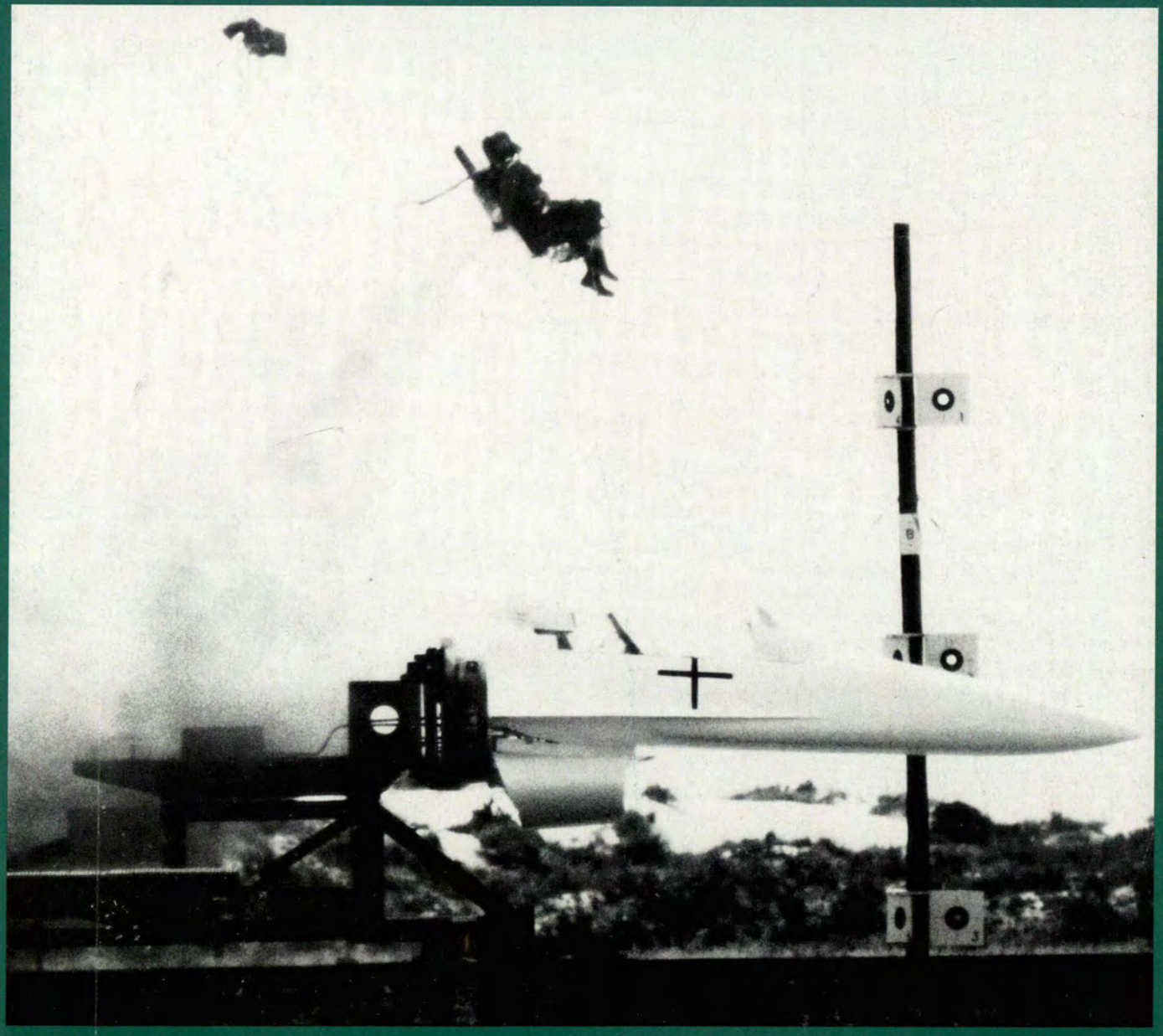
flying SAFETY

JULY 1991

Backing Up The Safety Program



THERE I WAS

■ As the safety officer, I had read hundreds of reports over the years, each time trying to analyze what happened at the wrong time to cause a mishap to occur. It was always easy to sit in the squadron with other pilots and point fingers at those faceless persons in the mishap reports.

Well, now it was my turn to analyze again. But this time I wasn't on the investigation board. *I* was the pilot the board should have been investigating. As the other pilot I was flying with said, "We just used up one of our 'luck marbles' in our flying career." Thank God we both had some left.

It was just another intercept mission — oh yeah, ho-hum — but there were factors to consider. I had just come in the day before from overseas and had jet lag (I was not thinking at the normal speed and was somewhat fatigued). However, I was an Eagle driver. I could hack it just like the other 40 squadron pilots.

The fatigue was the first "minus" in the equation. The second was proficiency. I had flown five times in the past month, so I was just maintaining "mission ready" and only had about 125 hours in the F-15. But that was like the rest of the pilots, and *they* could hack it.

The next "minus" was the weather — 500-foot overcast, with rain, and about 2 miles visibility. No big deal. Just another ILS approach . . . so I thought.

Okay, now you're thinking with all these "minuses" in the equation, why don't I just punch out during the taxi? Well, the "plus" factors that day included the best airplane in the world and the fact I was flying with an IP who had seen everything during his 2,000+ hours in the F-15 . . . or so he thought!

The mission went smoothly in the airspace — good fun and good training — and I felt like I was getting back in the saddle. Ready to RTB, I could relax now since the demanding part of the mission was over. Boy, was I wrong!

As lead put me into 2-mile Eagle radar trail, we started through the dense, gray clouds at 10,000 feet. I

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SPECIAL FEATURES

REGULAR FEATURES

DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, OSAF

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THERE I WAS

continued

had a good lock on lead and called it. We started vectors to pick up the localizer. Lead started to slow to 200 knots and continued down to 2,000 feet. I was now trying to maintain SA on what lead was doing, and deal with master caution and inlet ice lights when lead started his turn onto the localizer. The last radar picture I had was of lead 2 miles ahead at 2,000 feet starting his turn. Then things started to snowball, and I hadn't thought of a backup plan for what was about to happen.

I now had a search display only on my radar, that is, no lock on lead, and the localizer bar was coming off the wall. I now decided to fly my own approach and intercept the ILS since I was low on gas.

I hardened my turn to get the localizer but hadn't configured as of yet. I also hadn't let lead know I had lost vector contact. Lead had already slowed to final and configured. I was now on the ILS and slightly high and got the call to change to tower frequency. We had just changed our radio setup between primary and the aux radio, and this added to my tasking.

While I looked down to change to the correct frequency, I continued to try to lock on lead but was unable. The radar then got a lock, but AAI confirmed it was only a C-141 on downwind.

At this point, I was getting task saturated and started to consider my options, but time was running out. I was now at 5 miles with no lock and almost no clue. Things just didn't seem right, and I called requesting lead's DME, but the new radio setup led to confusion, and I called it on the wrong frequency.

Now at 3 miles, I broke out of the weather, and the hair stood up on the back of my neck. Lead was not in sight, and I called him again on the correct radio and asked his range. Just as I was about to do a 6-G missed approach pullup off the ILS, I heard a sobering "500 feet . . . behind you."

After climbing down the ladder and kissing the ground, I started to analyze once again what had happened and why I was not dead. Well, it was not just one thing. As in any other mishap, it was all those minuses adding up.

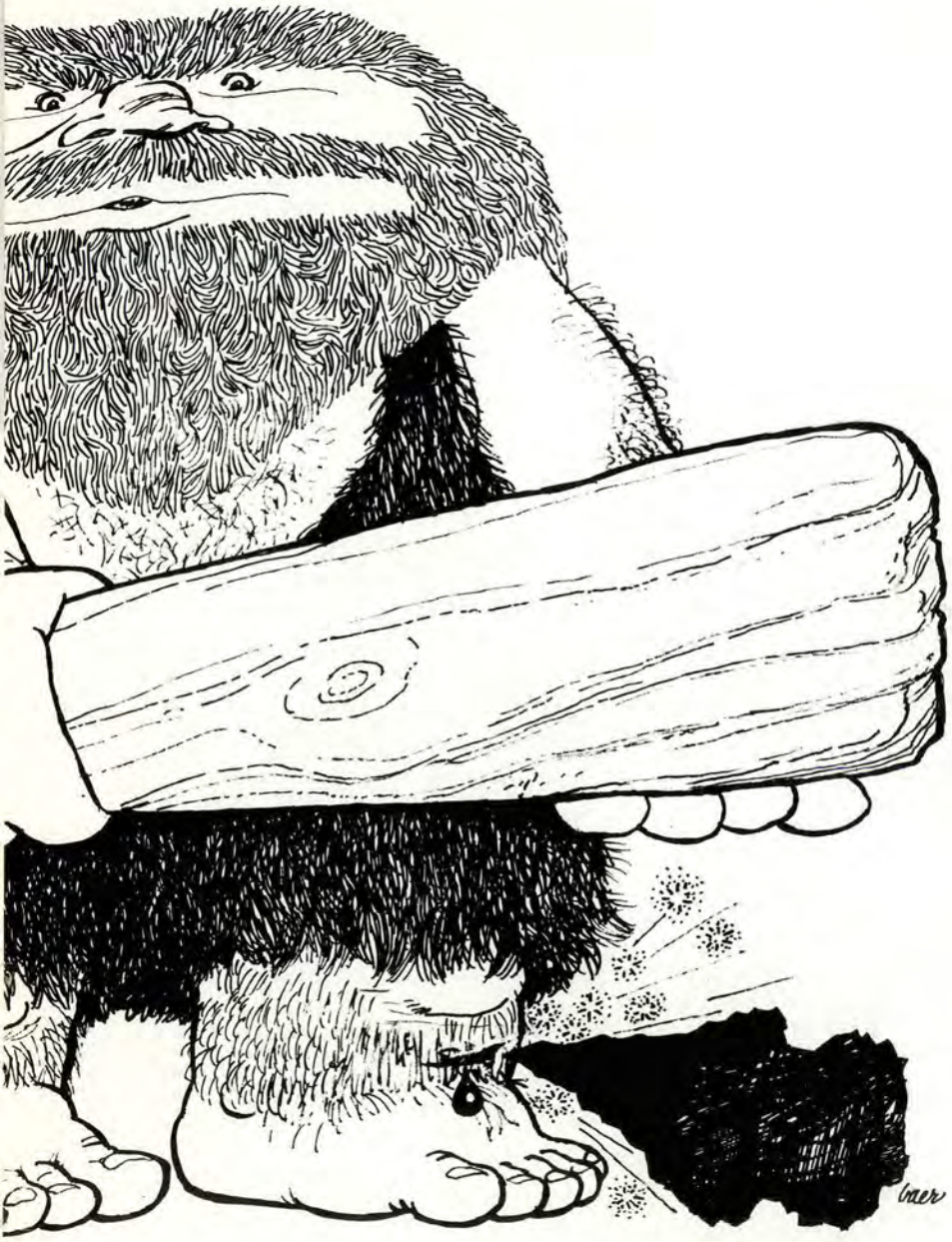
Because of my hard turn on final and because of my late configuration and higher speed, I had passed lead. And because of task saturation, complacency, and ego, I hadn't called lost contact. I didn't want this experienced F-15 IP to think I couldn't hack a simple radar trail recovery. Well, I showed him! I proved two airplanes *can* be in the same piece of sky.

