR flight plan, the distance is from the base of departure to the base of destination. For IFR, it is from departure base to the initial approach fix for approach to destination or initial approach fix for STAR routing. On stopover flight plans, the distance used is based on distance from originating base to first stop.

■ Flight Plan Approving Authority – The pilot-in-command will sign as approving authority on the DD Form 175 if he possesses his own approving authority (all Air Force pilots with instrument ratings possess their own approval authority unless it has been specifically withheld). The pilot-in-command will sign the "Pilot-in-Command" block of the flight plan if not acting as his own approving authority. Normally, the only time the pilot-in-command block will be signed is when a student pilot is flying a solo mission. If the flight is a formation, the pilot designated as Formation Commander signs as approving authority. His is the only signature required as long as he is indicated as the pilot-in-command. His signature indicates that each pilot member of the formation possesses an instrument rating if any portion of the flight is to be conducted under IFR conditions, and that he is aware of his responsibilities for the safety of the aircraft/formation and its occupants.

■ Remarks – There are two different types of remarks. The first type is anything essential to the safe and efficient control of air traffic, such as refueling altitudes, aircraft equipment limitations (i.e., TACAN only), military training route information, departure requests (i.e., radar vectors, VFR climb) and etc. The second type remark involves data for an informative nature that is passed between bases. For example, VIP/passenger/cargo codes, mission identification code and servicing requests are among the types of information that are included.

That's a quickie on some of the 175 entries that aircrews frequently question. The thing an aviator should remember when filing a flight plan is that he is using the 175 to communicate with several people. Write clearly, keep it simple, and exercise common sense. ■

Gin and... SODA?

COLONEL WILLIAM F. BELK, MC • Directorate of Aerospace Safety

■ Not too long ago, I asked for a gin and tonic in an Army Club and the waitress served me a horrible tasting concoction. After trying unsuccessfully to get her to exchange it for the real thing, she told me:

"We can't serve tonic water. The quinine in it is dangerous. An Air Force pilot crashed and they found it was due to tonic water."

Army policy required temporary grounding of any pilot who drank quinine water. So, the club simply substituted soda whenever tonic was requested.

The waitress didn't have all the facts straight, but that little bit of hospitality certainly enlivened the conference we were attending.

True, quinine is a drug with considerable toxicity. Quinine ingestion can even be fatal; however, drinking more than one's weight in tonic water would be required to reach that dose. When quinine is used therapeutically, at much lower doses (equivalent to seven liters of tonic water three times a day), toxic symptoms still occur frequently. Most often these are ringing in the ears, nausea, headache, visual disturbances, loss of hearing, and vertigo. Some individuals are much more susceptible and develop symptoms after a single dose or with small repeated doses.

Quinine undoubtedly can be dangerous, but the evidence that drinking tonic water leads to aircraft accidents is not quite as strong as the waitress indicated. In the mishap that precipitated the current concern over tonic water, neither the safety board nor any of the review authorities listed quinine as a cause. They concurred in the opinion of an independent expert that it may *possibly* have contributed to the difficulty the pilot had in resolving his disorientation but did not cause the disorientation. Prior and subsequent mishaps with that particular aircraft type lend credence to the latter conclusion.

On the other hand, the possibility that very small amounts of quinine could affect equilibrium functions of the inner ear has been demonstrated in the laboratory. Further studies will be necessary to quantify the effect and to shed light on the real importance of this finding. In the interim, it might be prudent for aircrew members to eliminate tonic water from their diet. While neither the USAF Surgeon General nor the USN Surgeon General recommended grounding of aviators drinking quinine water, they both took interim action to publicize the possible adverse effects and caution aviators against use of tonic water.

The root problem is considerably bigger than the current concern with quinine. On a daily basis, we are exposed to a wide variety of substances that could have adverse effects on performance. The home medicine cabinet is the source of most of these substances but others come in food and drink. Toxicologic studies on aircrews involved in mishaps show some have flown after taking prescriptions or over-the-counter drugs. Many of the latter are used so commonly that they are considered innocuous. Even when the adverse effect has been quantified and warnings published, prior experience may lead an individual to discount that advice.

Unfortunately, cold or hay fever maladies often are treated this way. Although the antihistamines they contain have been linked to accidents on the ground as well as in the air, most of us have used these prescriptions for colds and continued to drive our cars without being involved in a mishap. Accidents are infrequent occurrences. Even if the risk were doubled, they still would be infrequent, and most people would escape unscathed. That type of personal experience often leads one to continue to ignore the warning, perhaps in a more demanding environment.

A side effect common to all antihistamines is sedation. They dull the mind and slow reflex activity. Other side effects include dizziness, ringing in the ears, lassitude, incoordination, fatigue, and visual disturbances. Faced with the evidence of therapeutic levels of the drug and obvious failure of the crewmember to perform, USAF aircraft mishap investigation boards have attributed some accidents to ingestion of these drugs.

In recent years, salicylates have been the drugs most often found on

toxicologic study of aircraft mishap crewmembers. Aspirin is the most frequently used drug in the salicylate group. No USAF aircraft accidents have been attributed to aspirin ingestion, but annually in the US, salicylates cause more poisonings than any other single agent. Among the side effects important in aviation are gastric distress, nausea, vomiting, tinnitus, vertigo, and hypersensitivity. Aspirin also increases the metabolic rate and oxygen consumption as well as causing changes in acid-base balance. It is estimated that 0.2 percent of the population will develop hypersensitivity to aspirin. This is usually manifested as an asthma-like reaction or, less frequently, as a rash. One doesn't need these distractions while trying to fly an airplane.

