flying SAFETY

The "Failing Aviator" Syndrome

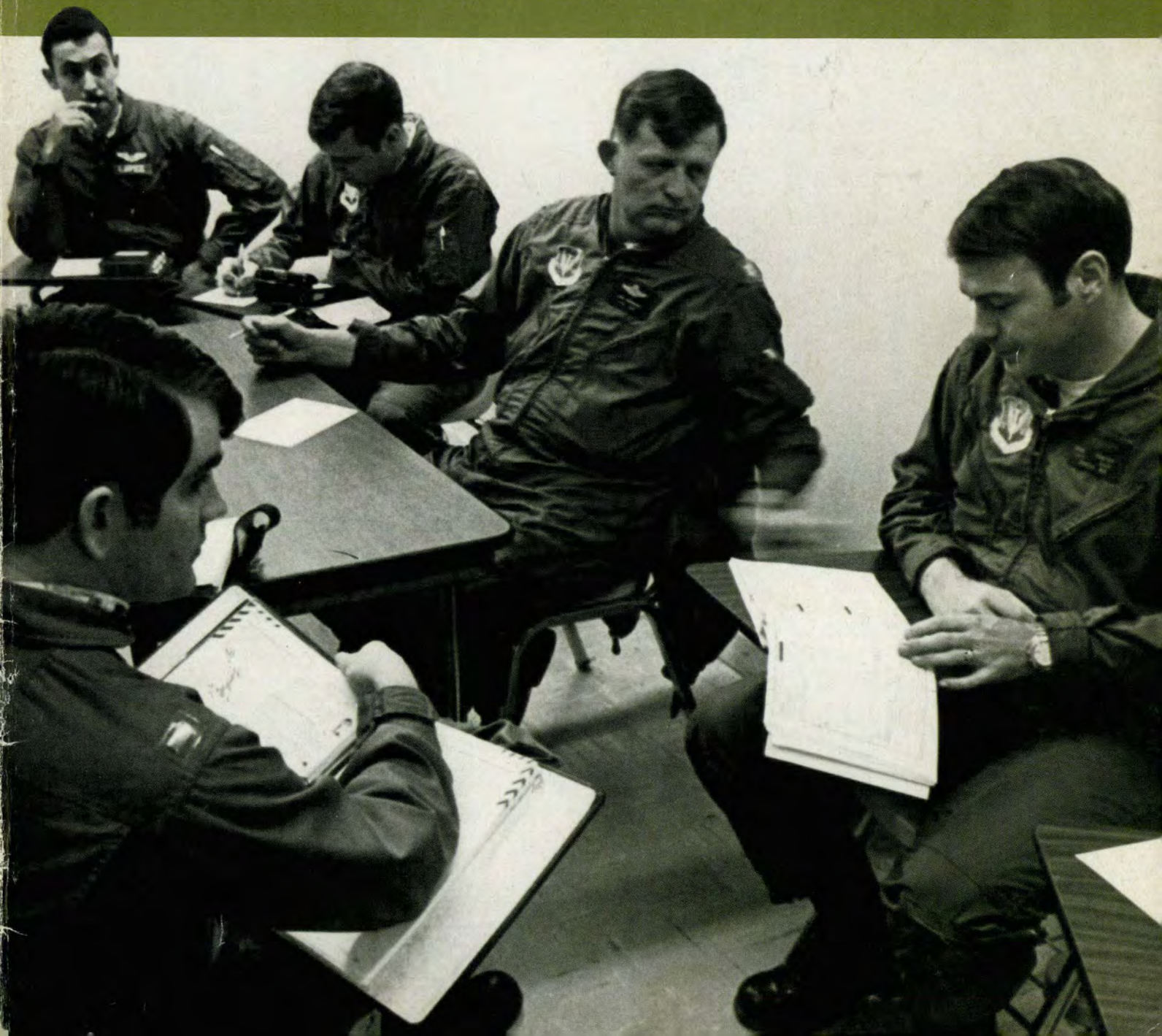
What Do We Do Now?

Coping With High-Tech Cockpit Complacency

Cockpit Stress

AUGUST 1992

HUMAN FACTORS



THERE I WAS

■ I was flying the right seat of one of MAC's finest, returning from an overseas mission. We were almost at our descent point from cruise altitude. The descent, approach, and landing were going to be mine, so the AC was pretty much taking it easy.

So easy, in fact, he was still talking with another crewmember during the time when I would normally be checking the ATIS and getting ready for the approach. I was starting to feel a little annoyed at the distracting conversations when Center interrupted and cleared us for the descent.

As the AC rushed to do his part, I was left on my own without the usual backups. He was still getting the ATIS information, calling command post, and checking with the engineer for any customs problems we might anticipate. Of course, Center changed our frequencies every 5 minutes and gave us a new, intermediate level off every 2,000 feet.

Somehow, I managed to get on the published approach segment without getting Center or Approach Control mad at us. I was a little high, but at least I was legal. The AC finished with the approach briefing just as we turned onto final. He was visibly "pressed" as he tried to explain our maintenance problems to people on the ground who seemed to have never *heard* of a C-5, let alone work on one.

Finally, I was able to squeeze in a couple of words, "Gear" and "Flaps." The gear handle was lowered, he turned to another page in the approach book, and then the landing gear crosswind knob was turned. Since we had no winds, I reached up and reset the trucks to zero, then set the flaps to the landing configuration myself. From that point on, everything remained very professional all the way through engine shutdown.

As we boarded the crew bus, the AC apologized for not setting the flaps and for incorrectly setting the crosswind. Going over the whole sequence, we both agreed the loss of crew coordination started way back before the descent when we hadn't insisted on a "sterile" cockpit. Next time, when it's my approach, the first thing I'm going to do is take charge of my cockpit. ■

UNITED STATES AIR FORCE

Flying SAFETY

AUGUST 1992

AIR FORCE SPECIAL PUBLICATION 127-2

VOLUME 48, NUMBER 8

page 2

page 6

page 14

SPECIAL FEATURES

REGULAR FEATURES

CONTRIBUTIONS

Contributions are welcome as are comments and criticism. No payments can be made for manuscripts submitted for publication. Address all correspondence to Editor, *Flying Safety* magazine, Air Force Safety Agency, Norton Air Force Base, California 92409-7001. The Editor reserves the right to make any editorial changes in manuscripts which he believes will improve the material without altering the intended meaning.

DEPARTMENT OF THE AIR FORCE • THE CHIEF OF SAFETY, USAF

PURPOSE —*Flying Safety* (ISSN 0279-9308) is published monthly by the USAF, Norton AFB CA 92409-7001, to promote aircraft mishap prevention. Use of funds for printing the publication has been approved by Headquarters, United States Air Force, Department of Defense, Washington, D.C. Facts, testimony, and conclusions of aircraft mishaps printed herein may not be construed as incriminating under Article 31 of the Uniform Code of Military Justice. All names used in mishap stories are fictitious. The contents of this magazine are non-directive and should not be construed as regulations, technical orders, or directives unless so stated. **SUBSCRIPTIONS** — For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Changes in subscription mailings should be sent to the above address. No back copies of the magazine can be furnished. **REPRINTS** — Air Force organizations may reprint articles from *Flying Safety* without further authorization. Non-Air Force organizations must advise the Editor of the intended use of the material prior to reprinting. Such action will ensure complete accuracy of material amended in light of most recent developments. **DISTRIBUTION** — One copy for each six aircrew members. One copy for each 12 aircrew support and maintenance personnel. Air Force units must contact their base PDO to establish or change requirements. AFSP 127-2 is entered as a publication at the Second-Class rate at San Bernardino Postal Service, 1900 W. Redlands Boulevard, Redlands, CA 92373 and additional entries. **POSTMASTER:** Send address changes to *Flying Safety*, AFSA/SEDP, Norton AFB CA 92409-7001.

The "Failing Aviator"

WGCDR GRAEME R. PEEL, RAAF
HQ TAC/SGPA
Langley AFB VA

Stress affects us all, and fliers, the consequences are more

■ A working definition of stress is the reaction of the body to outside stimuli which are strong enough to require adjustment. Such stimuli are termed stressors, and these and the accompanying reaction are strictly personal in nature. That is, stress may be manifested as tension or discomfort in one individual while simply appearing as increased motivation in another. There are no good methods to evaluate the relative significance of stressors. Apparently, minor problems may be as significant in terms of results as major disasters, depending on the individual.

Nonetheless, the time may come when an individual is confronted by overwhelming stressors, and the result, especially in the aviation community, can be disastrous. For this reason, fliers have long been the subject of special study, and a condition known as the "failing aviator" syndrome has been identified. In this condition, a flier is confronted by acute situational factors when his coping abilities are diminished, and an increased potential for a mishap ensues.

Environment Stressors

There are many environmental stressors, but for ease of discussion, they can be placed into four general groups — personal, family, social, and work-related. Personal stress includes inherent personality traits (as modified by experience), such as extroversion, the need to always be in control (not unusual in aircrews), or obsessive features. Family pressures may range from illness of a spouse or child to interpersonal conflicts. Social stressors include such factors as financial and moral pressures and a hectic lifestyle. In the work-related category, example elements are career competition, job difficulty, and overwork.

Stress-Induced Changes

Changes observed due to stress include excesses in routine habits (eating, drinking, and smoking), agitation, aggression and irritability, retreat from social activities, fatigue, deteriorating or poor flying performance, and increased risk taking. The loss of a sense of humor is a notable negative sign. The errors of judgment which appear in degraded flying skills are often of the omission or commission type, such as a failure to complete checklist actions or excessive channelization of attention.

Aircrew Stressors

Under "normal" peacetime conditions, aircrew stressors can be fairly predictable: Unfavorable conditions of service (frequent moves, relatively poor pay, constraints on flying hours), additional duties, the prospect of a staff job, etc. Such factors usually predominate, with family problems following. Unless unusual circumstances exist, and the stressors become overwhelming, most aircrew have sufficient capacity to adapt in a healthy way. Such causal human factors identified in aircraft mishaps are not always as common as other players. However, with a change in the game rules, patterns of stress and consequences are accentuated.