Since this occurred, I spilled my guts to other pilots so they wouldn't put themselves or me in this situation again. During my discussions, I found I was not the lone ranger. Stories came up of individuals in the same type of situation. Now, some started to speak out and admit it. I wish they had done so earlier. I might have been a bit more on the ball if I had known of the consequences.

One month after my situation, another pilot came to me and said, "I'm glad you told me about your trail experience. I found myself in the same situation last night after a night scramble RTB in bad weather. I learned from your mistake, and it may have saved me." ■

BR

ONK



LT COL JOHN W. KOCH
Air Force Safety Agency

■ Your name is Bronk. You live in a cave. You are hungry. You are smart. You think there must be easier ways to hunt than chasing animals over a cliff. You sit down one day and think.

You remember the day you hurt yourself on a sharp rock. You wonder what would have happened if that rock had gone deep inside you. You find a sharp rock and throw it at a tree. You notice the rock sticks in a tree, but not the tree you threw it at. You pick it up and cut your hand. You throw it again. You almost hit your mate in the head. You decide you need to look before you throw. Your mate decides you need to throw it where you are aiming.

You practice some more. Most of the time, the pointy end of the rock does not hit the tree. Some rocks break, some get lost, some of your friends get hit and get mad at you. Your mate decides you should have a meeting so your friends won't be mad anymore. The first system safety group is created.

Discussions with your friends result in an improved design (a rock tied to a long stick) that keeps the pointy end forward and results in better accuracy; range safety procedures are developed; the throwing spear weapon system has been invented.

Bronk learned a lesson the hard way. If he had first talked to some of his contemporaries, he would have found someone who had already learned the same lessons. He could have started with a tested design and improved on it. Others could have outlined the hazards he would face. He would have saved months of development time, and not have risked losing his mate or his friends in the process.

The purpose behind the modern system safety group is not a complicated one: Learn from other's mistakes and successes — do things smart. "The goal of this (system safety) program is to minimize loss of personnel and material resources due to mishaps and to preserve the combat capability of the Air Force by ensuring system safety is applied

continued

BRONK

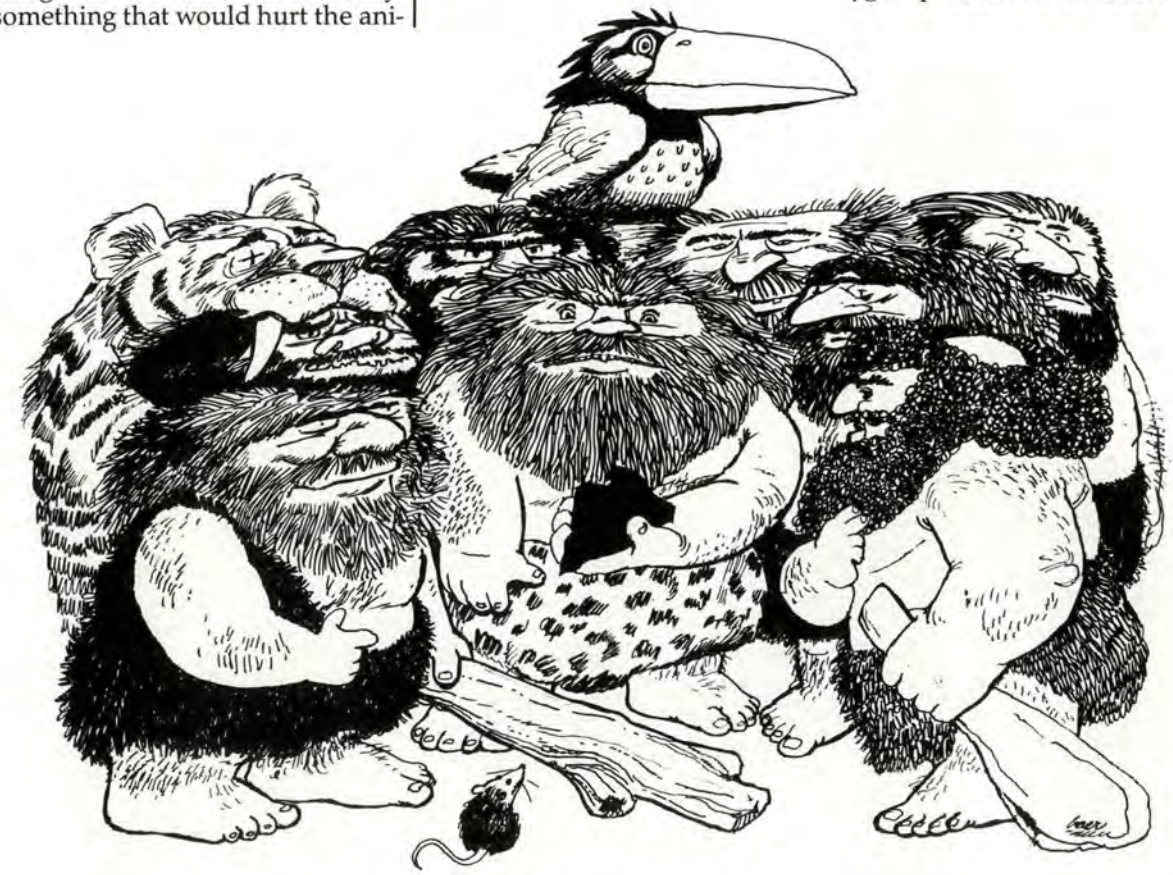
continued

throughout a system life cycle" (AFR 800-16, *USAF System Safety Program*).

Bronk would have met with better success had he begun his system safety group at the proper time. Sitting in his cave, Bronk was working on the Mission Need Statement (MNS). He should have considered then, while describing his needs, the system safety requirements, criteria, and constraints to be considered in his development program. That's the time to consider such things as the need for accuracy, something that would hurt the animal but not the hunter, and something that could be used repeatedly.

Later on, as specific operational requirements were developed, Bronk could have developed a description of his proposed system safety program and requirements in his Operational Requirements Document (ORD). Had he done that, his system safety group would have been in place long before the first rock was thrown at a tree. The system safety group would have pointed out the hazards of handling and indiscriminately throwing rocks. Safety procedures for testing the new weapon would have been developed. Additionally, group experiences in related areas could have been drawn upon to not only develop a safer system, but to develop it faster and better.

Once the first throwing spear system is developed, however, the responsibilities of the system safety group do not come to an end. In fact, they are only beginning. The group needs to sit down with the



first hunting party and discuss what happened. Did the weapon work as intended? If not, what can we do to improve the design? Was anyone hurt while using the weapon? If so, then how can we change the design to prevent injury, yet still have an effective weapon?

In doing its job right, the system safety group would follow the development and use of the spear from the initial stages of production to the development of spear throwers, reusable shafts, and perhaps even the bow and arrow. The group would be continually evaluating weapon system use and experiences and constantly working to improve the safety and effectiveness of the system.

The modern system safety group does the same. AFR 800-16 outlines the management of the system safety program. MIL-STD-882B, *System Safety Program Requirements*, outlines specific requirements for accomplishing a system safety program. Together, these two documents form the backbone of the USAF System Safety Program. It has helped us achieve our current record low mishap rate through the development of safer weapon systems for our warriors to employ. But to be effective, everyone must participate in the process.

When you see a design problem, let your safety officer know. The command will evaluate it and then take it to the program manager or director, if warranted. The system safety group is the decision-making forum, considering all aspects of the proposed change. The following experiences should help explain the process.

A newer design ejection seat was proposed for a tactical attack jet. Every ejection in the aircraft was reviewed. In no case would the new seat have saved a life that was lost. Every out-of-the-envelope fatality with the old seat would also have been out-of-the-envelope with the new seat. Furthermore, the injury rate for the old seat was below both the USAF average and the new seat's rate. Spending money for a modification that would not be an improvement could not be justified, and the old seat was retained.

A new oil quantity gauge was proposed for aircraft "X." The current gauge was deemed inadequate because it gave a reliable indication only from "full" to "one-half." For any quantity below "one-half," it still indicated "one-half." At the SSG, a new engineer asked, quite innocently, what the problem was. "If the quantity gets real low, a low pressure light comes on, and we'll tell the pilot to land." There was no shortage of pilots available to tell him that "light comes on" is not the end of the flowchart, but only the beginning.

Having engine(s) with unknown oil quantity is not a trivial problem, especially if you happen to be deploying over a large body of water. Being able to accurately monitor a decreasing oil quantity situation could be the difference between a timely divert to a routine landing or an unscheduled dip in the "pond." The airplane got a new gauge, one that accurately depicted oil quantity from "full" to "zero."

Overheard at another SSG was the statement: "Well, if this does fail, the fire will burn through the engine case, heat up the compartment, trip the fire light, and the pilot can then shut down the engine and land." Wrong again. The fuel manifold got fixed. Once more, "light comes on" is not the end of the process, only the beginning. The SSG is the place where the users and managers of a weapon system get together to ensure that lights do not come on.

Bronk made a few mistakes before he developed a system safe and effective enough for his hunting parties to use. Our goal is to develop safe and effective systems the first time. With proper feedback, the system safety groups can continue to ensure safe and effective weapons for our modern-day warriors. From the day we sit down in our cave and decide we need something new, to the day we bask in the glow of a warm fire and a full tummy, the system safety process is quietly and confidently guaranteeing the opportunity to lead a long and happy life using the most capable weapon systems in the world. ■

Keeping The Bombs On Target

The aftermath of Operations Desert Shield and Desert Storm has centered thus far on the remarkable effectiveness, professionalism, and dedication of all those involved — *RIGHTFULLY SO!* But now is the time to focus on a different aspect. What can we learn from our experiences that will make us even more combat effective in the future?