The belladonna alkaloids are frequently found in over-the-counter cold prescriptions, as well as in many prescription drugs for gastrointestinal disorders. They are used to reduce secretions of the nose, mouth, and respiratory tract and reduce motility of the intestines. These substances also can affect pupil size and accommodation, resulting in undesirable visual side effects. In addition, many of the prescription drugs for G-I disorders contain phenobarbital for its sedative effect. Mild sedation and disturbances in vision are acceptable when you're at home and at rest, but not while piloting an aircraft.

Many other types of drugs are readily available. The tranquilizers generally have a sedative action, slow reflexes, and decrease vigilance. Their specific anxiety ablating actions may further delay emergency responses. Sleeping pills and over-the-counter sleep aids have some not so obvious disadvantages. They can interfere with the quality of sleep, leaving individuals less rested than if they had obtained natural sleep. Diuretics and other high-blood pressure medications can cause weakness, fainting, or decreased tolerance to gravitational stress. (Hypertensive aircrew members whose blood pressure is controlled by certain medications, whose condition is stable, and who are under appropriate close medical surveillance can be acceptable risks. This is not true if they are taking drugs which have not been adequately tested for the flight environment, their dosage is not controlled, or they are not under proper medical surveillance.) Perhaps the most important thing to remember is that all drugs have side effects that can reduce your ability to perform to your maximum.

Equally as important as the drugs and their side effects are the underlying illnesses. Virtually all the conditions for which drugs could be taken will interfere with an individual's performance. At the very least, the symptoms will be distracting. At worst, sudden pain may obliterate all other sensory input.

How about food or drink? Today's crewmember knows alcohol will impair his performance, but may be surprised at how little is necessary. In recent years, the direct effect of alcohol hasn't been a problem in USAF aircraft accidents. Yet, 72-hour histories indicate that either many of the individuals involved in mishaps are remarkably hangover resistant or they don't believe morning after symptoms will interfere with their ability to fly. Some have added one or more drugs (aspirin and antacids) presumably to calm the symptoms before boarding their airplanes. Odds being what

Gin and... SODA? continued

they are, those individuals are likely to function much better with the aspirin than they would with the headache, but the best answer is to avoid the hangover in the first place.

In the beginning, vitamins came to us in our food. Today they seem to come in case lots by way of the local health food store. If you eat a balanced diet, aren't pregnant, and don't have a disease that interferes with absorption of nutrients, you don't need vitamin pills. Excessive vitamin intake can be toxic. This is particularly true of vitamins A and D. Excessive amounts of some of the others may not harm you, except in the pocketbook, but they're not going to help you either.

If the plug were suddenly pulled on all the coffee pots in the Air Force, the immediate disruption of productivity and job satisfaction would likely be devastating. There is no good evidence that a cup of coffee in the morning is harmful to a healthy individual. However, coffee and tea contain caffeine, a potent stimulant. One to two cups of either beverage are equivalent to a therapeutic dose of caffeine. At this level, its main actions are to speed the thought process, decrease reaction time, reduce fatigue, increase sensitivity of the senses, improve the quality of thought, and increase intellectual stamina. It also has a variety of effects on the heart, blood vessels, kidney, and gastrointestinal tract none of which poses any particular problem for a healthy adult. At higher doses, however, it can result in disturbing symptoms such as restlessness, excitability, disturbed sleep, irregularities of heart beat, and tremor. With coffee, a whole lot is not better.

Today you are flying aircraft in training scenarios that allow very little margin for human error. Competitiveness, pride, and motivation drive individuals to stretch the limits of their capabilities during exercises. The decrease in alertness accompanying a minor illness or self medication may cost you your life. Neither your family nor the Air Force can afford that loss. ■

The Professional Approach continued from page 11

to collision avoidance cannot be overemphasized. Flight instructors must set an example in carefully observing all regulations and recognized safety practices, since their students will consciously or unconsciously imitate the flying habits of their instructors. Flight instructors should guard against preoccupation during flight instruction to the exclusion of maintaining a constant vigilance for other traffic. They should be particularly alert during the conduct of simulated instrument flight where there is a tendency for the instructor to "look inside." Special training emphasis must be placed on those basic problem areas of concern mentioned here where improvements in pilot education, operating practices, procedures, and techniques are needed to reduce midair conflicts. They should understand and explain the limitations of radar that frequently may limit or prevent the issuance of radar advisories by air traffic controllers.

Flight examiners should direct their attention to the applicant's vigilance of other air traffic and adequate clearance of the area before performing any flight maneuver. They should direct their attention to the examinee's knowledge of the airspace, available air traffic services and facilities, essential rules, good operating practices, procedures and techniques that are necessary to achieve high standards of air safety.

Scan Training

Effective scanning techniques, as outlined above, are essential to the "See and Avoid" concept. Each pilot should receive extensive training in these techniques. The Aircraft Owners and Pilots Association (AOPA) Air Safety Foundation has developed an excellent education program designed to inform pilots on effective visual scanning techniques. The program, called "Take Two and See," is available on loan through the AOPA Air Safety Foundation, 7315 Wisconsin Avenue, Washington, D.C. 20014.

As you can see, the pilot's role in the prevention of midair collisions is critical. Improvements in pilot education, operating practices, procedures and techniques, as outlined above, can greatly reduce midair conflicts. And remember, regardless of whether you are operating IFR or VFR, always adhere to the "See and Avoid" concept.