Desert Shield and Desert Storm

The stressors induced by Desert Shield and Desert Storm were numerous. Problems observed in

Syndrome

are no exception. Unfortunately, severe for aviators.

the field included family separation trauma, financial pressures, boredom due to inactivity, and the many uncertainties associated with the future. The inability of fliers to control their situation was perhaps the greatest stressor faced.

For example: A pilot and WSO were lost when their aircraft flew into the ground during unauthorized and unsafe maneuvering. The pilot was an aggressive, self-confident individual with high motivation to succeed. Unfortunately, his strong personality created difficulties in his duty performance. He adapted poorly to regulatory restrictions placed on his flying, since he considered survival in combat required more realistic training than that being undertaken. He had recently been removed from his position as flight commander due to ongoing conflicts with squadron supervisors. In addition, he greatly missed his family and friends.

There were several cues to alert his colleagues to his gradual succumbing to stress. These included increases in his antiauthoritarian behavior on the ground and in the air, irritability, and deteriorating social contacts. The failure of supervisors and colleagues to respond to the pilot's warning signs contributed to the loss of the crew.

Managing the "Failing Aviator"

Appropriate management of the "failing aviator" is one key to mishap prevention. The goal is to reduce tensions in the individual to allow for adequate coping. Recognition of a problem is the first step. This may be difficult in view of the subtle cues exhibited, a lack of opportunity to observe, the ability of many to deny or disguise the stress response, and a lack of understanding of the situation by fliers and their colleagues. Suppression of identified stress may occur in a short-sighted attempt by fellow squadron members to "protect" affected fliers.

Once excessive stress is identified, fliers, just like other mortals, must accept personal responsibility for their well-being and actions. It is not enough to expect others to fully manage an abnormal stress response and provide the cure. Problems must be addressed with friends. Admitting the existence of a problem is not admitting failure. The source of stressors must be removed whenever possible, and then attention may be turned to treating the individual. Adverse habits have to be controlled and increased sleep and recreational opportunities taken. Work should also be realistically assessed and arranged to allow for flexibility and reasonable completion. Additional training may be necessary to allow for all of this. Social support, an essential component of survival, should be sought and provided.

Education of squadron members in all aspects of stress is another "must" for flight surgeons, psychologists, and supervisors alike. Formal stress management, to include self-awareness programs, follows under the guidance of health services professionals.

Stress is very real. It is essential to life, but equally it can destroy life. An increased awareness by all concerned of the effects of ever-present stress on aircrew, and how to manage the resulting problems, is essential if flight safety is to be maintained. Ignoring a failing aviator is fair to no one, as treatment to fully restore the flier is both available and effective. ■

Courtesy *TAC Attack*, Nov 91

FRA

THE CREWMEMBERS' FRAME-WORK FOR FLYING: A Personal Checklist

LT COL ADOLPH VALFRE, AFSA/SEC
LT COL JOYCE TETERS, AFSA/SEL

■ Take a moment to assess yourself honestly before rushing to accomplish today's mission. No one is at the top of his/her game every day. Still, proper recognition of your strengths and limitations can usually allow you to adjust your actions and behaviors to adequately compensate for your personal caution signals. In most cases, this regular self-assessment will still permit successful mission accomplishment. In other instances, it will alert us that our human machine needs a FRAME-work for the rigors of the mission. Try out the acronym, FRAME, and see if it doesn't provide you with a mental guideline to use as your personal checklist.

FRAME — Caution Signals

FIT — Do you feel physically fit, or are you less than 100 percent today? Do you have any health problems (colds, sinus, backache, etc.) which could contribute to sub-par performance? Are you self-medicating? Do you feel Code 1, Code 3, or maybe Code 2 Flyable? Is your body all right for a low altitude air-to-ground mission, full up air-to-air, or pattern only?

RESTED — Do you feel rested and ready for today's mission? Did you get enough sleep? Did you eat properly to sustain adequate performance?

ALERT — Is your mind focused, alert, and ready? Are you easily distracted or perhaps engrossed in routine details?

ME

MENTAL SELF-IMAGE — Is your self-image favorable and confident? Or is it burdened by marital, professional, financial, or other concerns which could undermine your concentration or effectiveness?

EMOTIONAL CONTROL — Are you emotionally in control today? Or are you angry, depressed, frustrated, or lonely enough to have it affect your performance? Did someone or something get to your emotions today?

Once you have looked at the FRAME-work of your strengths, take time to look for some of the following symptoms. Like the symptoms of a serious illness, these may appear to be insignificant, but they warn of serious problems.

- Do you feel rushed today — like you are riding behind rather than in front of the wave? This "off" feeling may cause you to rush your preflight, your checklist, and your normal self-disciplined approach to flying operations.
- Are you inflicted with the drops? You drop your pencil (break the lead), drop your checklist or maps, drop your head (figuratively speaking), or drop your eyelids during the briefing.
- Do you find yourself saying you'd really rather be doing something else today — anything?
- Are you forgetful or careless today — forgetting personal flight gear, forgetting checklist items of routine briefing events? Did you leave your checklist or charts in the briefing room, in the car, or in the crew bus? Do changes in the briefed mission profile upset you or disrupt your concentration?
- Do you find yourself daydreaming during the briefing? Are you having trouble concentrating or remembering what you just read or heard?
- Do you have an attitude suggesting this mission is "just another trip around the flagpole"?
- Are you completely focused on today's mission, or are other problems distracting you? How does your mental attitude match up with today's mission? If that routine range mission ended up including an emergency or a weather divert, would you still be ready?

In today's changing Air Force, it is even more imperative to be aware of one's capabilities. Use this checklist to assess whether the relentless stress currently being experienced is affecting you or your crewmembers' performance. Preflight yourself and your crew, just like you would preflight your aircraft! ■

LT COL (DR.) JOYCE TETERS
Air Force Safety Agency/SEL

What do we do now?

Confronted with the brutal loss of a fatal mishap, friends and family must learn to deal with some of their darkest fears, hurts, and emotions. Few are prepared to handle the task.

■ Reactions to the loss of a squadron or family member are many and varied. Often, I am asked, "What do we do now?" In an effort to answer this question, let's take a look at how the Air Force flying community meets and deals with the loss of one of its members. Perhaps a deeper understanding of the process involved will promote better preparation.

What Does This Have to Do With Safety?

From 25 to 45 aircrew members lose their lives in aircraft mishaps in a given year. The effects of these deaths often create a great deal of turmoil for flying squadrons, base personnel, commanders, families, and friends. Often these problems grab the attention of the aviator to the exclusion of flying.

Supervisors may be called upon to decide if the turmoil created by the loss is sufficient to degrade the aviator's performance in the aircraft. For example: If the aviator is married, dealing with family issues brought about by the mishap may become the primary concern.

Also, I have noticed maintenance personnel and air traffic controllers who have been significantly affected by the loss of an aircraft and crew. Often these individuals question their responses to the mishap or wonder if they somehow contributed to the crash.

The hours and days immediately following the loss are filled with anxiety and questioning which can definitely affect performance. The doubts and fears of these military members can be so severe they spend their time thinking about the mishap rather than concentrating on the job at hand. Consequently, mistakes can be made, and another mishap could be in the making.

The Grieving Process

The grieving process is present whether the crew survives or is lost. Even if the crew survives, squadron members, spouses, and children are affected.

■ **Anger** The primary feeling expressed in public by aviators following a mishap is anger toward the incident and, at times, the aviators involved. Crewmembers are able to express this feeling more readily than hurt or disbelief.

Spouses and outsiders usually do not understand this anger and are often taken aback when they try to discuss the loss or express their condolences to crewmembers. Sometimes the aviator seems to be angry about everything and everybody. In the aftermath, it will seem to spouses and coworkers they can do nothing right.

■ **Inappropriate Comments** In the squadron environment, crewmembers make jokes about the crash or the situation, which is disturbing to outsiders. It is as if aviators cannot allow feelings of hurt which accompany the loss of someone close to them. Rather, they hide these feelings from others by smart remarks and insensitive comments.

■ **Rationalization** The loss of a crewmember is often the fliers' first confrontation with their own mortality, and it can be frightening. Rather than acknowledge this fear, aviators disavow it by stating "they could just as easily get killed crossing the street." This allows aviators to rationalize the possibility of their own death as they attempt to explain the mishap to their families.

■ **Uncertainty** Young fliers who have never been through the loss of a fellow squadron member do not know how to deal with their feelings or how to interact with the grieving spouse. Often young aviators are not married and, therefore, have no one to talk to about the tragedy. Consequently, they tend to talk to other inexperienced fliers who also have little to offer. Many times this uncertainty leads to excessive use of alcohol and inappropriate behavior. Squadrons have been torn apart by young, inexperienced aviators who confront their own mortality alone.

While aviators are dealing with the sudden tragedy of an aircraft loss, the spouses are also attempting to cope with their feelings about the situation.

■ **Sorrow** Spouses also grieve for the lost aviator as friends. However, more immediate is the realization of the lost friendships when the family moves away from the flying and military communities.

If the military member was stationed overseas, the family departs the area quickly to attend funeral services in the CONUS. Often the

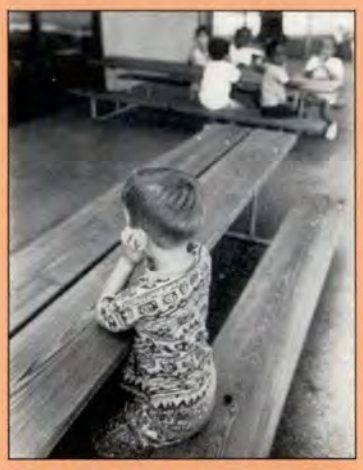
continued

Forgotten Children

I find children are often forgotten following an aircraft mishap. Spouses tend to talk to each other on the telephone about the situation, forgetting children are listening to one side of the conversation. Husbands and wives tend to discuss the incident over the dinner table, once again forgetting "little pitchers have big ears." Young children, as well as teenagers, are impacted by the mishap.