MAJOR BILL WHITE
Chief, Physiological Support Division
AFSC Hospital
Edwards AFB, California

■ The Warrior will always take up the slack. Since the beginning of flight, the interface of man and machine has demonstrated man's adaptability and willingness to do whatever it takes to get the mission accomplished.

For example: Brig Gen Chuck Yeager (Ret) sums up the tenacity of men in flight in a WW II scenario. When unexpectedly being pounced by a German ME-109, the WW II Warrior would sometimes dive close to the ground. After ensuring terrain clearance, they would aggressively pull heavy G loads, knowingly sacrificing their vision even to the point of blacking out because they knew their flightpath was headed upwards. Hopefully, the adversary would be overly aggressive and lose consciousness in pursuit. After all, what's the trim and blue sky for anyway?

A Success Story

When the F-16 came on line, we smacked a couple of birds into the ground. G-induced loss of consciousness (GLOC) became the battle cry, and the response was impressive. The Air Force Inspection

and Safety Agencies, partially following a similar response by our sister service, instituted an eye-opening survey asking aircrew members to anonymously "fess up" to the actual extent of the high-G problem.

With the operators' overwhelming confirmation there was a problem with GLOC, we responded aggressively. The combined efforts of safety personnel, operators, flight surgeons, researchers, and aerospace physiologists were soon evident — drastically improving the aviators' survivability in this high-threat environment.

Today's Needs

With today's focus on a smaller, better-equipped, better-prepared Air Force, the challenge of making the fighting machine and its support systems more "user friendly" should be obvious. Operation Desert Storm proved the viability and effectiveness of high-tech, smart weapons, but what about the Warrior, the "carbon based" element in the cockpit? I'm sure I don't need to remind you up to 80 percent of all aircraft mishaps are caused by the human element.

This is not an implication we as an Air Force have been negligent — on the contrary. Many returning Persian Gulf crewmembers have complimented the efforts to prepare them for their combat roles. But we certainly cannot become complacent. It is the appropriate time to hone the cutting edge of aviation safety, redirecting our emphasis where necessary. Therefore, the motivation for an aircrew survey addressing physiological stressors our folks encountered in the Persian Gulf is paramount.

All Gulf crisis veterans should be given the opportunity to express their concerns. There will be few surprises: Circadian dysrhythmia, mission scheduling, crew duty-day waivers, crew rest quarters (could we develop a modular transportable facility and preclude eight crewmembers per room, all on different schedules?), diet and nutrition (realistic availability of meals), spatial disorientation in featureless desert terrain, and sufficient fluids to hydrate properly — even airborne.

Furthermore, combat stress, deployment, family separation, and cockpit resource management must all be reevaluated. And finally, another "biggie" — heat stress and the chemical defense ensemble. If we're going to push hydration, let's be prepared to handle liquid waste.

With crewmembers chewing on coffee beans to mainline caffeine, entire crews asleep on the flight deck, or a fighter pilot setting his wristwatch alarms to ensure he wakes up for start time after strapping into the jet, we need to closely scrutinize the data and search for constructive alternatives.

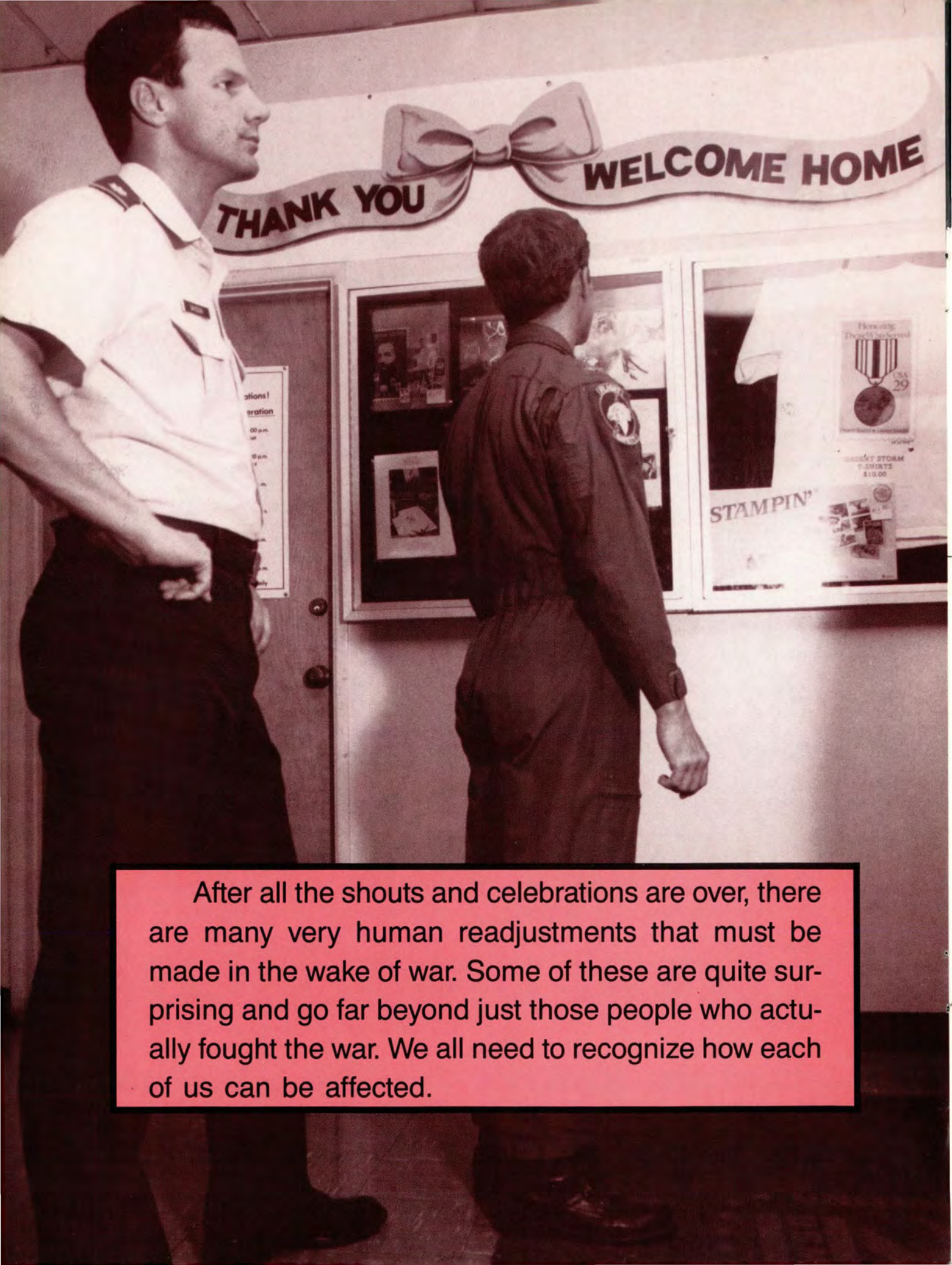
We Need Your Help

There's always room for improvement. It would be incredulous for us to pass up the opportunity to listen intently to our Warriors. Just as the GLOC survey became a catalyst for our successful focus on the high-G threat, a *nonattributive* survey on lessons learned from Operations Desert Shield and Storm could provide relevant direction to our ongoing and future efforts. "Those who forget the past are doomed to repeat it." A focused effort today will be cost effective in the future, ensuring our crewmembers' safety and ability to "Fly, Fight, and Win," to keep putting the bombs on target — tomorrow and always. ■

HELP US CHART PHYSIOLOGICAL STRESS

The Air Force Physiology Program requests your participation in an Air Force-wide survey on physiological stress. All aircrew members are invited to take part, but the focus will be on those problems encountered in the Persian Gulf. If interested, please write or call: AFSC Hospital/SGT, Physiological Support Division, Edwards AFB, California 93523-5000, DSN 527-4535.

We must ensure crewmembers' safety and ability to "Fly, Fight, and Win." A focused effort now will be cost effective in the future to guarantee we keep putting the bombs on target.



After all the shouts and celebrations are over, there are many very human readjustments that must be made in the wake of war. Some of these are quite surprising and go far beyond just those people who actually fought the war. We all need to recognize how each of us can be affected.

Easing the Transition

MAJOR (DR.) JOYCE E. TETERS
Air Force Safety Agency

■ Desert Storm is over, and the troops are coming home. Ya-a-a-y!! Man, we feel great, don't we? Everyone, from the returning troops to those who stayed behind are looking forward to things getting back to normal. Everyone is happy, and all are breathing a sigh of relief. And we live happily ever after, right? Wrong! There is still some hard work ahead.

When you have been TDY and return home, is everything okay when you get there? Sure, everyone is excited in the beginning, but this euphoria soon wears off, and within a few hours, an argument happens. Why? Because there have been changes. You, your family, and circumstances are different. You don't just come home and pick up where you left off. You have to go through a period of transition to finally get back to a smooth-running family. The same is true of your squadron and your work section.

This article is designed to help you with that transition. First, you need to know what will happen when you are all under the same roof (so to speak) and what problems you'll face. The second thing is what you can do to help put the squadron back together to work as a team, even with your differences.

Usually, we deal with the transition by saying time will cure all ills, and, eventually, we do get back together. But during that time, all too often, tempers are short, arguments happen, mistakes get made, and someone gets hurt on the job. No one wants to see that happen when a few simple steps can make your life and your transition so much easier.

For Those Deployed

■ Be prepared. Remember time has not stood still while you were gone. Despite the fact you have been gone for several months, you actually believe you will come back to the squadron and everything will be the same as usual. Not true. People and situations have changed.

■ Don't come back with the attitude you are the conquering hero. Granted, you can take pride in what you have accomplished, but pride goeth before the fall.

And what I mean by that is arrogance is not pride. A know-it-all attitude has no place in a squadron depending on teamwork. Yes, you have done your job well under difficult circumstances. But this does not mean you know everything there is to know. You can still learn from others. Leave your no-one-can-teach-me-anything attitude at home.