The preceding article is an adaption of FAA Advisory Circular 90-48A, adapted by Maj James Smith, HQ AFCC/IFFS. ■

the big sleep

MAJOR WILLIAM R. REVELS • HQ 15 AF • March AFB, CA

■ Early morning wake-ups are tough at best; the unexpected ones are always murderous. A T-39 alert crew found themselves groping for telephones at "O-Dark: THIRTY," groaning at the news of an unplanned mission.

The scenario wasn't totally unfamiliar. A Friday alert day, with little chance of flying, and lots of things to do around the house. Crew rest? Sure, a nap later— then early to bed tonight. The day passed without incident and evening came around with no mission assignment. A quick call to the command post confirmed my suspicion that nothing was brewing. Might as well catch the evening movie, then hit the sack. Not really a bad day— the grass is cut, pool cleaned out, garage uncluttered, and the living room rearranged. The wife is happy, the chores are done, and there's a whole weekend left for golf. By midnight, the world was truly a rosy place.

The sting came around 0200. Unexpected maintenance problems with the scheduled aircraft. Brigadier General Humphrey Bogart has a speaking engagement in Denver. Takeoff time is at 0400, but hustle because the ceiling is dropping at Denver. Grim news for a sleepy fellow to say the least, but no hill for a climber. One cup of coffee on the way to Base Ops, then another after level-off should clear out the fuzzies.

Adrenalin is great for demanding situations. The body nearly always comes through under stress, no matter how ill-prepared it may be. This particular mission was no different. The weather held at 400 feet, General Bogart was profuse with gratuitous remarks, and the world was beginning to look rosy again. First a little breakfast, then a quick flight back to home station. Probably have time for the front nine holes before dark.

The trip home was dull. Good weather, light traffic, with a little shut-eye here and there— taking turns, naturally. The past 24 hours had been tough, with all that work yesterday, two hours sleep, then the slam-bang trip to Denver. The final descent and approach were welcome relief. Fifteen more minutes and it would all be over.

It very nearly was all over. At 10,000 feet, the approach controller corrected the cleared altitude from 5,000 feet to 7,000 feet for a light civilian aircraft in a slow climb. The additional 2,000 feet would allow plenty of separation for the Cessna to pass underneath. The clearance drew a "Roger" from two groggy pilots, as the periodic naps were now beginning to overlap. Indeed, both of these gentlemen were asleep when the twin Cessna entered a wild gyration to avoid their T-39.

Needless to say, the incident got some attention from the FAA, the squadron, and the guy in the Cessna. No damage was done, no careers were destroyed, and bad feelings were eventually smoothed out. The point here is obvious, and small consequences have little to do with the situation. Perfunctory compliance with crew rest requirements is simply not acceptable. A moral, as well as legal, obligation to be adequately prepared for each flight is implicit with each set of flight orders. Our personal attention to individual preparation is the key to avoiding the big sleep. ■

The mission of the Air Force is to

~~TRAIN~~ ~~fly~~ and ~~fight~~ ~~SURVIVE~~

and don't you forget it!

MAJOR DAVID V. FROEHLICH • Directorate of Aerospace Safety

■ In the good ol' days of wandering around the Route Packs or MR's in SEA, we seemed to know who the enemy was! We were pretty well briefed on the threat whether it was AAA, MIGs or SAMs. We still got surprises once in awhile, but for the most part we knew who and what was out to get us. Not the case anymore! The major threat to operator survival has changed!

One of the most valuable post-war lessons we recognized was a need for realistic training scenarios to better prepare crews. From this need were developed extremely realistic exercises and low level route structures. Unfortunately, when you pump large doses of realism into training programs you also increase the risk of bashing bodies and birds. That's not to say that safety hasn't been considered and added to the formula, but risks are inherently increased when you go lower and faster more often. Add to those parameters the fact that the machinery is more complex, the scenarios more complicated, and the experience levels are creeping down. Deadly outlook!!!

Our new enemy (in the peacetime training environment) is the environment itself We (the operators) are tasked with training realistically to maintain a high level of combat readiness. In many cases we must do that training with reduced flying hour allocations, fuel conservation measures, and busier and more restrictive than ever airspace. The deck is really stacked! I don't think anyone is honestly surprised that as of 1 October 1979 we were ahead of the first 9 month's accomplishments (dubious wording) of 1978 in all aircraft mishap categories. As a matter of fact, we already had as many USAF pilot fatalities in 9 months of 1979 as we had all during 1978. When I say "not surprised," by no means do I mean happy or satisfied. I only mean that the numbers are much "as forecast." Lots of folks are tearing lots of hair out trying to figure out pat answers to make 1980 a safer and less fatal year than 1979 is turning out to be.

You as the operator are the only fix for the next year's mishap stats. All of the "MAJCOMs should" and "change T.O. XXX" and "brief all crews" mishap report recommendations may be for naught if the pole pullers and yoke manipulators in the green bags don't realize the odds they are playing against. You have to implant a caution light into your mission accomplishment "press" circuits. That caution may be because you're flying 370 knots in the weeds in a 25 year old machine, or doing the DACT dance only 6 months out of UPT or cracking minimums after 14 hours duty with an airplane full of PAX. Regardless, a lot of good folks are biting the bullet because they overcommit themselves. You *can* accomplish the mission safely if (and only if) you stack the

deck in your favor.