Don't forget, children go through the same feelings as spouses. However, because they have been on earth a limited number of years, they lack the sophistication to properly acknowledge, understand, and cope with them. Usually, they say nothing following the mishap.

However, a squadron will know if their children are frightened. What starts to happen is the children begin to "act out" their feelings about 2 months after the mishap. Parents may notice an increase in physical complaints, such as headaches or stomach upsets. Children may experience nightmares or a disrupted sleep pattern. It is their way of letting others know they are having difficulty coping with the mishap. Sometimes they don't know what is wrong — they only know that something in their immediate world is not right.



However, if children are helped to identify the issue, given the opportunity to talk about it and offered guidance for resolution, these behaviors will not appear. Parents will be surprised at how much children will discuss the mishap if only given the opportunity to do so. Again, *listen!*

Children can be guided through their grief with an explanation that death is a part of life, and at times, it visits us very unexpectedly and takes away people we love and care for. However, one of the ways we handle this is by living our life with the individual the very best we can. Then, if they should leave us unexpectedly, we have positive memories of the person which will travel with us forever.

Children will then start to focus on the positive, pleasant, fun times with individuals, and the healing process will begin. Ideally, parents need to teach this method of coping *before* an aircraft or aircrew is lost.

It's Time to Go

Frequently, recommendations given to civilians following a death are to stay in the same place and not make decisions for a year. However, this advice is not realistic for most of our military families.

The support systems available for civilians are not always available for the military family. Squadron friends PCS, and flight surgeons or mental health personnel change, too. Children of the mishap crewmembers learn quickly they do not fit in at school and can no longer talk about what their mom or dad does in the squadron.

This is a very difficult time for spouses. They want to keep the family nearby. After all, the Air Force is seen as a family, and we tend to feel we should take care of those left behind following the sudden loss of their loved one. However, this is not always in the best interest of the family.

Even though the move away from the military community is quick and, at times, seems emotionally unfinished, it allows the family to grieve their loss rather than direct their attention to the mishap. Spouses who remain at the base where the aircraft went down begin to hear all the rumors which run rampant following such a tragedy. Then, they start directing their emotional energy toward finding out the cause of the mishap rather than dealing with the pain and hurt accompanying the loss.

Often the spouse begins to blame the Air Force for the mishap. Now they are angry rather than hurt. Coincidentally, local friends who had been so close initially must return to their families and the daily routine of their own lives. At this time, the grieving family members feel abandoned by their friends and the Air Force, and more hostility rears its ugly head.

There is no "easy way" to leave the squadron, friends, and military structure. However, it is in the best interest of the spouse to do so as quickly as possible. They may want to return to the squadron in a year or so. This is natural as there may be emotional unfinished business to deal with. But at this time, at least, they have been given the opportunity to grieve and to face life as it will be for them without their partner. Otherwise, the grieving process may never be completed, and spouses may spend many years of their lives being angry with the military rather than accepting the death of their partner.

What Do We Do Now? continued

Honey, Please Don't Fly

Spouses need to be offered the opportunity to express their concerns and fears. This can be accomplished through a group meeting of spouses. The meeting allows them to ventilate their emotions, thus reducing the impact. Please remember the spouses of the squadron who lost the aircraft are not the only ones affected. Spouses in the other squadrons on the base are also dealing with their fears. Consequently, if the squadron decides to have a spouses' meeting, individuals from the other squadrons should be included.

Spouses need to face their fears head on. As they do this, a remarkable process begins to occur — the fears begin to go away. The spouses' group meeting helps them feel as though they have some control over the situation and themselves. Aviators should also *allow* their spouses the opportunity to express their fears.

Spouses need to understand the fear they feel is their own, and only they can effectively confront and deal with it. They also need to understand the way to do this is to talk about it. All the aviator has to do is *listen.* If they will do this, the feelings will go away.

family remains in the States or returns to the overseas location for only a short period while preparing household goods for shipment or wrapping up personal business. Even if the family is in CONUS, they will need to make some decisions about their future plans. Usually these plans do not include staying in the immediate area.

■ **Relief** Following the initial shock and disbelief, families then experience a sense of relief because one of their own was not involved. This is followed almost immediately by feelings of guilt. Individuals do not feel it is appropriate to have happy feelings during a time of tragedy. They believe others will not approve of them if they mention they are glad *their* loved one was not involved.

■ **Anxiety/Fear** Following the feelings of guilt, however, the spouse begins to experience anxiety. Maybe next time they will not be so lucky. This anxiety is usually not talked about. Spouses hope it will simply go away. Sometimes this is the case, but often it is not. If not adequately dealt with, anxiety becomes fear and can result in the spouse saying to the flying member, "I do not want you to fly anymore!"

Summary

Meeting the needs of family, aircrew, and squadron members following the loss of an aircraft or aircrew is very difficult. The primary reason, I believe, is because we do not all understand the process of grieving and coping which these individuals experience. Subsequently, medical and mental health personnel do not become actively involved with the units following a mishap. They expect flying personnel to "come to the hospital" if they are experiencing problems.

Traditionally, crewmembers and families have not sought this type of help. Rather, they go to civilian professionals who understand even less about the process. And *flying* personnel and their families will make this contact only if the difficulties they are experiencing are significant and serious. It is unfortunate this even occurs when early intervention could be most effective.

Many crewmembers and families never adequately resolve the feelings and issues they confronted following the mishap. If everyone can confront the emotional turmoil following the tragedy of an aircraft loss, and find appropriate methods of coping, they can then "get on with the business of flying airplanes." Support personnel can also begin to concentrate on their jobs rather than on what went wrong.

Consequently, our entire flying community becomes a "safer" environment as they meet and overcome the emotional aftermath. ■

High Blood Pressure

Keeping It Down

CMSGT ROBERT T. HOLRITZ
Technical Editor

■ Many aviators, both military and civilian, live under a cloud of fear that high blood pressure will bring their flying days to an end. In desperation, rather than risk being grounded by a flight surgeon, some resort to secretly seeking treatment outside of the Air Force and often fly medicated with unauthorized drugs. This practice is not only dangerous and illegal (for both our military and civilian pilots) but usually unnecessary.

The fact is, more than 90 percent of people with hypertension (the medical term for high blood pressure) can be treated by a flight surgeon without the use of grounding drugs. Generally these pilots suffer from what is termed essential hypertension. In this term, the word "essential" means from no known cause. The other 10 percent are usually a result of kidney, cardiovascular, or endocrinological disorders, many of which can be treated with surgery or drugs compatible with flying.

The first step in beating hypertension is a visit with the flight surgeon. A few tests can determine in which category you belong. In any case, understanding the nature of the beast and how to attack it can help take away the fear of flunking a flight physical.

Heredity

Many people believe if their parents suffered from high blood pressure, they are likely to suffer also. Studies *do* indicate a definite correlation between high blood pressure and heredity. Also, research shows if one of your parents has high blood pressure, the odds are you will, too. And if both parents have the disease, the chances are even greater.

Still, there is no clear understanding of the role heredity plays in hypertension. Many researchers believe we can inherit a predisposition for the disease, but environmental factors such as stress, high salt intake, and obesity are also players. However, inherited or not, changes in lifestyle can significantly help lower blood pressure to a safe, if not normal, level.

Salt

Of all the environmental factors believed to contribute to hypertension, it is not totally clear what role salt plays. However, it is generally accepted about half of the people with high blood pressure are salt-sensitive. That is, salt has the ability to cause a rise in their blood pressure. It is also believed this sensitivity is genetic in nature. But whatever role salt plays, a low-salt diet tends to lower the blood pressure of most hypertensives whether salt-sensitive or not.

Unfortunately, Americans use a lot of salt in their diet. On the average, each of us consumes about 6 pounds of the stuff annually. Aside from the obvious sources such as potato chips and bacon, salt is hidden in some unsuspected foods such as vegetable juices, canned vegetables, most condiments, ice cream, and even bread. A dietitian friend of mine explained a test for salt in prepared food. "If it tastes good, it has salt in it." An exaggeration perhaps, but most of us are addicted to salt.

While a doctor should be consulted before going on a low-salt diet, few physicians would argue against tossing the saltshaker in the trash and avoiding foods excessively high in salt. The American Heart Association recommends a daily intake of no more than 3 grams, or 1.5 teaspoons, of salt for healthy people and 2 grams for those with mildly elevated blood pressure.

continued

High Blood Pressure continued

Weight

As early as 1940, a study of Navy flight cadets by Dr. William R. Harlan of the University of Alabama, concluded excessive weight was a major factor in hypertension. While not all hypertensives are overweight, an increase in weight usually results in an increase in blood pressure. Conversely, a loss of weight by overweight hypertensives tends to lower their pressure. The bottom line is, if you are overweight, shedding those extra pounds can help lower your blood pressure.

White-Coat Syndrome

For a great many people, just the sight of a blood pressure cuff (sphygmomanometer) is enough to cause an immediate rise in blood pressure. Increases in systolic pressure as high as 30 points are not uncommon. Perhaps because hypertension is potentially career-threatening, aviators are especially prone to this syndrome. It is interesting that when the pressures of a group of borderline hypertensives were taken by a physician, the readings were significantly higher than when taken by a technician.

The best defense against white-coat syndrome is to understand a single pressure check on the high side is not cause for permanently grounding an airman. All flight surgeons are fully aware of the syndrome and will recheck the pressure several times during the exam.

If the readings continue to be high, the physician may require the patient to have the pressure checked daily for 5 days. In most cases, the readings will gradually drop to normal.

The bottom line is, there is no need to have an anxiety attack during a blood pressure check because white-coat syndrome almost never results in the permanent grounding of an aviator.