■ Keep in mind your unit took on a different identity when it deployed to Saudi. You took on a separate identity. You have worked together, suffered together, met and overcome adversity together, and you are proud of what you did. However, all this is in the past, and you will begin to have a sense of disappointment because the deployment is over. You can't really talk about this to others or to your spouses since you don't want to hurt their feelings. But believe me, you will feel the disappointment. The excitement is over. You feel as though you don't have any energy. You have trouble concentrating. Overall, you just have a feeling of being let down.

■ Then there is the guilt related to bombings. A few weeks into the war, the idea began to sink in — people were dying from the bombs being loaded on the aircraft. The reality hit! What you have to do now is get the thoughts out of your mind and onto a piece of paper. Or you need to talk to someone about the feelings. By expressing them, the feelings will eventually begin to go away. Otherwise, they tend to rattle around inside and cause you to feel bad.

Those Left Behind

■ You feel guilty you didn't go to war. You wanted to go, but for a variety of reasons, you couldn't go. Sometimes this causes you to feel like a second-class citizen. There is a lot of noise made about the returning heroes and, at times, you feel left out and unappreciated.

■ You took on the additional duties of those deployed. Many personnel in units worked 12- to 14-hour days, 7 days a week, to cover duties of those who left. You look forward to the returning troops to ease your load.

■ Some of you may have the *second-class citizen syndrome* leading you to believe you need to prove yourself or prove something to the returning warriors.

Individuals with this syndrome sometimes try to make themselves look important, and they start to

continued

Easing the Transition

continued

show off to the returning troops. Sometimes they will try to do the job faster and better than the Desert Storm troop. But be aware: This is when you will cut corners, miss instructions, and make mistakes — mistakes costing money and lives.

■ Don't be defensive about your coworkers who went to the Arabian Desert. They may not have as much Air Force time as you do, but they may have some very valuable lessons to help make your job easier. Be willing to listen with a positive attitude. Just as the individual returning needs to leave the know-it-all attitude behind, you need to leave your you-can't-teach-me-anything attitude at home, too.

■ Vietnam veterans are envious because they didn't get the same welcome home the Desert Storm troops have received.

It brings back memories of disappointing times. After all, they worked very hard for their country, also, and they were treated badly by the American public.

Some Simple Rules

You can keep these feelings from getting in your way. There are several simple rules you can use to help yourself avoid the pitfalls mentioned. This information could keep you from making mistakes and help make your days in the next few weeks much easier.

Look for a moment. You will be able to identify feelings and attitudes in many squadrons in the Air Force and perhaps a few in yourself or those you know.

The Deployed
Think things are the same
Feel like conquering heroes
A know-it-all attitude
"I don't belong anymore"
Guilty about war
"Now I can rest for a while"

Those Left Behind
Envious of those who went
Feel guilty they didn't go
Resent lack of recognition
Feel like second-class citizen
Vietnam vet disappointment
You take over the job now

Be Patient

■ Change takes time. Don't rush into the situation and expect it to be the same. Ease into it.

Those of you returning, let those at home brief you on what has happened during the deployment. Pay attention to what those left behind need from you, and gradually ease back into the unit.

■ Don't expect returning troops to know what has happened. Take time to sit down with them and bring them up to date. Don't dump everything in their laps at once, expecting they will know what to do. They won't.

■ Put attitudes and feelings aside, and concentrate on the jobs to be done. Returning troops don't have to prove anything and neither do those who stayed behind.

All have contributed to Desert Storm, and those left behind are heroes, also. Everyone needs to be thanked! Don't be surprised if troops left behind are not thrilled about listening to the exploits of those coming home. While the returning warriors were gaining glory and recognition, the troops at home were taking care of Desert Storm families and doing double duty on the job.

■ Returning troops, you need to redirect your attitude. You are no longer at war, and you don't have to do business as if your hair is on fire. We're back to launching sorties for training purposes, and you are not going to miss a real-life bombing run anymore. Slow down. Get back to concentrating on doing your job.

■ Have a lessons-learned meeting with both groups contributing. Use the information to make an even better squadron than you already have.

■ Take time for your family and the transition at home.

If you don't, the problems at home will be brought to work with you, and eventually you'll be thinking about your difficulties rather than your job.

■ Last, but not least, is respect and consideration. This must come from each and every one of you. You are going to have one-stripers with war experience and master sergeants without. It is extremely important you respect each other's feelings and opinions. If you do so, you will bring understanding to the transition — understanding which will allow you to listen and respect each other and do the best you can to help the other person. This understanding will let you put aside your own personal wants and desires for the sake of others and your squadron. ■

Coalition forces take over Saddam Hussein's yet-to-be-finished private air terminal located a few miles from his summer vacation palace in northern Iraq. From here, they provide much-needed food, supplies, and medical attention to the Kurdish refugees, returning to Iraq under coalition protection from the harsh conditions of the Turkish mountains.

37 TAS PROVIDES COMFORT FOR THE KURDS

CMSGT ROBERT T. HOLRITZ
Technical Editor

■ "Anywhere anytime" is the motto of the C-130 crews who provided vital tactical air support to Operations Desert Shield and Desert Storm. Landing on highways or hastily prepared sand-packed runways, it was these "trash haulers," as they call themselves, who gave General Schwartzkopf the airlift needed to move troops and equipment during his now-famous Hail Mary maneuver. From August 10 until the cease-fire, the Hercs flew nearly 50,000 sorties and moved more than 200,000 people and 300,000 tons of cargo.

When the hostilities ended and most of the troops were on their way home, the C-130s remained behind to gather thousands of tons of equipment to staging bases for the strategic airlifters to redeploy.

Finally, after 7 months in the desert, most of the Hercs returned home. But for the crews of the 37 TAS, the stay at home was brief.

continued

The commander of the 322d Airlift Division, Brig Gen James L. Hobson, makes final checks before landing at the Turkish village of Yuksekova.

The snow-covered mountains of southeastern Turkey are where Kurdish refugees fled from the threat of Iraqi massacre. These peaks tower 15,000 feet and are a formidable barrier against Iraq.

37 TAS PROVIDES COMFORT FOR THE KURDS

continued

Where the hell is Yuksekova, Turkey? Only the coordinates of the landing site were available. The C-130 pilot, Capt Phillip Plummer, and navigator, Capt Larry Bird, plan the flight to land needed supplies at the remote mountain village as part of OPERATION PROVIDE COMFORT.

Tens of thousands of Kurdish refugees, fearing Iraqi soldiers, fled into the mountains bordering Turkey and northern Iraq, and people were starving. Tactical airlift was the only way to get desperately needed supplies into the mountains. Less than 2 weeks after returning to their home base at Rhein-Main AB, Germany, the 37th Tactical Airlift Squadron deployed to Incirlik AB, Turkey, and began airdropping supplies to the Kurds as part of OPERATION PROVIDE COMFORT.

"At first we were dropping MREs," said loadmaster Sgt James Gordon. "That was all we had. But the Kurds didn't know how to prepare them. They ate the crackers, fruitcake, and anything chocolate and threw the rest away! Now we're delivering basic staples such as flour and reconstituted milk."

In all, the 37 TAS flew 237 airdrop missions delivering 2,217 tons of critical lifesaving supplies. But airlift was not the preferred method of delivery.

"Flying low-level airdrops in these mountains can get pretty hairy. A C-141 would have a pretty hard time flying these missions," said copilot 1Lt Neal Guri. Clearly, air-land delivery was needed to bring in personnel and equipment and provide lifesaving medevac services. Since there were no runways in the mountains of southeastern Turkey, the C-130s had to land on highways designated by the Turkish government for emergency air operations.

Although most of the 37 TAS crews were experienced landing on highways and other unimproved runways, landing in the mountains posed some unique problems. Unlike the desert, these roads and unimproved landing areas were at high field elevations and surrounded by snow-covered mountains. Because the shoulders of the roads were extremely soft, drifting off the pavement would, at the least, cause damage to the Herc's gear and, at

Yuksekova Base Ops. A combat control team checks the wind and gives final clearance for the C-130. Turkish authorities are tasked to keep the naturally curious locals off the landing strip in the background.

Although most of the 37 TAS crews are experienced landing on roads and sand-packed strips in the Arabian Desert, landing at Yuksekova poses additional problems. Unlike the desert, this 6,700-foot airstrip is at 6,200 feet. Because the shoulders of the 75-foot-wide strip are steep and soft, the slightest landing error can be disastrous. Meanwhile, vehicles wait at the end for the aircraft to land and the runway to return to being their local highway.

Along with emergency food and supplies, part of the job is to bring medical assistance. First Lieutenant Roseanna M. Chaloux of the 74th Aeromedical Evacuation Squadron, prepares to fly a medevac mission.

Safety is always an essential part of the job. Although their mission during past years has been difficult, the 37 TAS has maintained an impressive safety record.

worst, cause the loss of an aircraft and crew.

During OPERATION PROVIDE COMFORT, the 37 TAS flew many sorties to bases inside northern Iraq, including flights to Saddam's private airport in Sersink, 40 miles from the Turkish border. The airport was still under construction when the air war began and was abandoned after being damaged during a B-52 strike. Since the runway had been heavily cratered, a team of civil engineers had to make some temporary repairs to make it marginally usable.

In spite of the efforts of the engineers, the area was still covered with shrapnel and debris. Fortunately, the C-130s' turboprop engines are somewhat resistant to FO on the ramp and were not damaged. During the operation, the 37 TAS brought tons of critical supplies to Sersink again, proving the value of the C-130 to tactical airlift.

The 37 TAS not only provided desperately needed supplies for the Kurdish relief effort and flew many medevac missions, but also acted as a vital communications link between ground units flying 9-hour orbiting missions over Turkey and northern Iraq.

For more than 35 years, the C-130 has been the mainstay of our tactical airlift and will continue to be, well into the future. But the success of tactical airlift depends on more than the aircraft. It requires dedicated and skilled people, like those of the 37 TAS. ■

Traffic was stopped by Turkish officials, but there was no guarantee pedestrians, bicyclists, or animals wouldn't stray onto the road. This biker calmly pedaled through all warnings immediately after the plane touched down. Lucky fellow!

Once Again, Thanks For Your Support!

AND THE WINNER
FOR THE MARCH 1991
DUMB CAPTION CONTEST IS . . .

SSgt Joseph P. Ficklin
AFROTC Det 855, BYU
Provo, Utah

Unlike the members of the United Organization of Dumb Caption Writers of America (UODCWA) who insist they must start their careers at the top, it's obvious most of this month's contestants started at the bottom (or back, as the case may be).