Stacking the deck in your favor includes the time-worn elements of knowledge, preparation, study, practice and all those things professional aviators know they have to do. The difference lies in the fact that 10 or even only 5 years ago we were training with older, more experienced folks with different parameters. Most of the work was done at least 1,000 or 1,500 AGL and often at slower speeds and lower AOA's. We're pushing and pulling the birds harder, taking 'em lower and faster, and doing it with younger, lower time folks. That calls for each operator to develop an attitude of airborne survival.

Go into the ring figuring that the elements are out to get you and you will be better prepared to survive! First and foremost – know your equipment systems and limitations. We've preached that since time began, but it's far more important than ever because of the environment we're now working. When you are killing tanks at 100-300 feet, you have less time to analyze one of those flashing lights.

Secondly – put some extra time in on target or route study. I've seen too many collision with ground bashes that hint maybe the operator(s) didn't know the lay of the land as well as they might have. A term from one report comes to mind – Pilot lost situational awareness . . . and aircraft impacted ground. "Situational awareness" is an excellent concept to think about. You as the operator can no longer afford to become even temporarily confused or disoriented while airborne. That little extra preparation may give you the edge. Unfortunately, "situational awareness" covers a lot of territory. As an operator your "situation" obviously includes *your* position and parameters, but also a wingman's or other flight member's situation and such unpredictables as weather, fuel, external traffic and target condition or maneuvering. Bottom line – "Situational Awareness" is the biggee!

Lastly, from the operator's viewpoint, you need to be mentally willing to back down (knock it off, abort the route, etc.). I'm not saying not to strive to accomplish the mission, but for every set of circumstances you need a mental "no-go" point. For instance, it's a fact that most single engine drivers are much more aware of emergency airfields than multi-engine folks. I did both, and I sure noticed a lot more runways as I wandered around in the T-bird than I used to in the fantastic Phantom.

Pushing and pulling birds harder, lower and faster with younger, lower time folks calls for each operator to develop an attitude of airborne survival.

My point is that we're losing good drivers when the "press" problem takes them into a corner they shouldn't have painted themselves into! Plan an "I quit" point for each pass, route, rejoin, engagement, or whatever; review it prior to the maneuver and then stick to the plan. The operator who knows the equipment and rules, studies the parameters and terrain to prevent surprises and sticks to the plan that has cut the odds against him.

The next key element in the risk-reduction process is the individual one step above the basic operator.

Supervisors have to have a finger on the pulse! Probably the most important "supervisor" in any organization is the individual with the "I" in front. Whether an IP, IAC, IN or whatever, the instructor is in the best position to mold the experience levels of others, recognize and document trends and evaluate the training programs and scenarios for merit and danger. Upper level supervisors (commanders, ops officers, etc) need to take a hard look at the communication channels to your instructor personnel. Can these folks get the ungarbled (and non-fearful) word up to you? If not, you may be wasting one of your most potent mishap prevention tools.

Too often I visit a squadron and in a bull session hear comments from IPs about tactics, syllabus problems or systems. Also, too often those comments are accompanied by the statement "You can't tell that to them up there, they don't care, they just watch the numbers." I'm here to tell you the numbers are bad! If the communication lines aren't open, an unsafe individual or practice may skate until he or it becomes a statistic.

Two last commercials – First, all of the above may seem slanted toward fighters and jocks who spend their time fighting over the western deserts. Not true. I've got as much time with eight engines as I do with one or two, and a BUF low level with race tracks or a CAM mission requires substantial "survival" instincts and cautions these days also. Some of the problems are different, but the risk is still there.

Finally – what's the outlook? Bleak unless positive individual operator action throws the trend in reverse. With no changes in attitudes and actions, there will be nearly 60-75 fewer pilots and 20-25 fewer other crew members to read my ramblings by the end of '80. Almost as catastrophic, there will be nearly 100 fewer aircraft for the survivors to fly. Our budget and National Defense posture cannot afford those kinds of losses.

We at AFISC will continue to study, analyze and publish to provide USAF with the best information possible with which to build mishap prevention programs. Only commanders can instill an attitude of "accomplish the mission . . . but only if it can be done safely!" in the troops. In combat, safety depends on survival against the enemy, but in the peacetime training environment, survival is dependent on safety of operations. Ultimately, *survival is up to the operator!* ■

Survival Working For You

SGT ROBERT J. ROBEL • Arctic Survival Training School • Eilson Air Force Base, Alaska

■ Nothing is more beautiful than evergreen trees peeking out from a cover of freshly fallen snow. But as Jack Smith woke on that October morning, this spectacle of icy wonder was terrifying. Just 2 days before, he, his wife Helen, and their two children, David and Julie, had left their home under sunny skies to camp for a few days in a mountainous region near their Idaho home.

"Helen and I were unprepared for the sudden cold and snowy weather and decided to head for home. We quickly packed the camping gear, loaded the kids in the car and traveled about 10 miles down the forest road. Suddenly, we hit an exceptionally slick spot and the car slid off the road. The axles were buried in the snow and ice and it was at least 20 miles to the main road. I began to panic and Helen began to cry.

"I sat there listening to her cry, realizing that if I didn't compose myself, my family could freeze to death while I watched. I really needed to remember the information drilled into me by the Arctic Survival School instructors. Who would ever think I would need to recall that information while on leave with my family. I suppose you never know when you'll be in a survival situation.