Getting Ready

Preparation for the dreaded flight physical should begin months before it is scheduled. Long-term preparations include a change in life style:

- Cut down on salt intake. Don't add salt to food at the table. Avoid food with high salt intake such as salted snacks, canned soups and vegetables, and cheeses. (Again, consult the flight surgeon before going on a strict salt-free diet.)
- Begin a moderate aerobic exercise program consisting of approximately 30 minutes of vigorous exercise three or four times per week. Don't overdo it — excessive aerobic training has been shown to lessen G tolerance.
- Shed excessive pounds by lowering caloric intake and eating less foods containing fat and refined sugar.
- If you are at risk for white-coat syndrome, have your blood pressure taken frequently in a low-threat environment between flight physicals. Most clinics will take the time for a quick check every week. Better still, monitor it at home.

The Flight Physical

Actions taken just prior to, and during, the exam can help the flight surgeon get a viable reading of your blood pressure. For example:

- Keep in mind no single elevated reading will ground you. Don't fall victim to white-coat syndrome.
- Avoid smoking and caffeine for at least 2 hours prior to the checkup.
- An hour or so prior, engage in mild aerobic exercise. Don't overdo it.
- Make a stop in the latrine, and drain your bladder. A full bladder can elevate blood pressure.
- During the blood pressure check, relax, take a deep breath, and gradually exhale. Think relaxing thoughts.
- Be sure you get a good night's sleep the night prior.
- If possible, have the exam scheduled early in the day.

Do It For Life

While hypertension can be a career-threatening problem, aviators and others with high blood pressure stand to lose more than a job. Hypertension affects almost 62 million Americans. It has been dubbed the "silent killer" because half of those afflicted don't even know they have it, yet it is responsible for more than 31,000 deaths in the United States annually.

The bottom line is, hypertension must be treated, and the earlier the better. ■

MAIL CALL

"ASPARTAME ALERT"
Editor,

Thank you for the important "Aspartame Alert" article in *Flying Safety* (May 1992) informing readers of the dangers associated with aspartame (™NutraSweet/Equal) ingestion.

The Aspartame Consumer Safety Network began in 1987 to alert the public to the symptoms that can accompany use of the over 4,000 products containing aspartame. Our supporting data has been reported in print (including numerous pilot's publications) around the world. We have been featured on both national network and international TV news programs and have been interviewed on dozens of radio talk shows.

Pilots are losing their medical certification to fly due to seizures traced to their use of aspartame-laced diet products. So, we met in Washington with FAA Chief Deputy Flight Surgeon, Dr. Jon Jordan, in December of 1988. Following that meeting, I established a Hotline, (214) 352-4268, for confidential adverse reaction reports from pilots. Since then, we have received over 500 pilot-related phone calls. Some of the callers spoke about incidents of grand mal seizures in the cockpit of commercial airline flights. Our files contain numerous case histories of Military, Commercial, and General Aviation pilots who have lost their "medicals." Some reported nearly losing their lives, as well.

Eighty-five percent of all consumer complaints to the FDA are about aspartame reactions. Some commonly reported symptoms include blindness, headaches, seizures, memory loss and confusion, muscle cramps and spasms, nausea, hearing loss, heart problems, numbness, insomnia, drastic mood alterations, suicidal depression, chronic fatigue, severe rashes, breathing difficulty, and anxiety attacks.

Thank you again for publishing this life-saving information.

Best regards

MARY NASH STODDARD, Co-founder
The Aspartame Consumer Safety Network
P.O. Box 780634
Dallas, Texas 75378

Thank you for your kind words for our article. We were prompted to address the potential problems of aspartame after some of our health care professionals reported an increase in the number of inquiries from pilots.

They had heard only bits and pieces of information and wanted to make sure they would remain healthy for all of their flying careers. A fit pilot is most likely to get the job accomplished under the most trying circumstances.

Like the chart on page 14 in the same issue, the article on aspartame was intended to inform our readers of subtle, and not-so-subtle, effects from common products. By eliminating many of these substances from their diets, they may be able to keep their flight surgeon visits to one a year.

— Editor

Finally, Thanks For Your Support

AND THE WINNER FOR THE MARCH 1992 DUMB CAPTION CONTEST IS . . .

Chuck Woodside
SA-ALC
Kelly AFB, Texas

Judging our latest contest was one of the hardest yet. Hours of bickering went by without a selection. But, by putting their common sense aside, they finally selected Chuck Woodside as this month's winner. Surprisingly, it only took them 5 minutes to pick the Honorable Mention winners. (Once they disengage the brain-mouth interconnect, those judges can work miracles.)

HONORABLE MENTIONS

1. **Okay, we're coming in for a landing. Now this is a bit tricky — so face forward and remember . . . take GREAAT BIG STEPS!**
   Jim Burt, Academic Training, NAS, Corpus Christi TX

2. **Hey up there, let me up. This isn't worth one-half off a full-price ticket.**
   Major Dennis W. Kotkoski, 127 CAM/CC, Selfridge ANGB ME

3. **So Earl, what happened to the guy when they tried this in that "Airport" movie?**
   Major Dennis W. Kotkoski, 127 CAM/CC, Selfridge ANGB ME

4. **Help! I've gone up and I can't get down!**
   MSgt Santos Lara, USAF-CAP/NHLO, Concord NH

5. **I'll talk, I'll talk! Please, no more "touch and goes."**
   MSgt Mike McMahon, 136 CAM/MAAF, Hensley Field, Dallas TX

Endangering Species

Not all threats to pilots come from outside the cockpit. We are not nearly so much an "endangered" species as we are an "endangering" species. We are, too often, our own worst enemies.

Lt. Ben G. Tiger - He's so brash and overconfident he'll tackle any job regardless of how big or dangerous or how little he knows how to do it.

Captain Tim B. Wolf
Can chew up his own crew to keep himself as the leader of the group.

Major Al E. Gator
He's the SOF who can not only give his confusing solution to a problem but has the ability to call in 50 others each with their own different solution to muddy the waters.

Major Harry Bruin
The unbearable AC who hasn't been to CRM and doesn't want to go!

Lt. Ozzie Trich
- puts on a real show... but when it counts he may wind up with his head in the sand!!! Watch out for him!

Captain Gabby Byrd
The copilot who was once asked for his opinion and has been yakking ever since. (Nobody can get a word in edgewise to ask him to stop!)

baer

Captain O. W. El
"Daytime is nap-time
Nighttime is MY-time!!"

Captain I. "Monk" E. Shine
He sees no evil...
hears no evil...
speaks no evil...
he lives with evil!

Major Swine
A total frequency hog... he always fancied himself as a talk show host.

Lt Col Harry "Bull" Dawg
Tough and tenacious, once he locks onto an approach, he'll never give it up

Lt. Horst Plae
He's your favorite wingman who's always horsing around, is never in position when you need him and who can't even seem to respond when you call him. A really fun guy!

Col. O.L. "Buzz" Ard
Can't seem to recognize how he's slowed down and the world has speeded up... but he can tell you all about how tough things used to be.

Captain E. Gell
He soars high... he's the one that we all strive to be. Great eyes — always focused on the job... he sees all the details yet never loses his perspective of the big picture.

Coping With High-Tech Cockpit Complacency

JACK L. KING
Aviation Consultant
Flight Safety Foundation *Accident Prevention*, Vol 49, No. 1, Jan 92

■ Complacency is caused by an overabundance of the very things which should be expected to prevent mishaps — experience, training, and knowledge. "Familiarity breeds contempt" applies to those who become so comfortable with cockpit routines their sense of alertness is dulled. By using the team concept of cockpit resource management (CRM), the involvement of all flight crewmembers in decision-making can contribute to recognition of, and coping with, complacency, especially in today's high-

Computerized electronics have taken over much of the aircrew workload. But will high-tech cockpits lead to deadly complacency?

tech cockpit environment which is aimed at reducing pilot workload.

Reliable, computerized automated systems are assuming more of the operational and monitoring details of today's high-tech aircraft. The crewmembers operating this equipment must recognize the advanced technology easing their workload as a step toward improved efficiency and safety can, ironically, create some problems by reducing their attention and contributing to complacency.

Among the other technological advances of today's high-tech cockpits, crew comfort has not been overlooked. For example, seemingly insignificant details, such as slightly wider and more comfortable flightcrew seats, have evolved, too. Obviously, such comfort features in the relative quiet of a jet cockpit provide a more favorable setting for complacency to develop than the noisy, uncomfortable cockpit configurations of years past.

More senior pilots can compare the significant contrasts of operating earlier equipment with that of today. For example, the late Capt Dick Merrill, the 45,000-hour pioneering pilot of Eastern Air Lines, emphasized the vast contrast in the comfort of flying transatlantic in a Boeing 747 compared to his first crossing in a noisy, poorly instrumented single-engine Vultee which was stuffed with Ping-Pong balls for emergency flotation in case of ditching. In another example, Merrill almost froze to death flying night mail during winter in an open-cockpit biplane.

Favorable conditions prevail for complacency to more easily develop in the high-tech cockpits of today than in our previous generations of aircraft. Although the cockpit technology presently in use may appear to be revolutionary, its progess has been evolutionary; advancements have occurred gradually with each upgrade and new generation of aircraft.

Today's transport aircraft have many automated systems to manage flight with precise navigational control and significant advances in the display of cockpit information. With increasing automation, the flight engineer's position is gradually being eliminated as technology allows the two-man cockpit to become the norm.

Although technology represents substantial positive achievement in transport aircraft, a number of safety concerns have been created. Among these are training procedures; real-life workload under normal, abnormal, and emergency conditions; the loss or gain of situational awareness in the new glass cockpit; safety and efficiency with a two-pilot crew; and, the operational consequences of fatigue, boredom, and complacency which might be caused by these more sophisticated aircraft.