However, SSgt Joseph P. Ficklin has found his way to the top of Dumb Caption stardom with his winning entry. Along with the 10 honorable mention winners, SSgt Ficklin has captured the essence of finishing even the most menial jobs. For his keen insight and matchless humor, he will soon be receiving the legendary "Cheap Little Prize."

Fortunately for all our contestants, we got a bulk rate on "Cheap Little Prizes" and can continue to present them to winners for years to come. So look over this month's Dumb Caption Contest Thing and earn your own prize.

Honorable Mentions

1. **Raisins, sugar, yeast; a little time and . . . VIOLA!!**
   Jim Burt, Training Dept, NAS Corpus Christi, Texas
2. **(Singing) I press the little valve down, and the fluid goes round and round, oh oh oh, oh oh, and it comes out here.**
   Jim Burt, Training Dept, NAS Corpus Christi, Texas
3. **Just take one more little step in this direction, Bucko, and we'll just see how funny your stupid comments are, and I don't care if you do outrank me, 'cause I'm the one with the bucket of goo!**
   SSgt Joseph P. Ficklin, AFROTC Det 855, BYU, Provo, Utah
4. **The Chief said he would help me become an outstanding airman, and he did! Here I am, "out standing" under the south end of a north bound plane!**
   SSgt Joseph P. Ficklin, AFROTC Det 855, BYU, Provo, Utah
5. **Boy, this random drug testing program has really gone too far this time.**
   Sgt Mark LeDuc, 124 CAMS, ANG, Boise, Idaho
6. **Well . . . they did say whoever volunteered would soon be at the "top of the maintenance ladder" . . .**
   Jim Burt, Training Dept, NAS Corpus Christi, Texas
7. **. . . And then I said, "I'm tired of being an office flunky; I wanna be where the action is."**
   Jim Burt, Training Dept, NAS Corpus Christi, Texas
8. **R-E-L-I-E-F? It's probably the name of the tubing contractor, Charlie . . . Why?**
   Jim Burt, Training Dept, NAS Corpus Christi, Texas
9. **Exotic duty stations — exciting duty assignments . . . yeah, right.**
   Jim Burt, Training Dept, NAS Corpus Christi, Texas
10. **One plane finished and forty-nine to go, and that's the last time I date the Chief's daughter!**
    SSgt Joseph P. Ficklin, AFROTC Det 855, BYU, Provo, Utah

WRITE A DUMB CAPTION CONTEST THING

Last week, we had the dubious honor of greeting Byron Q. Lackluster, President and Supreme Sovereign of the United Organization of Dumb Caption Writers of America (UODCWA) at our offices. We're not sure exactly *why* he came to visit, but there's little doubt the box of glazed donuts had something to do with it.

In the course of shaking our hands on his way to the coffeepot, we couldn't help but notice his fingers were stained with black ink. When asked about the stains, Byron insisted his pen had broken.

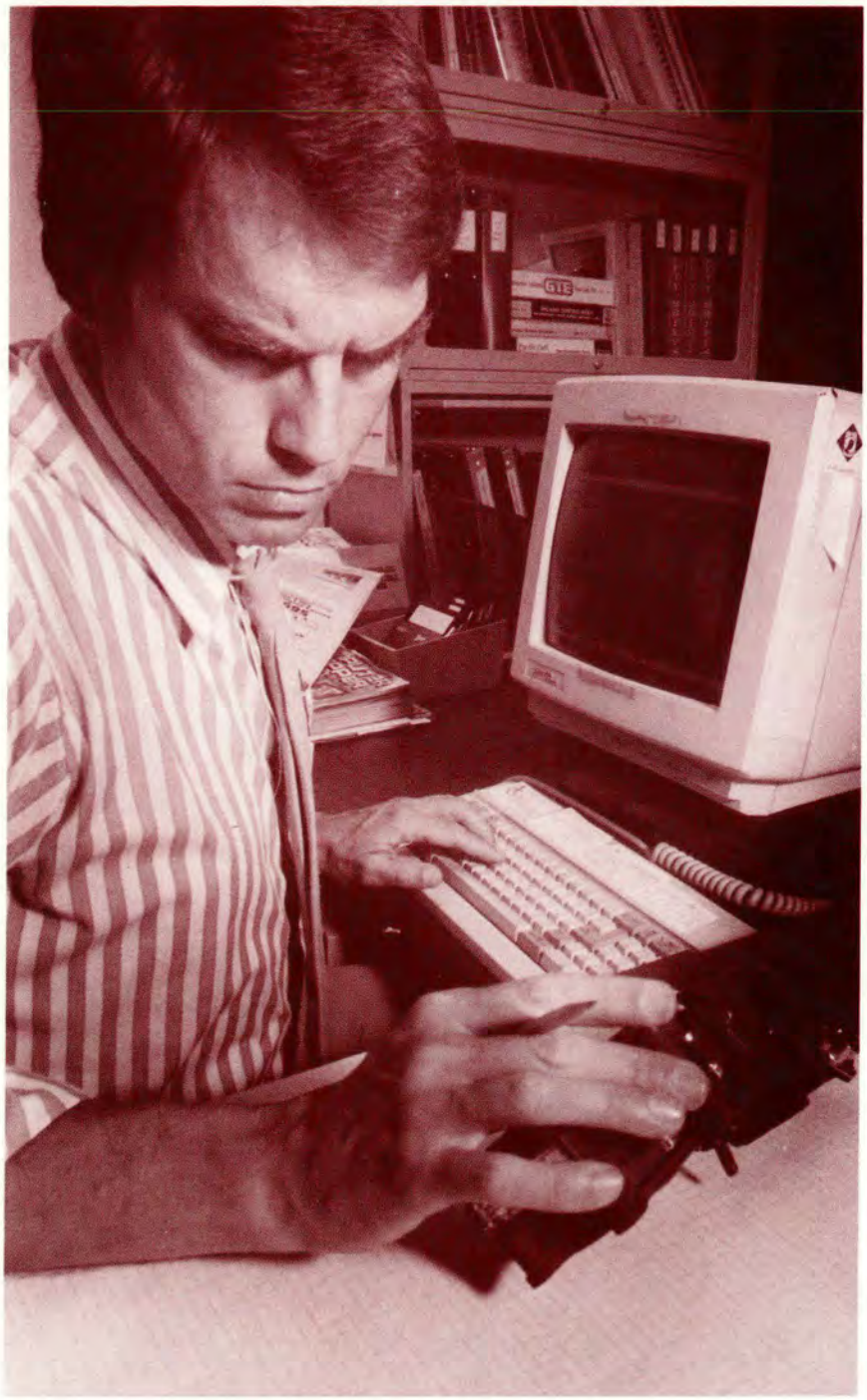
Yesterday, we received the office copies of *Flying Safety* magazine. While looking at several copies, we noticed some of the pictures for the next "Dumb Caption Contest Thing" had black ink smears which made it all but impossible to see the picture. We called the printer, and they assured us the presses had provided the usual high quality magazine pages.

Could Byron have had something to do with this? If your picture has been tampered with, please let us know when you send it to us for this month's contest. The evidence could, if it confirms some strongly held suspicions, go a long way toward ending the reign of King Lackluster.

Make a photocopy of this contest page. Have your photocopy notarized if you want it used as evidence against Byron. Then, attach your caption(s) using sticky notes, or paste, or that stuff they use to fill Twinkies™. If you want to protect your entry during shipping, feel free to pack it in gourmet popcorn. (Hey! All this talk of food is making us hungry.)

Send your entries to **"Dumb Caption Contest Thing"** • *Flying Safety* magazine • HQ AFSA/SEDP • Norton AFB, CA 92409-7001

Will it kill again?



OR . . . Have you told anybody about it?

MAJOR KELLY M. HAGGAR
Air Force Flight Safety Action Officer
Air Force Safety Agency

■ All fatal mishaps have some tragic elements. One crewmember goes DNIF for a cold. The rest of the crew is killed during a mishap involving loss of control at low altitude. However, fate has stepped in. The DNIF crewmember was watching his crew flying the aircraft over the home drome and was killed when burning fuel from their crashing aircraft engulfed his car.

The *really* tragic mishaps are those in which an unreported, or improperly reported, problem goes uncorrected. We pay for the same mistake more than once because no one got the word.

Some Examples

■ Another service loses an aircraft also operated by the USAF. The loss is traced to a problem with insufficient lubrication in a critical gearbox. Unfortunately, the facts don't make it into any of the USAF deficiency reporting channels. The USAF system manager is unaware of the problem or the mishap. Time passes, the problem repeats, a USAF gearbox fails in the same way, an aircraft is lost, and two crewmembers are killed.

■ A fighter is making a low-altitude simulated airfield attack. An observer is in the rear cockpit on an orientation ride. Suddenly, the fighter pitches up and rolls uncontrollably. There is no time available for an ejection. The aircraft is lost, and two more die as it hits nearly inverted. The problem? Inflation of the G-suit of the rear cockpit passenger occasionally causes interference with the flight controls in this type of aircraft.

Several units, but not all those equipped with this aircraft, are aware of this problem. The corrective action? The aircraft has a cutout switch to disable one set of flight controls. On orientation flights, some units use rubberbands to hold this switch into the cutout position. Good enough? Obviously not! Again, none of this made it into any reporting channel prior to the fatal mishap.

We've made great strides in reducing our mishap rates, especially in recent years. We've done this while keeping our combat capability, as the Iraqis can attest. But there is always room for improvement. In this next mishap, everyone lived. Still, it could have been averted by timely notification and aggressive followup action.

- An engine was designed with an unrecognized first-stage compressor blade weak area. This led to some blades breaking off just above the platform. Unfortunately, the retaining ring designed to hold the remaining blades in place in the event of such a blade break was also not strong enough. There were three separate failures of blades in which the retaining ring was also broken.

One blade break was reported in the flight safety channel as an ice FOD, but the unit did know of the broken ring. One did not meet any automatic reporting criteria and was not seen as a high accident potential candidate. The third occurred during a maintenance ground run and similarly did not meet any automatic safety reporting threshold. Again, the retaining ring was broken in each of these three incidents. However, since they all occurred either on the trim pad or at low speed early in the takeoff roll, damage was confined to the engine.