"As I desperately tried to remember what the instructors had said, the information started coming back in pieces. We would have to maintain our body heat in order to survive. This was extremely important! I recalled the instructors explaining that our bodies are like engines generating heat, and our clothing acts as insulation to maintain that heat. I remembered what the survival training instructor had said about dressing in layers; therefore, Helen and I began putting on shirts, sweaters, and jackets. The dead air space formed between layers of clothing keeps you warmer than just one heavy garment. They said that the key to maintaining good insulation and keeping warm was the word C-O-L-D. Now I could see how important this information was. If only I could remember what the letters in the word COLD stand for.

"I seemed to recall that 'C' represented keeping clothing *clean*. Clean clothing maintains heat in dry air spaces better than dirty clothing fibers. The 'O' had to do with *overheating*. By layering our clothing, if we become too warm, we could remove it as needed. The 'L' was to remind us to keep our layers of clothing *loose* fitting in order to create dead air spaces. Last of all, the 'D' in the word reminded us to stay *dry* – wet clothes are cold clothes!"

After building a fire to keep Helen and the kids warm and dry, Jack began setting up the tent. Gunshots of hunters in the area could be heard and Jack wished he had some means to signal for help. It would have been foolhardy to try to find them, for without a map and compass, he surely would have become disoriented. Their best chance for survival and rescue now seemed to be to set up camp and stay put. Sooner or later someone would find them.

While setting up the tent, those lectures kept coming back. Jack's instructor had said, "Metal and other substances conduct cold;" this was reinforced when his fingers began sticking to the metal rods of the tent. Without gloves, Jack returned to the fire to warm his hands while Helen began rummaging through their belongings to find enough wool socks to use as gloves. He was greatly relieved to see they had enough for all, because he knew that a great deal of heat escapes through the hands.

By now the wind was blowing hard and he remembered the survival instructor talking about convection,

or the loss of body heat due to moving air masses. This reminded him that he had better get their necks covered. The neck area too, is a great source of body heat loss. Helen decided that towels would double as scarves quite nicely. They laughed as they realized that they must have created an unusual, if not comical picture, with towels around their necks and colorful wool socks on their hands.

Helen had wrapped the baby in Jack's jacket and three of his shirts, and secured him snugly in a pillow case to form a bunting. She then nestled him in a sleeping bag on a bed of dry pine boughs. The boughs would keep the underside of the sleeping bag from getting wet until Jack could get the tent set up.

All was going well and Jack once again began setting up the tent. He could hear his daughter, Julie, laughing from behind him as he worked. When he turned to see what she was laughing at, he remembered what the instructors had said about another form of heat loss – compression. He tried not to get angry at his daughter as he watched her making "angels" in the snow. He realized that by lying in the snow she was compressing the insulation of her clothing and, therefore, eliminating the dead air spaces. Besides all of that, now she was soaking wet.

Helen and Jack quickly stripped her of wet clothing and put her into the warm sleeping bag with the baby. Jack hung her clothes on poles by the fire to dry, and Helen melted some snow over the fire to make hot chocolate.

It was getting dark quickly, so Jack hurriedly put the finishing touches on the tent. While Helen started cooking dinner from the meager supply of food, Jack went out to look for more firewood. It seemed important to eat if they expected to keep producing heat. Now that their fear was under control, they were all hungry.

Jack was lucky to find a good supply of firewood close by, but he was not so lucky when he tore a large hole in his pants while returning with wood. Since the heat in his body could escape through the tear in his pants, Helen took the time to make repairs while cooking dinner. She even joked about never getting away from household duties. By now, Julie was out of the sleeping bag and back into dry clothing. Everyone's spirits were improving.

After a warm and nourishing meal, they settled in for the night. All of them slipped into two sleeping bags, zipped together to trap additional body heat. Jack recalled the instructors saying you shouldn't sleep in all your clothes. Your clothes might become too wet or damp and the sleeping bag will soak up body moisture causing a reduction in its insulating qualities. With all your clothing on, you may become too warm, causing you to perspire in the sleeping bag, so they stripped to their underwear. It was the longest night any of them had ever endured. Jack awakened several times to check the weather and to keep the fire going as a signal.

As the morning dawned, bright and beautiful, with blue skies overhead, the temperature had warmed considerably. As Helen was preparing what little food they had left, she started yelling for Julie to be quiet. She had heard something. Listening intently, they realized that a vehicle was coming up the forest service road. Jack ran out to the road just as the vehicle was approaching their car.

The vehicle carried two hunters, anxious to begin their day's hunt. After Jack explained his situation, the hunters gladly took him and his family to a ranger station.

Jack and his family were lucky to be rescued so quickly. Whenever traveling into a remote area, one should always be prepared for the worst. There are basic factors to keep in mind whan faced with a survival situation in cold climates. The main thing to remember is maintaining body heat and the "KEY TO COLD."

Keep it **C**lean
Avoid **O**verheating
Wear it **L**oose in Layers
Keep it **D**ry

Additionally, there are four major forms of heat loss – convection, compression, conduction and radiation. It is mandatory that you avoid these forms of heat loss in order for Survival to equal MAINTENANCE OF BODY HEAT. ■

NEWS FOR CREWS

Career information and tips from the folks at Air Force Manpower and Personnel Center, Randolph AFB, TX.

The ACIA and your career

CAPTAIN JOHN S. SMILEY
Rated Departmental/Joint Career
Management Section

■ "I've met my first gate, so where's my career broadening assignment?" Our career managers at AFMPC hear this question frequently. Since "gates" and gate management are certainly one "piece of the puzzle" in determining assignments, let's review provisions of the Aviation Career Incentive Act (ACIA) as it applies to our ability to respond to your career plans.