The complacency factor may appear to be elementary to the highly skilled professionals operating today's complex aircraft; however, a comprehensive review of U.S. National Transportation Safety Board (NTSB) mishap reports attributing the probable cause to pilot error suggests an element of complacency could have been a factor in many of these occurrences.

Complacency Defined

Complacency is defined as being pleased with oneself, as experiencing self-satisfaction and contentment. A sense of being untroubled, undisturbed, unworried, unvexed, unplagued, and untormented may leave a lot of time in flight for the mind to wander beyond the stable flight environment of the smooth-functioning, high-tech cockpit. The highly automated aircraft has many systems which practically eliminate the need for pilot involvement, thereby providing additional time for daydreaming or other noncockpit-related distractions.

Aeromedical specialists have called attention to many aspects of the cockpit environment that lead to fatigue and distraction, but very little emphasis has been placed on conditions that can be conducive to complacency, especially in high-tech cockpits.

Most experienced pilots can recall errors which could have been attributed to complacency. Often the shock of recognizing a mistake will not be evident until an embarrassing situation happens — such as not properly correcting for a crosswind landing, missing a key item on the checklist, or not flying the correct approach procedure pattern.

Complacency can cause aircrews to run quickly through checklists, fail to closely monitor instruments, or to not use all navigational aids. It can cause a crew to use shortcuts and poor judgment and to resort to other incorrect practices which can mean the difference between hazardous and professional performance.

If the flightcrew member's mind is occupied by thoughts other than control of his own aircraft and avoidance of others, there is an excellent potential for deviation from accepted safe operating procedures unless the complacency is recognized and corrected.

Actually, complacency can be a rather enjoyable state of mind if the aircrews' accompanying self-satisfied thoughts are practiced while hiking, fishing, sailing, relaxing in a hammock, or doing other noncritical tasks. However, while operating an aircraft, a crewmember should recognize and avoid this natural tendency to lapse into a period of inattention.

There have been conflicting opinions concerning the specific duties and authority of individual flightcrew members since the first aircraft requiring more than one pilot was placed into service. In the interest of safety, military flight services and commercial airlines have standardized many operating procedures. For example, the callout and response procedure for each checklist item and the establishment of which crewmember does what during specific events, such as emergencies, are now accepted practices.

continued

Coping With High-Tech Cockpit Complacency continued

Crew Mix Affects Complacency

A thought-provoking flight safety position pertaining to the specific duties of a senior and junior pilot was presented at a Flight Safety Foundation meeting several years ago. The director of flight operations for an airline told the audience his company considered the ultimate in safety was achieved when a senior pilot was in the right seat supervising a younger and less experienced pilot who was flying the aircraft, especially during the landing approach. The reasoning was that the younger pilot possessed faster reflexes while the senior pilot overseeing his performance had the experience and judgment necessary to better assess the overall operation. Cockpit complacency would be less likely to develop in this particular configuration.

There has been speculation that using two senior captains might result in a situation which could induce cockpit complacency because their mutual respect and familiarity might result in bypassing checklists and procedures. The pairing of two senior captains may have been a rare occurrence during the earlier days of airline operations; however, in more recent years, the level of training and proficiency of the copilot or second officer has been greatly upgraded. For all practical purposes, today's transport copilot could be classed as a reserve captain because of his high level of skill compared with his counterpart of a few decades ago.

Some four decades ago, the airlines, as well as corporate operators, sometimes used inexperienced copilots in the right seat positions to serve an apprenticeship which consisted of on-the-job training. In many cases, this concept left little opportunity for complacency to develop because the captain had to be continually alert to ensure his copilot did not pull the incorrect lever at the wrong time. Staying alert was prerequisite to staying alive.

Flying the same aircraft every day, with the same crew, and using the same routes, more common to corporate operations than airlines, can lead to complacency. Each pilot learns precisely how his associate reacts, especially in a two-pilot flight operation. This familiarity also develops a tendency to implement shortcuts, such as accomplishing an abbreviated checklist without using callouts, and overlooking accepted procedures, such as not using an approach chart at a "familiar" field even though certain critical information could be overlooked.

Expect the Unexpected

Flying has been described as "hour after hour of boredom, punctuated by moments of sheer, stark terror." In recent years, the ending threat of this familiar axiom has been almost eliminated by today's reliable, high-performance aircraft. But, just as there are exceptions with mathematical probabilities, on July 19, 1989, this axiom proved true for Capt Alfred C. Haynes of United Airlines when his McDonnell Douglas DC-10 lost all flight controls while cruising at FL 370.

The aircraft suffered a catastrophic engine failure, and the uncontained disintegration of the tail-mounted engine's fan rotor caused the loss of all three of the aircraft's redundant hydraulic flight control

The high-tech cockpit provides the flightcrew with an abundance of easy-to-understand information. But this can lead to complacency.

Cockpit displays such as this help improve cockpit management.

systems, making the aircraft almost uncontrollable. In coping with the one-in-a-billion loss of flight controls, the captain, assisted by his crew and another DC-10 instructor pilot who was aboard as a passenger, spent 45 minutes fighting and nursing their crippled transport to the municipal airport at Sioux City, Iowa, where they maneuvered the aircraft to a semicontrolled crash. Their only control was using varying combinations of engines and power.

This mishap has been precisely recounted by Haynes and documented in several publications (FSF *Accident Prevention*, June 1991). Pilots reading the complete details of this report will learn a few lessons.

Haynes recounted there were five very important factors contributing to the degree of success they experienced. These were luck, communications, preparation, execution, and cooperation. Good luck was the most important, since "we were left with a chance to survive."

CRM Prevents Cockpit Complacency

In recounting the DC-10 mishap, Haynes related an important factor relevant to the event. He praised the company-sponsored CRM program introduced in 1980 and used the talents and knowledge of all members of the crew. During the hectic 45 minutes they spent controlling the crippled transport, the high level of cooperation on the part of the cockpit crewmembers was attributed by the captain to their earlier CRM training.

Until recent years, the industry had never placed emphasis on training crewmembers in cockpit management. The progression from right seat to left seat, or from flight engineer to copilot, traditionally occurred when enough time, seniority, experience, and technical skills were accumulated. After worldwide mishap reports indicated many probable causes of fatal mishaps involved lack of cockpit coordination, the CRM training program was implemented by the industry with the object of improving the situation.

CRM might be compared to changing cockpit crew authority from a dictatorship led by the captain, to a more democratic process, with each crewmember contributing knowledgeable input. This results in a more cooperative venture in the safe operation of the aircraft. Another advantage of this cooperative crew concept might be used in preventing a fellow crewmember from being lulled into a state of complacency. A casual conversation suggesting a cup of coffee or even taking a stretch could be the answer when one crewmember notices the signs of complacency in another.

Complacency is not a factor during proficiency flight checks or when performing emergency procedures under actual conditions. If crewmembers always operated with the same alertness and used an informal self-analysis of their performance as they do during such conditions, complacency would not be a contributing cause to a mishap.

Man/Machine Relationship — A Challenge to Complacency

Today's modern, high-tech aircraft and well-trained crew are excellent examples of a remarkable man/machine relationship. Although the machine function of this relationship seems to be making the most scientific progress by reducing man's workload, it is the thought process of man that developed the technology and directs its safe operation. Certainly, complacency should not be allowed to alter this relationship. ■

COCKPIT S

LT COL BILL KORNOVICH
Williams AFB AZ
Flying Safety, Nov 86

■ Stress is the result of an unforeseen or unexpected event during the course of a flight. This not only includes aircraft systems failures (emergencies), but also includes the unexpected — the event which is not routine. An example of this would be not seeing the runway at decision height or finding the runway does not look like you expected.

Any event or situation different from the routine or the expected can lead to disruption and fear — stress. By the nature of aviation, events can rapidly become life-threatening.

The cost of inadequate response to an emergency or unexpected situation can be death or the loss of costly equipment. The *safe* resolution of an aircraft emergency or unexpected event is largely the result of how well the crew is prepared to work together to deal with the stress.

During any stressful situation, my experience shows crewmembers can be distracted enough to affect the aircraft control. Of course, this is a function of aircrew proficiency, experience, and effective crew coordination.

This article may help you *prepare* yourself for the unexpected, which can improve your efficiency and reduce the level of stress in any given situation.

The Stress Factor

In the early stages of aviation, stress was a more normal part of training. Early aircraft did not enjoy a high reliability rate. Although young aviators of the past did not get the amount of training we enjoy today, they most probably spent a higher proportion of their training in stressful, life-threatening situations. The pilots who survived adapted well to stress, or at least took it for granted.

Air Force aviators today enjoy a very high level of reliability and safety in the equipment we fly. Our modern aircraft are designed and built with safety in mind and have many redundant features. The chances for human error are, in some cases, being designed away.

The bottom line is crews fly more hours incident-free, and they experience less "seasoning" flight time. The terms, "by the seat of the pants" or "I got it home on a wing and a prayer," are not part of modern Air Force war stories. In fact, most of the war stories seem to concentrate on keeping up with all the new equipment and avionics. Our simulator training programs encompass all the marvels of computer technology. However, little in the simulator can equal the stress of a real life-threatening situation. Because of this, when an emergency does occur, many of our pilots are taken totally by surprise.

I believe during the initial stressful moments of an emergency, many pilots have difficulty focusing

How does an aircraft commander deal with stress among the crew?

STRESS

on the problem and setting priorities. They are compromised in their ability to diagnose the problem and select a course of action. They may well overlook the proximity of the ground as their most immediate hazard.

The response of a crew and their ability to correctly handle more than one task simultaneously is, to a large part, a function of good crew coordination and experience. If experience is low, the successful aircraft commander compensates by delegating tasks to enable better prioritization and so keep ahead of the situation. This requires a crew who understands each other's habits and capabilities.

Experience together can help build working rapport, but not without effort. A competent aircraft commander is a cockpit resource manager and accordingly cultivates the crew's efficiency and trust.