The first two times a blade and ring failed in flight, Class A mishaps resulted. Why? Yes, there were design errors here. However, no one caught the warning indications of the first three incidents. The units did not open the engine enough to catch the broken rings, nor should they have. The agency receiving the engine answered the question asked by the unit, i.e., "Tell us why this blade broke off." Unfortunately, no one made the connection among the three ring failures, and no one considered how damaging a failure in flight could be where the internal loads on the engine would be both different and higher.

The Common Threads

What common threads run through these mishaps? *First of all, someone must recognize widget "X" or procedure "Y" is a threat to aircraft and aircrew.* It's perfectly okay for some components to be a "fly-to-failure" item. If they are not critical to continued flight, have other system backups or some redundant features and won't induce some more serious problem, fine. In a case such as this, it may not even be all that unusual if widget "X" fails at 700 hours instead of 1,400 hours. It may not matter much.

However, ops, safety, and the maintainers need to consider what is failing, or not working as advertised, or interfering with something else that can't be a "fly-to-failure" part. How serious is a widget "X" failure? How many are failing? Why? The item or system managers for widgets and their supported aircraft can't see a trend if the failure or problem doesn't get reported. Okay, so only one has failed. Actually, all that means is one of *yours* has failed. How many have failed in the *fleet?*

This raises the second lesson: Tell someone. There is a veritable army of support and logistics folks currently in AFLC, AFSC, and at MAJCOM headquarters. None of them can help you if you cut them out of the pattern by doing a homemade, rubberband "fix" to your problem. A lot of money is tied up in spare parts, depot-level repairs, stock levels, wartime spares kits, and so on. A lot of the decisions made about length of shelf life, quantities to purchase, warranty requirements, and the like are made on the basis of which widgets fail or how long they last.

Such matters also help control safety mods on an aircraft. Those decisions can't be more valid than the data base. If some part is incorrectly being seen as an "anvil" (lasts forever, works good) when it's *actually* shaky variable weak, no one is stocking very many of them, and a mod won't start to fix or replace it. How do you know whom to call? The "yellow pages" of AFLC is TO 00-25-115, *Maintenance/Engineering Management Assignments.* Using this, and TO 00-3-5D-54, will ensure the right manager is informed about the problem.

Third, tell them the right thing. If a widget "X" failure has chewed up

continued

Any mishap is a lamentable waste of precious time, effort, and material resources. Human injuries or losses of life escalate the price beyond levels of acceptance. But, worst of all, is a loss caused after a previously learned lesson wasn't passed on to those who could have prevented it from happening again. Maybe the best way to eliminate the chance of such needless waste is for each individual to become responsible for passing on lessons learned to the folks designated to take positive steps for eliminating any possibility of recurrence.

will it kill again?

continued

Make sure any necessary part deficiency information gets to the field. This is critical to prevent mishaps.

something costly, or is otherwise reportable, we shouldn't have any notification or discovery problems. Everyone ought to be able to recognize a reportable incident and be willing to report it. That's why we have a long school for flying safety officers. (On the other hand, if they can't recognize a reportable mishap or aren't allowed to, we have other, bigger problems.) The difficulty arises when we have failures, incidents, or problems that *don't* clearly meet any AFR 127-4 criteria. Now who do I tell about it, and what do I say?

Making It Work

Technique: Carefully evaluate what else is affected by widget "X" failure. Were we lucky here, or were we good? Could the crew have coped with this same failure at a higher airspeed? A lower altitude? With the wings forward? The gear down? What's the *potential* here? Here's a kind of "catalog" of available reporting channels, along with a few tips on how to make them and their controlling regulations work for you.

- "This thing will kill somebody if we don't get it fixed." Your best bet here is a high accident potential (HAP) message. See AFR 127-4, paragraphs 2-1L and 4-3E.
- "It might not kill anyone, but it sure is more risky when X breaks." Go with a materiel deficiency report (MDR), as outlined in TO 00-35D-54. Pay particular attention to the addressee tables, 2-3 and 2-4.

NOTE: A unit can submit a HAP/MDR in one combined message. However, the message may not contain any privileged information, such as crew testimony. If the incident is compounded by any crew involvement, or requires crew testimony to explain or describe the complete situation, it's better to send a HAP and an MDR separately. (Be sure to cross-reference each message.)

- "This thing doesn't last very long, and it isn't dangerous." Several avenues are available here. Units can nominate failure-prone items to the Product Improvement Working Group, or PIWG (pronounced "Pee-Wig"), via their numbered air force or equivalent. AFLCR 66-15, *Product Performance*, complements AFR 66-30, *Product Improvement Policy for Operational Equipment*.
- "This failure *could* be dangerous, but we're not sure it is." The system safety group, or SSG, is a good place to explore *possible* threats. The typical SSG functions to identify risk areas, weigh options, and recommend corrective actions to the aircraft's system program manager (SPM) or the system program office (SPO). The SPM or SPO chairs the SSG and publishes the agenda and minutes. AFR 800-16, *USAF System Safety Program*, is the current controlling directive.

Nominating an item to the SSG is worthwhile even if it is not made an agenda item at the meeting. The operational user and the SPM or SPO evaluate and control what the SSG reviews. Screening candidate SSG items provides at least enough of a review to validate widget "X" failure as a safety threat. If not, it could still be referred to the PIWG for corrective action as a nonthreat problem.

Summary

We're not asking for *more* reports; we need *better* reports. There's more to this than just how well the loggie systems react to failures. It's also a question of what they are told and what they are asked. This is like 781 squawks — "autopilot inop" doesn't give a technician very much information to go on.

Safety and maintenance at the unit level must work together closely. The wrench turners may not appreciate the full implications of widget failure; a pilot probably won't be aware of the broad range of failure reporting channels. TO 00-35D-54 covers more than just MDRs. How many pilots realize there are TDRs, QDRs, SRs, and WDRs? How many wing wearers know what the GIDEP is? Or what belongs in the DPCCP? The wing level FSO doesn't need to be an expert on these gritty details either. But the FSO does need to know there's a big parts world out there, and it's got to get data — informative, balanced, weighted data — to properly react. ■

The Board President concluded his briefing. Everyone agreed these intrepid aviators were indeed lucky — lucky to be alive after living on the ragged edge. You be the judge . . .

LIFE ON THE RAGGED EDGE

LT COL JAMES D. TEIGEN
HQ SAC/SEF
Offutt AFB, Nebraska

■ Sitting in the back of the room, I pondered this observation and drifted back to a recent Paul Harvey broadcast of "The Rest of the Story."

Paul, during his broadcast, had recounted the fate of those involved in the Sioux City mishap of the DC-10 crash from the summer of 1989. As he spun his story, he mentioned the over 120 tragic deaths and the miraculous fact over 180 people survived the crash. He said some had called it luck. His hook to the story was that it may have been something more than luck . . . maybe divine intervention. He went on to say 12 of the most experienced crews were placed into simulators to duplicate the mishap sequence. None of the other crews could recover the crippled DC-10. They all died.

That is what this story is all about — life on the ragged edge of the flight envelope. As aviators, we have always heard the idea applied to those lucky ones who ejected late and got just one swing before they hit the ground, the "one swingers" of ejection episodes. For that to have happened, everything worked as advertised with ZERO margin of error. Those stories, the ones from the ragged edge, are the stuff "Warnings" are made from.

In my years of investigations, I've met some of the folks who owe their lives to the ragged edge of the envelope. Some say they're lucky! Maybe Paul was right — maybe it was divine intervention, but they all agreed if they had it to do all over again, they wouldn't have waited so long. . . .

Some Close Calls

The first one who comes to mind was the student pilot whose aircraft departed controlled flight in the final turn. The aircraft was rolling, and no control inputs would stop it. He elected to eject.

Two eyewitnesses saw the ejection and saw the seat falling to the ground. The pilot was still in the seat, no man-seat separation, and no chute was visible as the witnesses lost sight of the pilot and seat below the tree line. The trees were approximately 100 feet tall in the area where the seat came to rest, and the ground was muddy from a recent rain.

The witnesses were sure the pilot was a fatality. There was no way

continued

LIFE ON THE RAGGED EDGE continued

anyone could have survived. The witnesses were adamant — no survival was possible.

But in this instance, the student was "living right." He survived with only minor scrapes and bruises. Apparently, as the seat and pilot went into the tree line, the man-seat separation had begun. The student was kicked free, and his chute began to deploy. The chute was streaming and started to blossom as the student hit the muddy area. There was no swing. But there was just enough deceleration from the chute's opening, coupled with the water and mud cushioning his descent, to keep him from being seriously injured, or dying as the eyewitnesses had said.

Sure, he was covered in mud, and he lost his helmet in the ejection. But he stood and took off his chute harness and walked out of the swampy area, on his own. Proof there is some life at the ragged edge.

The second episode of life at the ragged edge involved a "dollar" ride (first ride in a new aircraft) in a T-38. The mission was going according to plan when the instructor set up for a demonstration of the effectiveness of the rudder. Normally, these were done in a clean configuration (now, they're *required* to be done clean by regulation), but this instructor had always done the demo with the gear and flaps down to show "real" rudder effectiveness. I bet it was a "real show."

The aircraft departed controlled flight and began its wild gyrations as it literally plummeted toward the earth below. There were brown, blue, and green flashes outside the canopy, but they couldn't make out any references or landmarks on the ground — it was gyrating too fast.

The instructor used every recovery technique in the book and even borrowed some from others attempting to regain control of his jet. None of them worked, not even a spin prevent from T-37s helped these aviators.

Passing 10,000 feet MSL, the instructor told the student, "I think it's time to get out." That was it. The student waited for the command to eject, or bail out, but it never came.

The student was waiting for the instructor to go first, as the instructor was in the back seat, and the student knew the backseater had to go first (rocket blast, you know). The student mustered all the courage in the world, pulled the yellow-and-black-striped handles, and ejected.

According to the instructor pilot, the following occurred real fast. As the student ejected, the resultant reaction force from the ejection motor forced the nose of the T-38 into the "recovery cone," and then the resultant center of gravity shift from the lack of a canopy, pilot, and ejection seat brought the nose of the aircraft back up and allowed the aircraft to resume flight as we know it.

Following a formation join-up, approach and landing, the instructor landed and taxied to the hammerhead. That's where I met him,

climbed up the side, and shut down the engines from the front cockpit. The instructor said he was real lucky, told his story, and asked if we had heard from the student.