The ACIA was passed as Public Law 93-294 in 1974 to ensure that the services maintained a viable rated force. It imposes a utilization standard on rated officers and requires that pilots, navigators, and aircraft observers be assigned to operational flying duties for specific amounts of time by certain career checkpoints commonly referred to as "gates." By meeting these gates, officers will retain their entitlement to continuous aviation career incentive pay, even if not assigned to flying duties. Duties which qualify as gate "counters" are identified by Rated Position Identifier (RPI) codes 1, 2, 6, or 8. RPI 1 and 2 are pilot and navigator line flying positions, RPI 6 is found in either line supervisory positions (Sq CC/Ops Off) or wing staff, and RPI 8 refers to gate-creditable positions at numbered AF, MAJCOM, or higher staff levels. All of these positions require the incumbent to actively fly. RPI codes 3 and 4 identify rated authorizations in the staff other than those requiring operational flying duty and are not "gate" creditable. (RPI 3s are found at Wing level and below while RPI 4 positions equate to numbered AF and higher staff levels.) Rated supplement tours are normally for RPI 0 positions and as a rule do not offer operational flying credit (there are some exceptions).

The gates occur on the anniversary of the 12th and 18th years of aviation service, including time spent in flying training as an officer. By the 12th year of aviation service, an officer must have at least 6 years of operational flying (includes UPT/UNT time) to be entitled to continuous aviation career incentive pay to 18 years of aviation service. (The aviation service date is the date of the original aeronautical order directing participation in flying duties.) At the 18th year of aviation service, an officer must have performed 11 years of operational flying to be entitled to continuous monthly aviation incentive pay through his 25th year of *officer* service. (The officer service date is the officer's commissioning date.) However, if at the 18 year point the officer has performed at least 9 but less than 11 years of operational flying duty, the officer is entitled to continuous pay through 22 years of officer service. If the officer has performed less than 9 years of operational flying at 18 years of aviation service, his entitlement to continuous monthly aviation career incentive pay ceases at that point. He may, however, be paid when he performs flying duty, but any further flying does not count towards attaining subsequent gate credit. Aviation Career Incentive Pay (ACIP) for all personnel terminates at 25 years of *officer* service. Graphically, the ACIA can be depicted as in the chart on page 27.

Being the commonly encountered question which kicked off this article, let's discuss how the ACIA works in individual assignment considerations.

First, there's the question of "how much gate enough" at any given career point. As an illustration, let's assume an officer has just met his or her first gate and has an aviation service date of November 73. If the officer is now assigned to a career broadening assignment for four years, what's the effect on his/her "gate" outlook? The officer has at least 6 years operational flying, and is guaranteed incentive pay to 18 years aviation service – November '91. Upon completion of the 4 year non-flying assignment, the officer will have 8 years left to make either the nine-year gate, which would require 3 more years of operational flying, or the eleven-year gate, which would require 5 more years of operational flying. (The Air Force goal is to allow the majority of rated officers to meet the 11 at 18 standard while all must meet the 9 at 18 standard.)

At the 10-year point in the above example, if the officer is to make the 11 at 18 standard, he or she has 3 years "left" before his or her 18th year of aviation service for additional non-gate creditable positions. The officer – and his/her career manager – faces severely limited downstream options by allowing for only a three-year "window." Upon reaching field grade rank where non-flying (RPI 3/4) staff positions often include some of the more attractive assignment alternatives, the officer could have less flexibility than others competing for the same j with more gate time to their credit. Our bottom line here is that follow-on utilization options – as well as immediate

gate status – should be given strong consideration in assignment determination.

A second point often leading to misconceptions is how the gates relate to assignments outside the rated requirement structure. After an officer has satisfied the "gate" requirements, the probabilities for flying versus non-flying duty are determined more by the requirements to maintain rated viability (currency). As a general rule, we try to avoid back-to-back assignments not involving flying as either a crewmember or in a staff capacity. Rated viability can be generally determined by measuring how long it has been since the officer flew a major weapon system against how much time he/she has in that (or similar) systems. Rated viability is important in every part of the requirement structure. If you're part of the crew force, you're building or updating your viability in addition to getting gate credits. Most rated staff positions require viability since it's that very experience that qualifies the incumbent to do the job.