Preparation for Survival

The Air Force Standardization Program prepares crews very well for "business as usual." Pilot skill levels are generally very good. Business as usual rarely results in mishaps. Yet a routine event, which may not be recognized by an inattentive crew, can lead to tragedy.

A few points should now be made:

- All *crewmembers must anticipate* the stress of an emergency or unusual situation. It is not a question of "if it will happen to me" — but "when it will happen."
- *Being prepared* for the stress of the inevitable emergency is difficult, but critical. Likewise, knowing how you and your fellow crewmembers may respond in light of your experiences may be the key to your survival.
- *What single action* can the pilot make to reduce the possibility of an immediate death? It may not ensure resolution of the original problem, but it will give the crew a chance to live long enough to take further action.
- Finally, the crew must *know the environment* in which they are currently operating. More importantly, they must plan for the environment they are about to enter (either planned or unplanned).

The best we can do, currently, is teach a management of priorities in crew actions. Basic training is aimed at a critical action approach, i.e., the Bold Face. Recently we have begun to consider prioritized use of the whole crew to get the job done. Good cockpit resource management will help keep basics from being overlooked (such as keeping the aircraft flying and getting away from the ground).

In a large multisystem, redundant-laden aircraft, like the C-141, there is a tendency for crews to misplace emphasis on a single complex system or on numerous systems. Entire crews have been distracted by multiple-flashing annunciator lights, horns, or bells. A more simplified survival approach should be taken to emergency (stress) training — reducing what I call the "along-for-the-ride" * time.

There are but few precious seconds during which the whole crew is trying to analyze what is happening. During these moments (as I have seen numerous times as a flight evaluator), the entire crew is distracted from the immediate goal of keeping the aircraft flying. Statistics show most multicrew, nontactical aircraft mishaps happen in the takeoff and landing phases of flight.

Every pilot has experienced the along-for-the-ride syndrome. When

continued

* The author defines "along-for-the-ride" time as a loss of situational awareness. Specifically, a time during an emergency when the crew is not totally aware of where the aircraft is or where they are taking it.

COCKPIT STRESS

continued

Even the most experienced aircrew member can undergo incapacitating stress when faced with one or more unexpected events. Difficult approaches, inexperienced crewmembers, and emergency procedures compound the seriousness of cockpit stress.

the crew is under the stress of an emergency, or unexpected situation, they may be giving little attention to the basics of flying the aircraft. This is obviously a definite lack of task delegation.

When this happens, it is important to have a preplanned course of action which will increase the buffer zone of recovery as I like to call it. These actions may be simple ones — grabbing a handful of throttle, selecting full thrust, leveling wings, regaining flying airspeed, and pulling the nose to the best angle of climb. It sounds simple. We would hope it is instinctive to highly trained pilots. (It is not always so when attention is misdirected to other tasks.)

If, however, the tasks are effectively delegated, the crew is again in control and not just along for the ride. The crew may not have fully analyzed the emergency or unusual event, but they are reducing their stress factor by increasing the margin for recovery and making additional time available to deal with the unexpected.

If this has not yet happened to you, it will. If you don't think it will happen to you, you're wrong. And, if you believe you, as an individual, cannot be overloaded to the point where you are along for the ride, you shouldn't be flying.

The Basics

You should not minimize the need for good systems knowledge

A planned course of action and good crew coordination are the best ways to increase the buffer zone of recovery.

and understanding. That need is basic. The intent is to emphasize mental preparation for the unexpected and the coordinated use of the crew. The unexpected increases stress, disrupts the thought process, and leads to the along-for-the-ride syndrome. Pilots don't like feeling they are not in control of any aircraft or situation — such as not being sure of where they are, what the aircraft is doing, or if they can safely complete a maneuver.

I experienced this feeling during a descent over mountainous terrain while being vectored by radar. No one in the cockpit was sure if the assigned altitude and heading would provide terrain clearance. Stress was high, and the crew was along for the ride. We told the controller we were leveling. The crew was then in control again.

A commercial airline lost an aircraft a few years ago in a similar situation. The crew was uncertain of terrain clearance (as revealed by the voice recorder). The stress factor was high as the captain and flight engineer discussed the terrain. However, the crew did not take the *one* critical action needed — stop the descent.

The aircraft was on autopilot and was continuing the descent. Everyone in the cockpit was along for the ride. They impacted the terrain during their discussion. The copilot was silencing the ground proximity warning (probably to hear the captain and flight engineer discuss the terrain).

The key, in my opinion, is for each crewmember to establish a point you will not proceed beyond. Some "no compromise" rules for the various stages of flight must be established. These are points where allowing a change in your habit patterns can lead to disaster. For example, in the C-141, you must decide the gear *will* be extended immediately after the flaps during a landing approach.

This leads to another point. There are those situations when everything feels right and is very wrong. The term "chair flying" is valuable here. Some time spent flying an entire profile in the mind can identify some of these areas and point out those no-compromise points beyond which you will not proceed.

As was pointed out earlier, the most critical phases are takeoff and landing. High speed, heavyweight rejected takeoffs in the C-141 are potentially hazardous. Being prepared for the stress of a system failure and the decision whether to stop or continue is essential. If the aircraft is generating forward thrust, no drag devices are deployed, the flight controls are operating, and there is a source of airspeed and altitude monitoring available, the C-141 can be flown. Thinking about basics, delegating tasks, and then confirming they are working properly can greatly reduce the stress of an annunciator light coming on at "go" speed.

The same preparation applies to landing. Not every approach has to result in a landing. Many pilots have experienced the stress of not being sure the aircraft will stop in the remaining runway. At that point, they may have been along for the ride. Again, establishing no compromise boundaries beyond which you will not proceed can keep you in control.

Knowing the stopping performance of the aircraft at a particular weight, and the point you will be on the ground (or be executing a go-around) are critical factors for the crew. If the entire crew has good experience and judgment and yet someone is not sure you can enter the landing environment safely, take the one critical action which will return you to an environment where you can remain in control — *go around*!

There are examples for every stage of flight, and the variations of these are endless. Always have a coordinated plan. The crew knows this plan will put them back in control immediately.

The stress and accompanying complications of an emergency are obvious and should be expected. Every crewmember is vulnerable to the along-for-the-ride syndrome. By remembering to properly prioritize the basics of keeping the aircraft flying and increasing your margin of safety, the crew can rapidly regain control. ■

Some things never change. This story on human pride is as

PRIDE

LT COL JAMES I. MIHOLICK, Ret
Directorate of Aerospace Safety
Aerospace Safety, Feb 75

■ It's probably more often blamed than credited for having caused various phenomena, including wars. It's known to "goeth before a fall." It's painted in giant letters on many SAC hangars. And, among other things, generally thought of as something Marines and fighter pilots have a lot of. It is a lot like many things which come to mind. A certain amount of it is necessary. Too little or too much is considered bad.

Pride is a very fragile thing, easily damaged, carefully guarded, demanding of constant attention. If ignored, it consumes great quantities of judgment, awareness, and curiosity. It simultaneously generates large amounts of complacency, conceit, and overconfidence. If respected, it motivates self-improvement efforts, increases the desire to excel, and allows for a realistic assessment of one's actual, rather than imagined, capabilities.

A "can do" attitude is too often embraced without reason or limitation. We consider the individual who died trying far superior to the individual who wouldn't even try, without realizing they both represent an extreme. We don't consider beforehand one who dies trying totally eliminates the possibility of success and becomes the equal of those who didn't try.

For some reason, we don't equate the daredevil who dies, trying to ride a motorcycle through fire, to the pilot who dies trying to attack a target not seen from a normal base leg altitude.

Both of them have much in common — they both thought they could, they both couldn't, they both failed. For whatever the reasons, improper equipment, improper training, improper odds, or improper "pride" level, neither accomplished the mission.

Was either more successful than one who didn't even try? At this point, the person who didn't try has infinitely greater odds of success, if only by default. By not yet trying, there is still open the option of future attempts.

Obviously, neither extreme will accomplish the mission. Success depends on tempering pride with judgment, even patience. We have to occasionally add to the "I can do it" attitude thoughts like "on the next pass," "when the weather's better," "if I had a different kind of airplane," or "as soon as I get some more practice." We must weigh the criticality of the task against the odds of success. Tunnel vision on the objective is considered heroic in combat but not on a peacetime local training mission.

Close air support training missions are fun, but they must also be educational. They must be used to develop the skill required to be successful in real combat, and part of this skill is the ability to assess the situation and apply the tactics

true today as it was more than a decade ago.

can do strange things

which will maximize the odds of success. We have to remind ourselves the objective of a simulated close air support mission is *not* to destroy targets. It is simply to practice the tactics and develop the skills which would give us the best chance of destroying a target *if we wanted to*! The loss of an airplane or pilot in combat is not considered totally fruitless. There is, however, no other way to describe that loss on a peacetime tac range.

The situation within the tactical fighter community right now is probably more hazardous than it has been for many years. We've been at "war" for 9 years, and the great majority of fighter pilots have combat experience. It's easy to become a little too relaxed in the relatively safe training environment. In fact, the odds of disaster are much less than we so vividly remember. Combine this with the fact our proficiency is lower than it was in combat. We simply don't fly as much. It's far too easy to project back to combat flying. How many of us feel we've "done it all" under the most hazardous conditions in the history of aerial warfare? Is this false pride? Probably not, for it *was* tough, and we *were* good.

How many of us feel, since we proved we could do it then, we can still do it now (false pride)? Consider how we project this "I can do anything" attitude to the new guys. We tell them, "If you don't know who the world's greatest fighter pilot is, you aren't one."