The student, after landing, gathered the chute and walked to a farm house to phone the base. While waiting, the student drank a glass of lemonade until someone from the base came. The student also thought he was lucky.

The FAA radar tapes were analyzed — they weren't just lucky. It was life on the ragged edge, again. The data showed the aircraft was dropping at over 25,000 feet per minute, the demo started at FL 240, and the ground was around 500 feet MSL. Remember, the instructor told the student it was time to get out passing 10,000 feet MSL, and the recovery occurred by 5,000 feet MSL, within 10 seconds of impact.

Was it luck, or was it something else?

The third episode was again a dual crew out in their T-38 — in the pattern this time. The instructor was doing a demo, overhead pattern. In the final turn, too much bank and back pressure to "bend it around" was applied, and the T-38 stalled, dropping into the classic wing rock.

Most of Stan Eval was in the hammerhead waiting for takeoff clearance and saw the whole thing. The wing rock in the descent made the greatest impression. They knew it was the sign of death.

They all braced for the impact and expected explosion. The Runway Supervisory Unit (RSU) picked up the crash phone and called to report the loss of a T-38. Everyone who saw the stall braced for the explosion. It never came.

Over the tops of the trees, just off base, came a white rocket with burners blazing, in a classic saber dance, rocking over the tops of the trees, just clearing these short 25-foot trees — but on the way up!

The crew recovered the aircraft, left the gear down, and requested an emergency closed for a full stop. The crew flew a wide downwind and touched down on the center runway, rolled out, and taxied to parking. That's where I met them.

Wrapped around the main landing gear was some unraveled high tension power line cable. It was wedged into the gear doors, not to be budged by mere human hands.

But there was something even more amazing. Along the leading edge of the left wing, from the midpoint of the left wing out to the tip, was evidence of a cable slap. The left wing physically hit a high tension power line with its leading edge in a slight left bank.

The cable they hit drooped at the same angle as their wing was banked. One more degree of bank to the left, and the cable would have slipped over the top of the wing rather than the path it took slipping under the wing. Had the bank angle or the droop of the cable been off the wrong way, even 1/4 of an inch off, the result would have been catastrophic.

I went to look at the power lines the crew hit. The poles were 50 feet

continued

LIFE ON THE RAGGED EDGE continued

tall, but the cables drooped to as low as 25 feet above the ground. The cable was struck on the way UP, on an upward flight vector, and you could say these two aviators were lucky. Living proof of life on the ragged edge.

The last instance of life on the ragged edge was a solo student in a T-38. To say this student wasn't the strongest student ever would be an understatement. He was having problems in the final turn, not enough bank or back pressure, and the result was consistent for this pattern-only ride.

"Overshooting final, this is Swordfish, GO AROUND."

It was getting to be a regular radio. The RSU queried the student on his fuel state. The response got everyone's attention. The student had 700 pounds left and was now established on outside downwind.

The RSU began devoting more instructional time to the student (talking him down) to get the aircraft lined up on the runway for a full stop landing. Coordination with tower allowed for a possible overshooting final to bend it back around to land on the RSU-controlled concrete. The RSU controller literally told the student how to fly the aircraft around the pattern and onto final.

The student, with a pucker factor off scale, flew a hotter-than-normal pattern. He figured if he needed to go around, he'd have the airspeed . . .

The student shifted his aim point down the runway, a couple of dozen times. The RSU allowed the shifts to ensure the student would get it on the ground this time. The student finally touched down, just about at the same time the RSU spotter was going to direct a go-around. Then the fun began.

You remember the extra airspeed? Well, the student didn't, and he attempted to aerobrake. You guessed it, the aircraft went AIRBORNE!

The student landed again and didn't aerobrake but saw the end of the runway approaching, so he elected to put on the brakes, stepping on the binders. The student applied the brakes really hard and noted nothing was happening. He stepped on the binders, harder this time.

POOMPH! POOMPH! Rumble - rumble - rum - rum - rumble!

The tires had both blown, and he was now rolling on the rims. The end of the runway was really coming up fast now. The student elected to turn off the runway onto the hammerhead/taxiway. He stepped on the left rudder, and the aircraft began to skid, sideways.

Now came the departure end barrier cable. The aircraft was skidding sideways and started to physically hop when the right main (remember it was a left turn) hit the cable, just right, and grabbed hold.

The RSU described it best — the aircraft just tipped up on its right wing and hung there for a time. Then it just flipped right on over onto its back and stopped. Upside down!

There was the startled student — hanging upside down — the shoulder straps digging into his shoulders, and the lap belt pulling at his waist. He thinks, "I've got to get out!"

He released his lap belt and crumpled into the canopy in a tangled mess. He smelled strong fumes of JP-4. The engines were shut down, and the student grabbed the canopy breaker tool.

He punched a hole in the side of the canopy and crawled out, then ran for his life.

As the disaster response force gathered around the T-38, we noted the size of the hole. It was just slightly bigger than the student's helmet. How did he manage to get out? The fuel spill was contained, and we were all thankful the jet didn't catch fire.

Proof again there is life on the ragged edge. Was luck the key in any of these? Could it have been divine intervention? We won't know — not in this lifetime.

Cautions and Warnings

All aircrew technical orders describe in the Cautions and the Warnings how others have experienced life on the ragged edge. Most of the warnings are the result of what we, in safety, call "blood on paper."

Most of the warnings were written by technical experts, investigators, and mishap boards because in their instance, the pilot, or aircrew, didn't make it.

Repeatedly, tech orders emphasize if aircraft control is lost at any altitude, or by passing a particular altitude, staying with the aircraft reduces any aircrew member's chance for survival. Statistics prove this to be true!

But there are always those aviators who doubt the book — those who have a "super human" outlook. You know the type — the "I can do anything and get away with it" — those who think they're God's gift to aviation.

There's an old saying in aviation, and it's as true today as it was when it was first spoken. "There are old pilots and there are bold pilots, but there are never any old, bold pilots."

Those lucky aviators I described all agreed after their flights, life on the ragged edge isn't worth it. They all said they should have done it differently — ejected earlier, ordered bailout at a higher altitude, flown a straight-in, on airspeed.

What is Needed

As professional aviators, we can't rely on luck or divine guidance, nor can we live on the ragged edge. The secret to becoming old pilots is professionalism, knowledge of the aircraft and the regulations, crew resource management, and knowing when to say "when." Agreeing to adhere to these precepts can be the determining factor in whether you become a statistic of the ragged edge. The best time to make those choices is when you're on the ground, not in the midst of emergency. As the old saying goes, "It's hard to remember when you're up to your heinie in alligators that your intent was to drain the swamp." ■

COL LLOYD E. DODD, JR., MC, SFS
Director, Professional Services
Office of the Command Surgeon
Hickam AFB, Hawaii

■ I'm a flight surgeon, and I would like to spend a few minutes on a serious, even lethal, disease I have seen in aircrew members.

A Case History

A crew took off one Monday morning. The crewmembers had an average of nearly 4,000 hours each in this weapon system. Each was either an instructor or in Stan Eval — the cream of the squadron. They had not been flying as much as they liked and were crowding quarterly currency requirements.

The AC was considered the best stick in the unit and was nearing the end of a highly successful 3-year tour. Confident, talented, and outgoing, the AC was liked and very much respected by his peers. He was also taking his last flight with the organization and wanted it to be something to remember.

Mission planning took place Monday morning just before the flight and was as brief and superficial as possible. No one even asked about the weather at the destination airport.

The plan was to shoot low approaches to a local civilian airport which was in a spectacularly scenic area. This strip was surrounded on three sides by towering mountains and by a beautiful bay on the fourth. The approach (6.2 degrees on the IFR plate) was so steep, though, the squadron had decided never to use the strip because it was inherently too dangerous.

This day the weather had closed to below minimums, but the crew came in anyway and shot two missed approaches, badly executing both. On the third try, they somehow lost position orientation and wound up miles north of and parallel to glideslope. The confident pilot, without being on any portion of the published approach and without any positive NAVAIDS, descended. Approach control lost the aircraft when it dropped below the 7,000-foot radar minimum. There were no more transmissions.

It's hard to believe this could happen, but it did. Why it happened is a lesson for everyone because the disease that killed this crew could attack again, and someone could be writing about us.

THE FINIS-FLIGHT SYNDROME

An old disease and a modern killer

I'm a doc, so I'll put the discussion in medical terms, but I believe everyone will understand.

The Finis-Flight Syndrome

The Finis-Flight Syndrome is a common malady which attacks skilled, intelligent, usually competent aircrew members, generally at, or near, the end of a tour. The victims are usually high-hour fliers and, more often than not, instructors or evaluators. Some are even senior staff officers. Being a good stick is no protection from this syndrome. Indeed, sometimes the best pilots seem the most prone to develop it.

The symptoms are, at first, an inappropriate and expansive self-confidence which often develops into a feeling of euphoric detachment. The victims sometimes develop bizarre delusional systems such as the belief they are imbued with a Superman-like invincibility.

As the disease progresses, it bypasses the motor and coordination centers of the brain to lodge directly in the frontal lobes to attack and impair judgment, thinking, and other higher cortical functions. Basic caution and skills gained from training disappear. Victims develop a careless disregard for established procedures and crew discipline. They become inattentive to details and slow to admit mistakes, no matter how obvious their problems are to others.

Risk-taking increases and actually may become a goal in itself. The more hazardous the event, the more enticing it becomes. A mental pattern of rule-breaking is established where each indiscretion becomes easier to envision and act on until almost anything seems possible and worth the risk of trying. This condition becomes strikingly similar to a medical condition known as an "organic brain syndrome," a kind of dementia.

If the victim survives the experience, he is usually compelled to boast about his supposed prowess and expects others to admire his achievement. Too often he gets the positive feedback he craves, and his pathologic behavior is reinforced. Thus, the Finis-Flight Syndrome is likely to be propagated to other, younger crewmembers and is even more likely to recur in the original victim at some unpredictable time in the future. Flashbacks become commonplace.

What to Do About It

As I said earlier, the Finis-Flight Syndrome can kill. It does so in war and peacetime. One squadron in Vietnam lost so many people on their finis flight (from rulebending and risk taking) they adopted a policy of not telling pilots when they were to fly their last flight. The CO just walked up after a flight and told the crewmember he was finished for that tour.