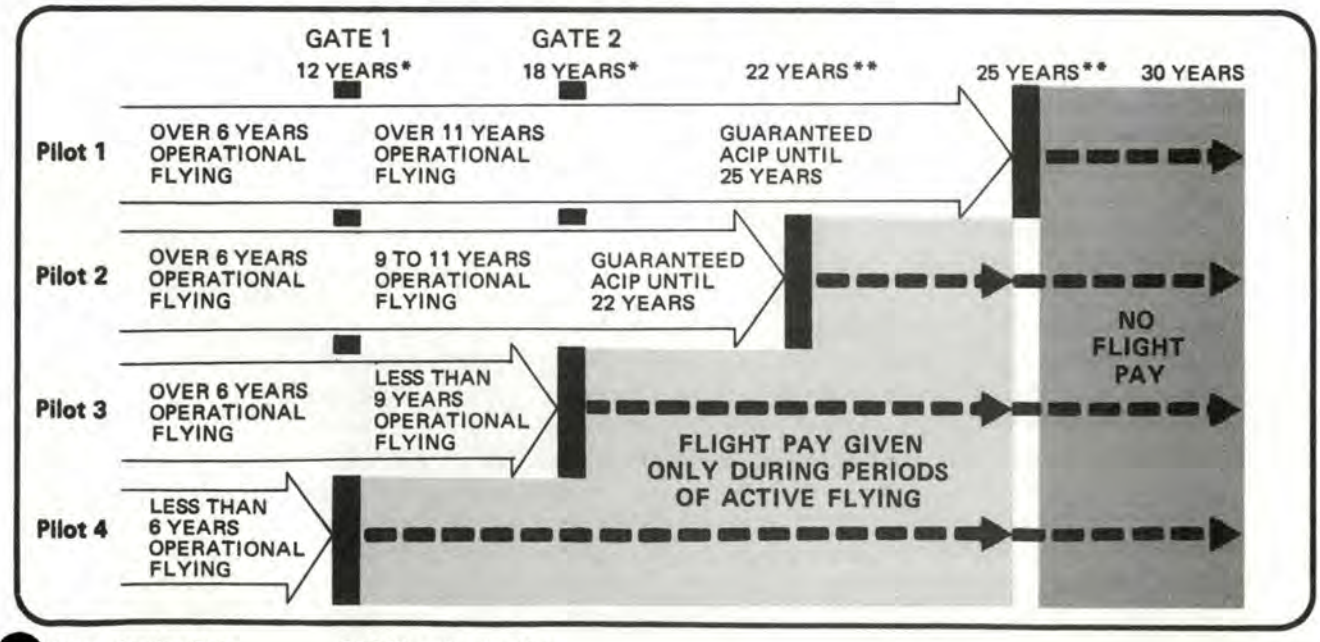
Even the rated supplement requires viability – from two perspectives. First, the primary reason we have the supplement is to provide a ready reserve of rated officers for augmentation and/or replacement during wartime. Plans call for most of our officers serving in the supplement to return to rated duties and enter combat without extensive retraining, so a reasonable degree of currency (viability) is absolutely necessary. Second, as the rated supplement inventory decreases over the next few years, supplement duty will be increasingly restricted to areas where rated presence – expressed in terms of recent experiences in a specific weapon system group – is the overriding requirement.

ACIA helps to ensure that the services maintain a viable rated force by imposing a utilization standard on rated officers. However, simply by meeting gate requirements, a rated officer should not expect automatic assignments out of the rated "arena" – over 90 percent of the requirements for rated officers are in operations and ops related staff positions. While meeting your gates entitles you to incentive pay across a rated career, that pay is tied to the fact that you are a rated officer who is available for rated duties (cockpit or staff) when needed – *throughout your career*. In times of low UPT/UNT rates and a declining supplement, most officers can expect to spend a larger portion of their careers in rated positions. Planning ahead, looking at downstream options, and maintaining rated currency or viability will maximize your chances (and ours) of keeping your career on track. A little forethought and an understanding of how the gate system works can make the ACIA work toward – not against – your personal goals. ■

ABOUT THE AUTHOR

Captain Smiley has been assigned to the Air Force Manpower and Personnel Center as an action officer in the Fighter/RECCE Career Management Section (Nov 76–Nov 78) and the Rated Departmental/Joint Career Management Section (Dec 78–present). Captain Smiley's background includes tours in PACAF, TAC, and USAFE as an F-4 WSO. He will be returning to the F-4 in the PACAF theater (Kunsan AB, Korea) in March 1980.

AVIATION CAREER INCENTIVE PAY (ACIP)



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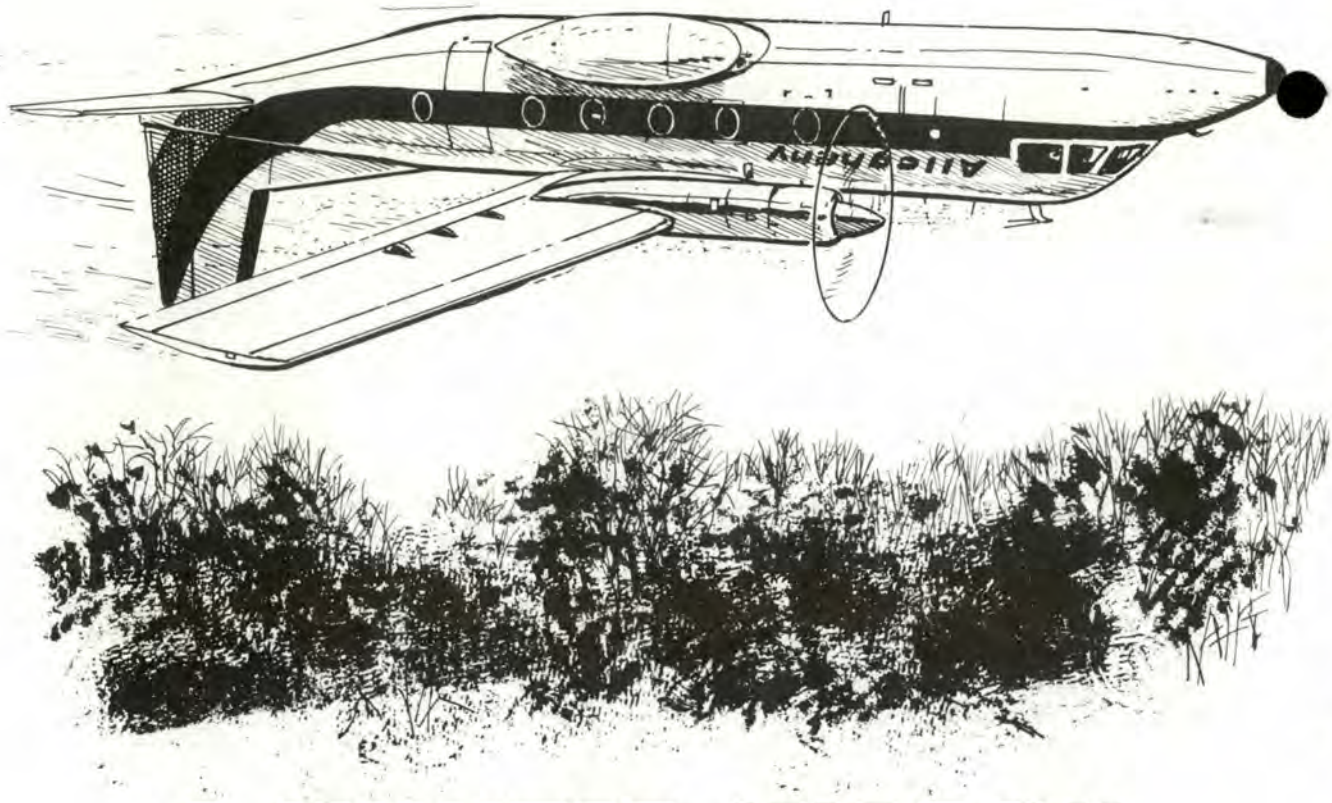