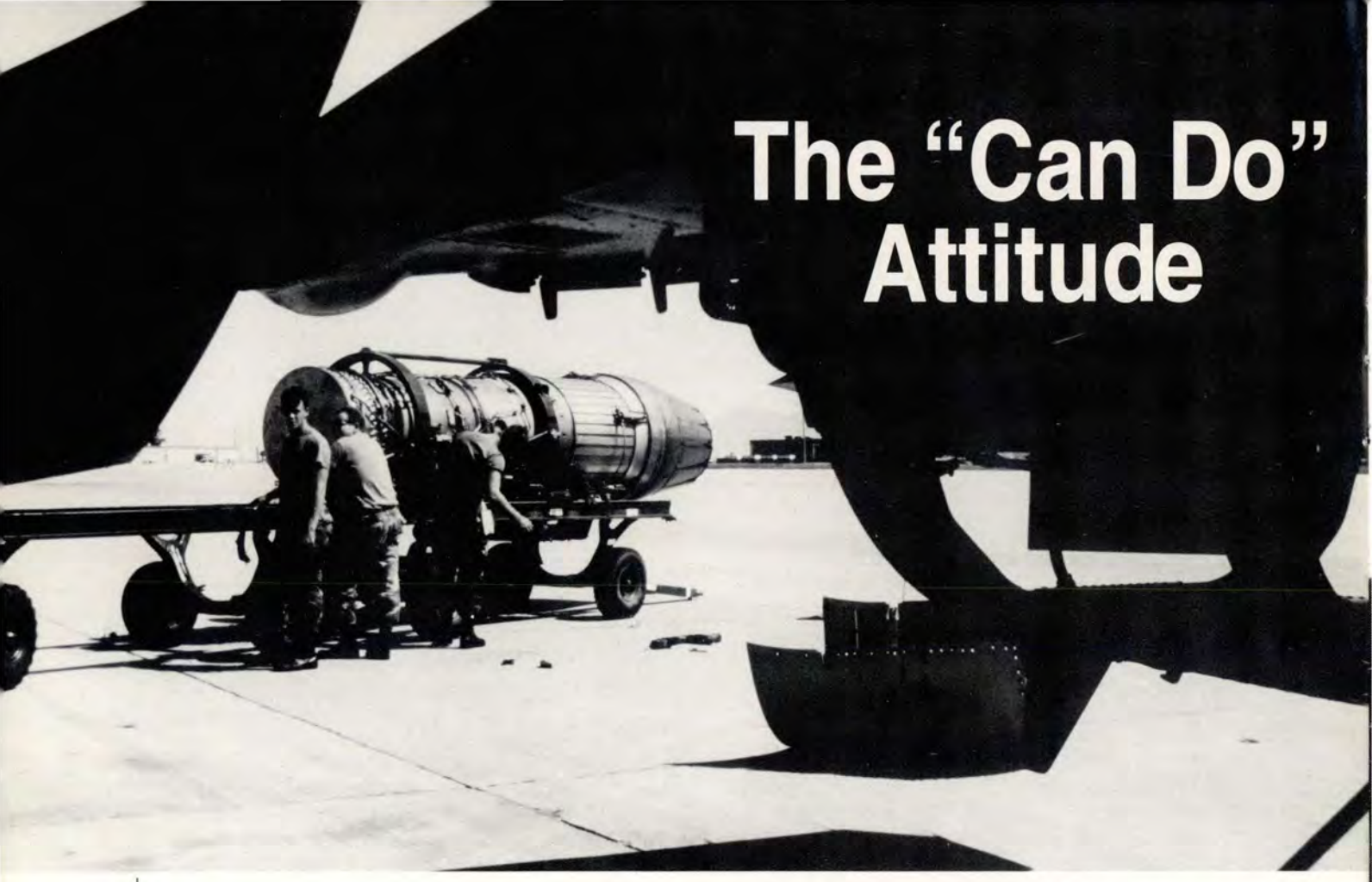
On the other hand, how often do we remind Blue 4 to become the world's greatest fighter pilot? Know your limitations and work to improve them. We have to emphasize the world's greatest fighter pilot isn't stupid and doesn't get killed trying to strafe a ten-dollar enemy bicycle under a 500-foot overcast. Great pilots know what they and their airplanes can and cannot do! They do not say, "I can do anything." They do say, "I can do anything within my and my airplane's limitations (and those things I can't do, I'll work my tail off practicing until I learn how)." In short, they are proud, but smart enough to know pride can kill them if not respected and if not controlled.

Hopefully, the right hand will continue to enjoy a 50:1 kill ratio over the left hand in the bar hassles. Fighter pilots will continue to do it better, best, or on the first pass. It's fun being good, but let us not be so good it kills us.

As poorly as it tastes, some pride occasionally must be swallowed for survival's sake. And survival is what it's all about, at least in terms of self-generated losses. A prerequisite to being the very best is, obviously, "being."

We must keep sight of the very reason for our existence, for our ability to do our job depends not only on our skill, but our numbers. There is one thing better than having the best fighter pilots in the world, and that's having a lot of them! ■

The "Can Do" Attitude



MSGT GEORGE KROEPIL, JR.
35th Equipment Maintenance Squadron
George AFB CA
Flying Safety, May 88

■ One of the most admirable and desirable qualities in the business of maintaining aircraft is a "can do" attitude. Each of us can think of at least one member in our unit who possesses this personality trait.

This individual or team, given the necessary tools and time, can almost assuredly complete the task. Whether it be launching and loading aircraft under combat conditions or preventing an aircraft from going "hangar queen" status (not flown in 21 or more consecutive days), people will find a way. Once found, this "can do" attitude becomes invaluable to the work section. But, as many of us know, this "can do" attitude can also become a problem.

This same attitude can, and sometimes does, contribute to mishaps, especially in the area of maintaining aircraft. But what about this "can do" attitude in our everyday workload? Recently, I experienced this attitude firsthand.

This example took place in the inspection section of our maintenance squadron. The inspection section performs all major and minor scheduled inspections for our assigned aircraft and also repairs all discrepancies found during the inspection. When one aircraft is completed, it rolls out of the hangar and in rolls another. It is a continuous cycle. Since the inspections are scheduled in advance, it is essential each aircraft be finished on time.

To add to the anxiety of getting off schedule, every major inspection has the potential to produce a "hangar queen" which must be reported up the chain.

Aircraft 0288 was scheduled for a 600-hour periodic inspection — the most extensive inspection accomplished on this type of jet. It takes 11 days to perform the inspection. The inspection consists of 255 work cards containing 1,275 items, the removal and installation of 130 access panels, and the repair of all discrepancies. In addition, the no. 1

engine was scheduled for time change, which would give us one more day to complete the inspection. If everything went as scheduled, the aircraft would roll out of the inspection hangar and fly well ahead of its "hangar queen" status day.

This was a big "if" as the saga of 0288 revealed.

Day 1: At 0700, the aircraft is scheduled to be in the inspection hangar but arrives at 1230 p.m. and the work begins.

Day 2-4: Everything going as scheduled. Inspection discovers 723 discrepancies. Maintenance crews have been working 10-hour days . . . minimum. Things look good.

Day 5-8: Repairs are in progress and no delays in sight. Should be ready for installation of no. 1 engine tomorrow. It has been 10 days since the aircraft has flown.

Day 9: Engine installation complete, but during various system operational checks, the vari-ramp system will not fully operate. Troubleshooting in progress. With 14 days since the last flight, the "can do" attitude is present.

Day 10: Vari-ramps still a problem, but crews continue putting aircraft back together. Have to press for engine run tomorrow. Still could make the 12-day schedule.

Day 11: Vari-ramp problem corrected, but a major problem surfaces. During the engine run, a fire warning light illuminates. No fire, but a faulty fire loop in no. 2 engine bay. Must remove engine to replace loop. Crews working around the clock as the 16th day from last flight passes.

Day 12: No. 2 engine removed and requirement for inspection of engine bay completed. Seventy-three discrepancies found. Repairs in progress. People are still smiling, and morale is high. Cooperation is abundant despite the long hours and constant setbacks. The "hangar queen" pressure is understood but has no ill effects.

Day 13: Start falling farther behind but received support from the flight line folks. No. 2 engine installed, and aircraft is readied for maintenance run. It has been 18 days since last flight. Beads of perspiration are forming at the hairline.

Day 14: Saturday. No cartoons today. The readjusted completion time for all maintenance is set at 1600 hours today. It is now 1500 and the last wrench has turned. Engine run goes without a hitch. The job is finished . . . well, not quite. The aircraft has to fly before 2400 Monday or it will become a dreaded "hangar queen." The ball is now in the crew chief's court, who has been personally involved in the entire inspection process.

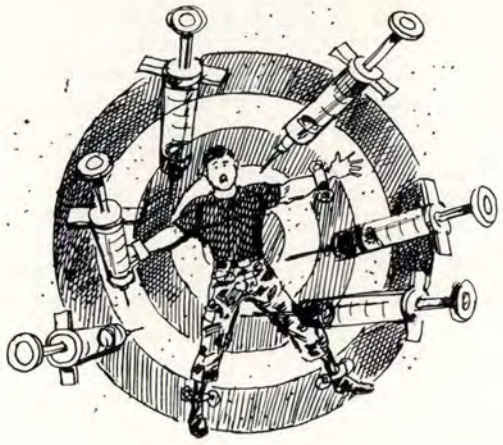
Day 16: Monday. Tension mounts as the day begins. Aircraft 0288 sits on the flight line as preparations for its first flight in 21 days are underway. The crew chief reads through the forms, services all the systems, and runs the checklist over and over so nothing is forgotten. The weather is good as the aircrew shows up at the jet and begins the preflight. A crowd starts to gather in the background. The crew starts the engines, and all conversation stops. Anticipation rises as the aircraft taxis toward the runway. All eyes are fixed on the approach end of the runway searching for the black smoke before takeoff. Suddenly, anxious onlookers see the black smoke and 0288, gear retracted, headed skyward.

For us, this was a success story. No, we didn't finish the aircraft in 12 days, but the "can do" attitude didn't override our professional attitude. Although the "can do" attitude can become a problem in situations such as this, the more important professional attitude prevailed.

The professional remains within the "box" of established rules, regulations, and procedures. With an honest "can do" effort to complete a task at hand, the professional will say "back off" if something is not correct or within the known "box."