The "treatment" is an infusion of basic awareness and regular doses of common sense and professionalism. Curiously, this is not a problem for which I, as a flight surgeon, can give someone a shot in the arm and permanently immunize against. Instead, it is one of those rare instances where I strongly recommend self-medication. The crewmember needs to do the following:

- Recognize Finis-Flight Syndrome for what it is — an inane and juvenile loss of self-control and self-discipline. It can occur in any crewmember, not just pilots. If you see the symptoms popping up in yourself, step back and coldly reassess your situation and priorities.
- Refuse to reward the victims by admiring or cooperating in their exploits. Even suggest they try growing up. The most rewarding finis flight should be a perfectly executed, by-the-book, professional mission — the work of a supremely skilled, in-control master pilot.
- Realize the impact of such irresponsible behavior on others. Like it or not, the Finis-Flight Syndrome victim will leave an impression on some of his squadron mates. His "glory" can contribute to their deaths.
- If you are a supervisor, anticipate Finis-Flight Syndrome, and look for the symptoms in your people. If you see the problem developing, do the victim a favor and hammer home a healthy jolt of reality. Make the diagnosis early and treat aggressively.

I don't think we can ever totally eradicate Finis-Flight Syndrome, but good preventive medicine can certainly dramatically reduce the morbidity and mortality of the disease. It's a medicine we should all practice. ■

178 SECONDS

The first step to building experience in civilian aircraft is lots of visual flight rules (VFR) navigation. Without an emphasis on the "visual," the experiences may be short-lived.

■ "Pilot continued visual flight into adverse weather conditions."

Familiar words? For those associated with aircraft mishap investigations, they are, for they summarize the type of occurrence which continues to cause the greatest loss of life in general aviation mishaps — in spite of the publicity given to the subject over the years.

One would think the futility of pressing on in bad weather should be obvious, but without getting into the pilots' minds, the compulsion behind their fatal decision will remain elusive.

This article attempts to reproduce the thoughts of a pilot who gets into clouds in what might be a typical scenario. Read it, and if you are ever tempted to press on in marginal weather, recall its advice. If then, for whatever reason, you decide to continue and lose visual contact, start counting down from 178 seconds. This is how long a pilot who has no instrument training can expect to live after flying into bad weather and losing visual contact — according to researchers at the University of Illinois.

Twenty student "guinea pigs" who flew into simulated weather *all* went into graveyard spirals or roller coasters. The outcome differed in only one respect — the time required until control was lost. The interval ranged from 480 seconds to 20 seconds. The average was 178 seconds — 2 seconds short of 3 minutes.

Here's the fatal scenario . . .

Countdown

The sky is overcast and the visibility poor. The reported 3-mile visibility looks more like 1 mile, and you can't judge the height of the overcast. Your altimeter says you're at 1,500, but your map tells you there's local terrain as high as 1,200 feet. There might even be a tower nearby because you're not sure just how far off track you are. But you've flown into worse weather than this,

so you press on.

You find yourself unconsciously easing back just a bit on the controls to clear those none-too-imaginary towers. With no warning, you're in the soup. You peer so hard into the milky white mist your eyes hurt. You fight the feeling in your stomach. You swallow, only to find your mouth dry. Now you realize you should have waited for better weather. The appointment was important — but not that important. Somewhere, a voice is saying "You've had it — it's all over."

178

You now have 178 seconds to live. Your aircraft feels on an even keel, but your compass turns slowly. You push a little rudder and add a little pressure to the controls to stop the turn but this feels unnatural, and you return the controls to their original position. This feels better, but your compass is now turning a little faster, and your airspeed is increasing slightly. You scan your instrument panel for help, but what you see looks somewhat unfamiliar. You're sure this is just a bad spot. You'll break out in a few minutes. (But you don't have a few minutes left . . .)

100

You now have 100 seconds to live. You glance at your altimeter and are shocked to see it unwinding. You're already down to 1,200 feet. Instinctively, you pull back on the controls, but the altimeter still unwinds. The engine rpm is in the red — and the airspeed nearly so.

45

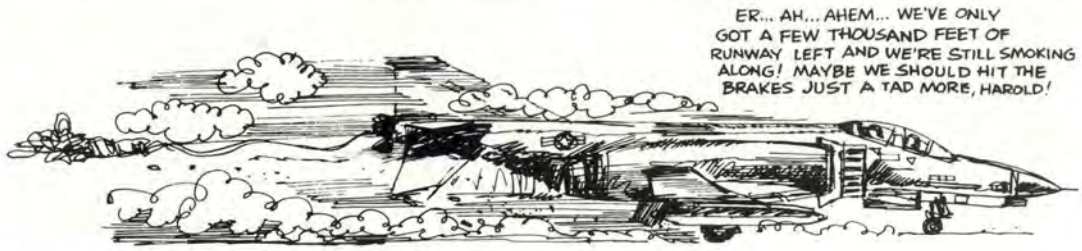
You have 45 seconds to live. Now you're sweating and shaking. There must be something wrong with the controls. Pulling back only moves the airspeed further into the red. You can hear the wind tearing the aircraft.

10

You have 10 seconds to live. Suddenly you see the ground. The trees rush up at you. You can see the horizon if you turn your head far enough, but it's at an unusual angle — you're almost inverted. You open your mouth to scream but . . . ■

Courtesy Business Aviation Safety

OPS TOPICS



Whoa!

■ Sure, landing is something you *have* to do following a successful mission. But if you want to go out on another mission with the same jet, landings become as important as the T.O.T.

Recently, a Phantom completed a successful training sortie and made a normal approach and landing out of a PAR. After touchdown, the crew deployed the drag chute as usual, but this time it streamered. The tower controller saw the streamer and notified the PAR controller, who then called the crew on the PAR frequency.

Unfortunately, the crew had already switched to tower's frequency and didn't get the word. During the landing rollout, the crew noticed they were still traveling too fast as the runway remaining markers flashed by. Although moving faster than expected, they still weren't too concerned about getting the fighter slowed in time. They pushed on the brakes harder and even noticed the anti-skid doing its thing, but the end of the runway was still approaching faster than they liked.

Nearing the end, they decided to try a turn into the dearm area, but a whole lot of inertia was still heading for the weeds. The resulting skid finally stopped off the taxiway and in a rough blacktop area. A minor tire replacement, a thorough FOD check, and close examination by the safety shop, and this jet will fly again.

If they had it to do all over again, they said they would aggressively begin braking at the first sign the jet wasn't slowing down as expected. Then, they would not even attempt to turn off the runway until they were at a legitimate taxi speed. It seems simple enough . . . now.

Calibrated Fingernails

How much Avgas does it take for your Cessna 152 to make a 2½ hour local flight? You're planning to do some touch-and-go's at three separate airfields before returning home. Therefore, the first thing they do is remove the fuel caps and look inside.

In preparation for a recent flight, one pilot did just that. Unfortunately, the fuel was not up to the top, so the pilot inserted a finger into the tank as far as possible. The fuel just barely wet the fingernail (call it about 1.5 inches below the rim). In the pilot's opinion, the aircraft was fully fueled.

Well, you all know the story about opinions. Now for the facts. One and one-half inches measured on a calibrated dipstick indicates the tank is missing 3.5 gallons (times two tanks, remember). The manufacturer has calculated there is 1.5 gallons of unusable fuel onboard. Two gallons of fuel were used for start, taxi, and takeoff. A "topped off" Cessna 152 should have 26 gallons. So once underway, the pilot actually had 15.5 gallons for the trip.

The trip was flight planned for 2 hours (the fuel needed for 30 minutes of touch-and-go's was not included). Due to a modified, bigger engine, the actual fuel consumption of this aircraft over the last 100 hours was 6.1 gallons of fuel per hour. For the mathematically inclined, the pilot had barely more than 2.5 hours of fuel on board.

As things will happen, the pilot deviated off the planned course in an attempt to follow a nondirectional beacon (particularly well named in this case) and added another 20 minutes to the route.

Two hours and 30 minutes into the flight, the engine sputtered. Five minutes later, the engine quit. One minute later, the aircraft landed in a corn field. Weeks later, the pilot is still wondering how much time was saved by not getting a calibrated dipstick or by not topping off the tanks. ■

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FSO's CORNER

A Guide to Heat Stress

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■ I visited the 302d Tactical Airlift Wing safety shop at Peterson AFB, Colorado, and obtained ample information to keep me in writing material for several months. Here's an installment.

It seems there are more and more demands on our military personnel to perform in warm climates. Panama, Honduras, and Saudi Arabia come to mind. In more moderate climates, training with either the groundcrew chem-defense ensemble (GCE) or aircrew chem-defense ensemble can make you wish for a cool summer day.

With the threat of chemical warfare a glaring reality in today's military environment, chemical warfare defense training must continue. While accomplishing that training mission (or a real-world mission), we must remain aware of the risk of heat injury from wearing a chemical warfare defense ensemble is as glaring a reality as the threat of chemical warfare. A system like the multiman intermittent cooling system can provide relief and extend effective duty periods in the GCE, but it's not a panacea.

With all this in mind, the 302 TAW safety personnel, in conjunction with unit medical personnel, developed and distributed the "Guide to Heat Stress." The purpose of the guide is twofold. First, to make unit members aware of the potential for heat injury, with emphasis on prevention and early recognition.

Second, to provide each unit member a quick and ready reference for recognition of symptoms and administration of first aid, while seeking medical personnel for assistance.

In plain and simple terms, the guide covers prevention through hydration and use of the buddy system, heat stress, heat cramps, heat exhaustion, and heat stroke. It's printed on both sides of a checklist-size piece of paper for convenience and to enable placement in a checklist binder for easy access.

I wonder how many of our personnel participating in Operations Desert Shield and Desert Storm possessed such a reference? If your unit deployed, did your personnel know about heat injury prevention and first aid? If you'd like a copy of the 302 TAW Guide to Heat Stress, call me at the number below.

What are you doing in your program that could help other FSOs if they knew about it? If you know of something, call me (Dale Pierce) at DSN 872-4858 (USAFTAWC), or send a short note to 919 SOG/SEF, Duke Field, Florida 32542-6005. ■

Request For Survival Stories

■ Do you have a survival story you would like to share? The USAF Survival School is looking for people like you who have experienced a survival episode, either military or civilian, which can be used to enhance our training. We will use your valuable experience to let others know what might be expected and how they might feel.

Please contact us at 3636 CCTW/DOV, Fairchild AFB, Washington 99011-6024, DSN 657-2171/2176 or commercial extension (509) 247-2171/2176. ■

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