A WINTER WORRY

■ The Allegheny Airlines commuter crash at Clarksburg, West Virginia, last February 12 was caused by the captain's decision to take off with snow on the aircraft's wing and tail surfaces, the National Transportation Safety Board reported.

The snow reduced aerodynamic lift and caused the captain to lose control of his aircraft shortly after takeoff, the Safety Board held.

The copilot and one passenger were killed when the modified twin-engine Nord 262 crashed upside down about 14 seconds after lifting off from Runway 21 of Clarksburg's Benedum Airport. The captain and seven passengers were seriously injured. The flight attendant and 14 passengers survived with minor or no injuries.

The aircraft had been deiced 20 to 30 minutes before it left the ramp, but the Board found that about a quarter of an inch of wet snow had accumulated on the top of the wings and horizontal stabilizer after the deicing.

The captain could remember nothing of the accident, but eyewitnesses said that after a normal takeoff roll and lift-off, the aircraft rolled both to the right and to the left before the right wing struck the runway. The Safety Board concluded that snow which had adhered to the outboard surfaces of the wing, in addition to reducing lift, had rendered the ailerons "at least partially ineffective" after the plane climbed out of "ground effect" the cushioning effect which increases lift and reduces drag when an aircraft is airborne but still close to the ground.

A professional pilot always "must take the proper measures to ensure that the wings, stabilizing surfaces, and control surfaces are clean and free of ice, snow or frost before he attempts a takeoff," the Board said. "Any doubts . . . must be resolved by visual inspection, if necessary, immediately before the takeoff is begun.

The Board's formal determination of probable cause was "the captain's decision to take off with snow on the aircraft's wing and empennage surfaces which resulted in a loss of lateral control and a loss of lift as the aircraft ascended out of ground effect."—Courtesy NTSB Safety Bulletin SB 79-65.

That accident reiterates the time worn adage that the slightest mistake, or lack of knowledge, can be terribly costly in aircraft operation. If you missed the article on the subject of ice on the wings, see "Wing Surface Roughness—Cause and Effect," Page 16, Aerospace Safety, *November 1979.—Ed.* ■

☆U.S. Government Printing Office: 1979—214/2

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 Accident Prevention Program.

CAPTAIN

Eric M. Coloney

LIEUTENANT COLONEL

John P. Westra

50th Tactical Fighter Wing

■ Captain Coloney, Aircraft Commander, and Lt Col Westra, Flight Surgeon, were on a low level flight near Illesheim Army Air Field, Germany, when they heard a loud explosion. Their F-4E aircraft immediately yawed to the right, the right fire light illuminated, and the EGT increased to 900 degrees. Captain Coloney executed bold face procedures, and pulled off the low level so he could analyze the problem at a higher altitude. He retarded the throttle to idle, but the fire light remained on, so he shut down the engine. Although EGT initially dropped off, it quickly increased to 1,000 degrees, and the fire light remained illuminated. With one engine shut down and indications of an engine fire, Captain Coloney declared an emergency with Illesheim Tower, and flew direct to Nurnberg International Airport since Illesheim's runway was only 3,000 feet long. Although Captain Coloney declared an emergency with Nurnberg Approach Control, and requested radar vectors for landing, Nurnberg was unable to respond until Munich Radar, who was observing the emergency squawk, offered to relay vectors via telephone through Nurnberg to the stricken aircraft. Smoke and haze obscured Nurnberg as Captain Coloney approached the airfield. Meanwhile, the EGT increased and pegged out. At one mile out he visually acquired the field, only to find that the limited radar assistance he had received was intended to assist him in locating the field, and was not actually a final approach. Since a safe landing could not be made from this position, he used the power available to reposition, and made an uneventful landing. Investigators later found that the third stage turbine blades had penetrated the right engine case and bay, damaging the flap and aileron. Other fragments penetrated the number five fuel cell. Captain Coloney's rapid response to this emergency prevented further damage and possible loss of the aircraft. The crew's calm, professional response during the recovery at an unfamiliar civilian field was instrumental in preventing possible injury or loss of life. WELL DONE! ■

Mission Risk Assessment Factors

QUESTION: GO or NO GO TODAY

FLIGHT SAFETY