In summary, the "can do" attitude remains a very worthy attribute for any maintenance person. But we must ensure this "can do" attitude is used in conjunction with a strong sense of professionalism. If it is, then the "box" of our particular working area, rules, regulations, and procedures becomes clear. The qualities of a "can do" attitude and professionalism combined have unlimited potential. ■

MAINTENANCE MATTERS



Accidental Injections

■ Responding to a "Red Ball" to repair a hydraulic leak, a specialist probed blindly with a wrench inside an F-15's access panel to locate and tighten a suspected loose B nut. Seconds later, he felt a sharp pain and quickly pulled his arm out of the panel.

With the help of the crew chief, the specialist removed his field jacket, revealing a swollen and discolored arm. Within minutes, the specialist was in the emergency room with a corps of doctors working to save his injured limb.

The cause of the specialist's painful, and potentially fatal, injury was the injection of hydraulic fluid into his arm as a result of a pinhole leak in the aircraft's 3,000-psi hydraulic system. Fortunately, after painful surgery and several weeks' recovery, the specialist returned to duty.

This type of mishap is not uncommon, and most maintainers are aware of the hazards of working with high-pressure hydraulic systems. However, many are surprised to learn low-pressure systems, such as paint spray systems and grease guns used in aircraft maintenance, are also capable of injecting foreign substances into an unmindful maintainer's body.

An unwary corrosion control specialist also learned a painful lesson when he was seriously injured attempting to clean the spray orifice of an airless paint gun. The specialist was new on the job and had not been briefed on the safety requirements for using and cleaning airless sprayers.

With his hand over the orifice, he accidentally injected himself with a dose of polyurethane paint. Since aircraft paints contain exotic chemicals, such as heavy metals, in addition to causing painful injuries, an injection can also cause deadly systemic poisoning. As a result of this mishap, the untrained painter lost 15 days of work.

A grease gun may seem like a pretty innocuous piece of equipment. Yet, its careless use is the cause of the *majority* of Air Force accidental injections, injuring an average of two folks annually.

A typical example was a maintainer who was using a piece of safety wire to unplug a clogged fitting on a manual grease gun. When the wire was removed and the obstructon cleared, grease was injected into his finger, through his hand, and into his wrist. Another technician was injured as he was wiping a grease gun fitting with a rag. The grease penetrated the rag and was injected into his palm.

As with any type of equipment, it is important to keep hydraulic systems properly maintained. It is also important for supervisors to ensure personnel are properly trained and follow technical and safety directives when working with them. ■

Warning!!!

■ Every maintainer knows (or should know) **"WARNINGS"** are put in TOs to prevent injury or death. Still, some folks fail to observe **"WARNINGS,"** with tragic results. In fact, the majority of maintenance-related injuries are the result of someone failing to heed a **"WARNING."** The following is a deadly example of what can happen.

A ground equipment specialist was tasked to remove the ram assembly from a B-4 maintenance stand located in the base salvage yard. He raised the stand to gain access to the ram but failed to insert the two safety pins as required by the TO. He also failed to heed the **"WARNING"** in the TO which stated, "Do not place arms through scissors assembly."

When the specialist loosened the hydraulic line, the stand collapsed, pinning him between the structure and the scissors. He was fatally injured.

The lesson is clear. A **"WARNING"** is always a warning, whether you are being supervised or not. Heed all **"WARNINGS,"** whether maintenance is being performed on the flight line, in the shop, or the base salvage yard. ■

☆U.S. GOVERNMENT PRINTING OFFICE: 1992-679-016/60000

MAINTENANCE MATTERS

Forward of the Intake

■ Murphy's Law for FOD states: "If it's forward of the intake and it comes off, it *will* go down the intake." Here's an example.

During a postflight inspection, an F-111 crew chief discovered severe FOD damage to the no. 2 engine. Further inspection revealed a fastener missing from panel 1202 forward of the no. 2 intake. The engine was removed and sent to the engine shop where specialists found the missing fastener in the exhaust section of the damaged engine.

A review of the aircraft records indicated panel 1202 was removed and reinstalled to allow access to circuit breakers to troubleshoot a landing gear problem. According to the forms, the panel was properly secured and inspected by a qualified 7-level.

The cause of this mishap, and hundreds of others like it which occur every year, is not that the screw was torqued improperly and inspected. Rather, the locking feature of either the screw or nut plate was no longer functional. To prevent this from happenng, TO 1-1A-8 requires new screws to be installed each time a panel is installed forward of the intake.

The problem with this requirement is there are usually a heck of a lot of panels forward of a jet's intake. In fact, almost all of the panels on the A-10 are in front of its motors.

Fortunately, there is a way to check the locking feature of nut plates and screws. Self-locking nuts, 3/8 inch or smaller, can be checked by the finger-tight method. If a nut or screw can be run down by the fingers after the locking feature is engaged, the locking friction is no longer effective, and the nut or screw must be replaced. This check only takes a second, but it is good insurance against FOD. Make it a habit. ■

Terminal Fire

■ During a routine phase inspection, a tanker crew chief found a broken wire on the pilot's window heat terminal. An environmental systems specialist was called to replace the terminal lug.

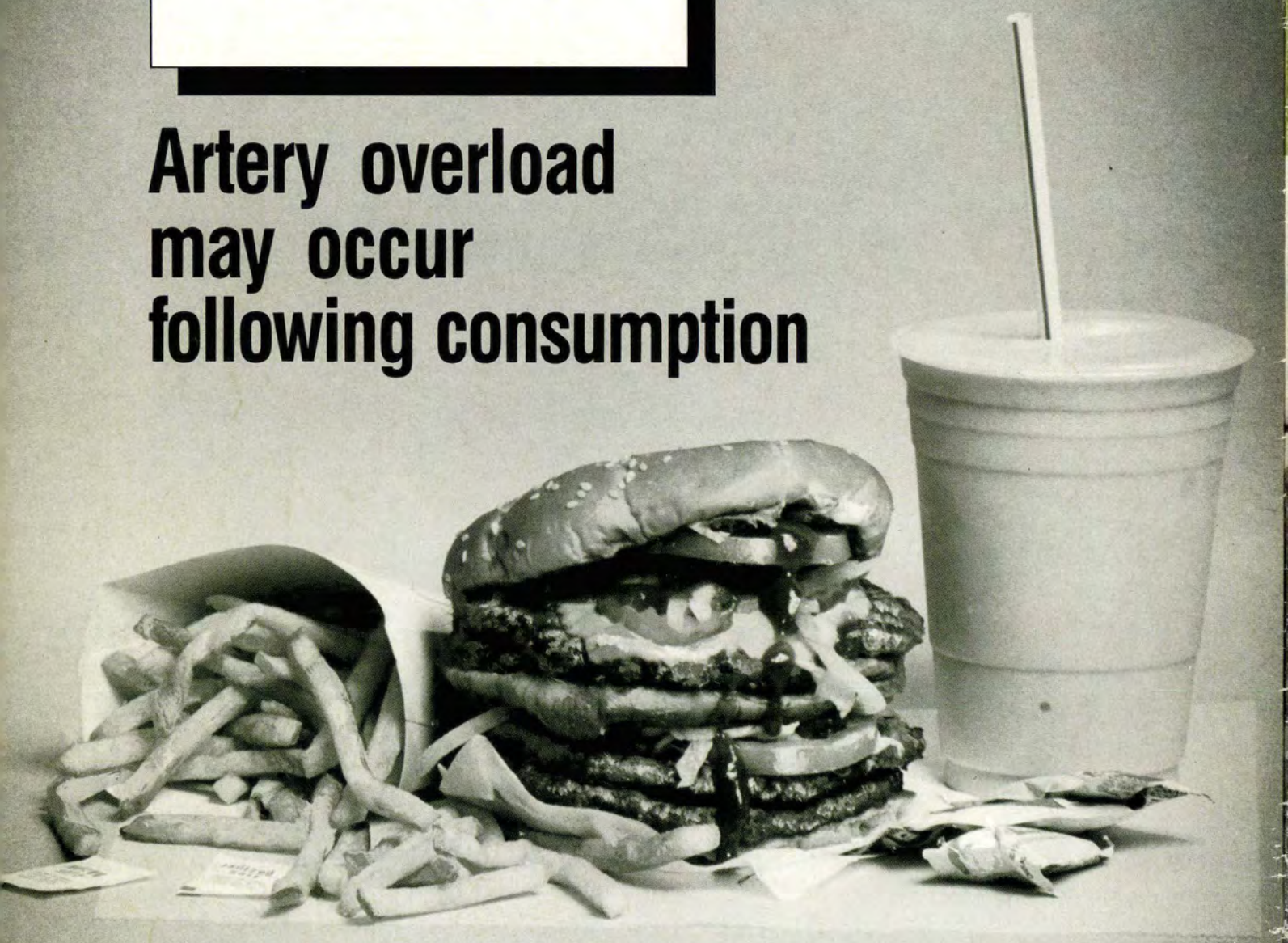
During climbout on the first flight after the inspection, the flight crew heard a loud pop followed by 2-inch flames and black smoke coming from the pilot's window. The crew immediately turned off the window heat and the flames disappeared. The pilot declared an emergency, dumped fuel, and made an uneventful landing.

A maintenance team had no trouble determining the cause of the fire — a short between the window heat electrical terminal and one of the window bolts. A closer look revealed the terminal lug installed by the environmental specialist was the wrong part number. It was too long and arced against an adjacent window bolt.

To preclude surprises like this on your jet, always verify the part number with the tech order before installing a part. Don't simply match the old part with the new one. It could be that the old part had failed because it was incorrect to start with. As magic as our computerized supply system is, there is always the human element — Murphy's Law — to consider. Take the time to check the TO for the right part every time. ■

WARNING

Artery overload may occur following consumption



Grease, salt, and sugar are NOT part of the basic *Healthy Heart* diet.