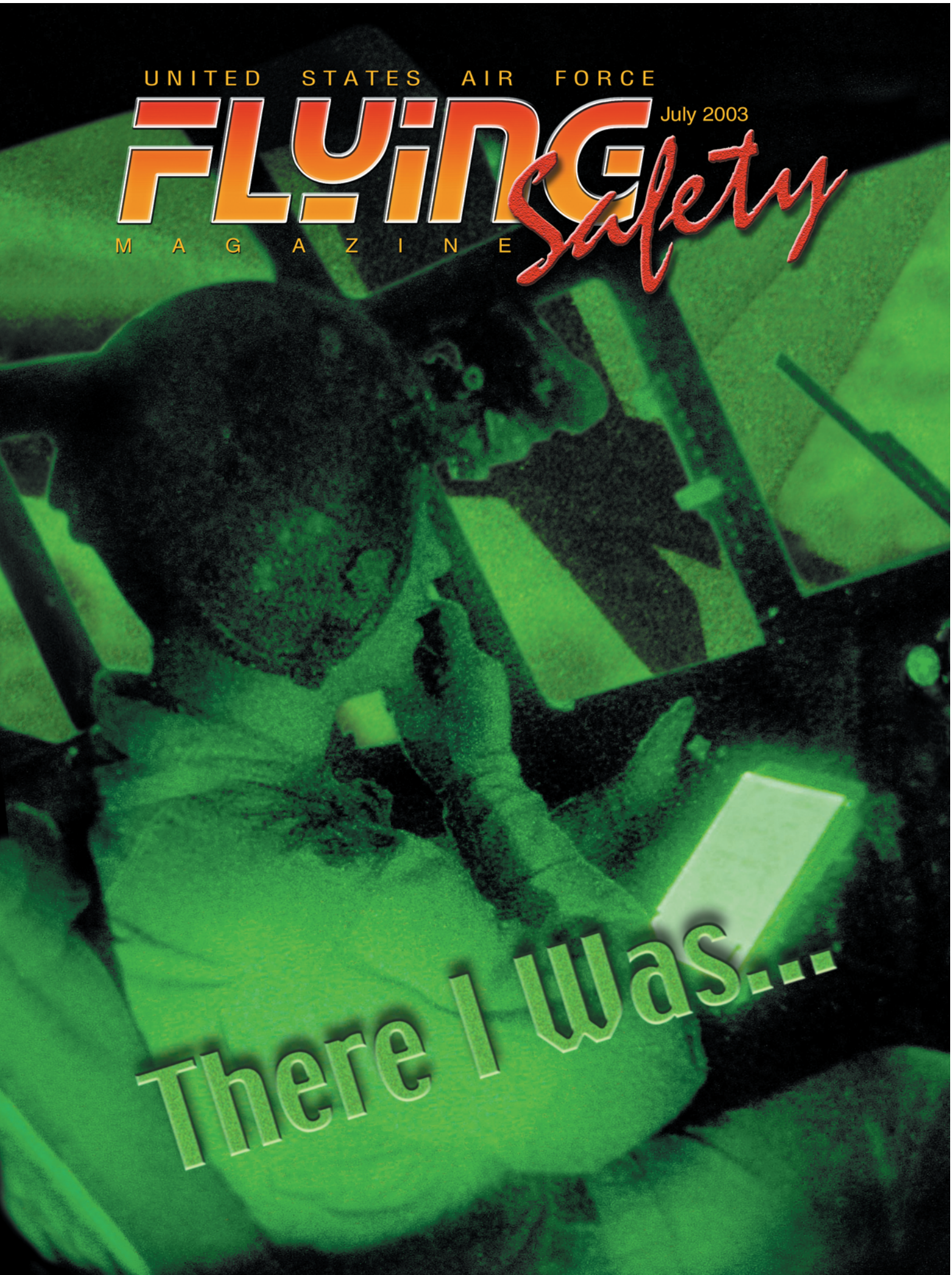
UNITED STATES AIR FORCE

FLYING Safety

MAGAZINE

July 2003



There I Was...

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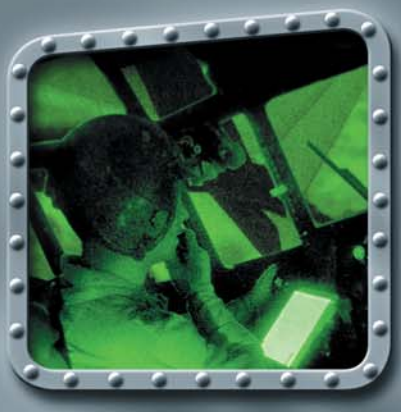

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UNITED STATES AIR FORCE
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MAGAZINE

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SAFETY sage

EVERY AIRMAN A LEADER

(Editor's Note: These words, from the vice commander of Air Combat Command, are pertinent for all Air Force members.)

Commanders,

Since the 1st of June, three motorcycle mishaps have left three ACC airmen dead and one other seriously injured. Initial indications are that in all three mishaps our young airmen were clearly exceeding the speed limit. In one mishap, they were under the influence of alcohol, not wearing helmets, and had not attended the mandatory motorcycle training. This failure to adhere to our AFIs, policies, and society's laws is getting our most valuable resources maimed or killed.

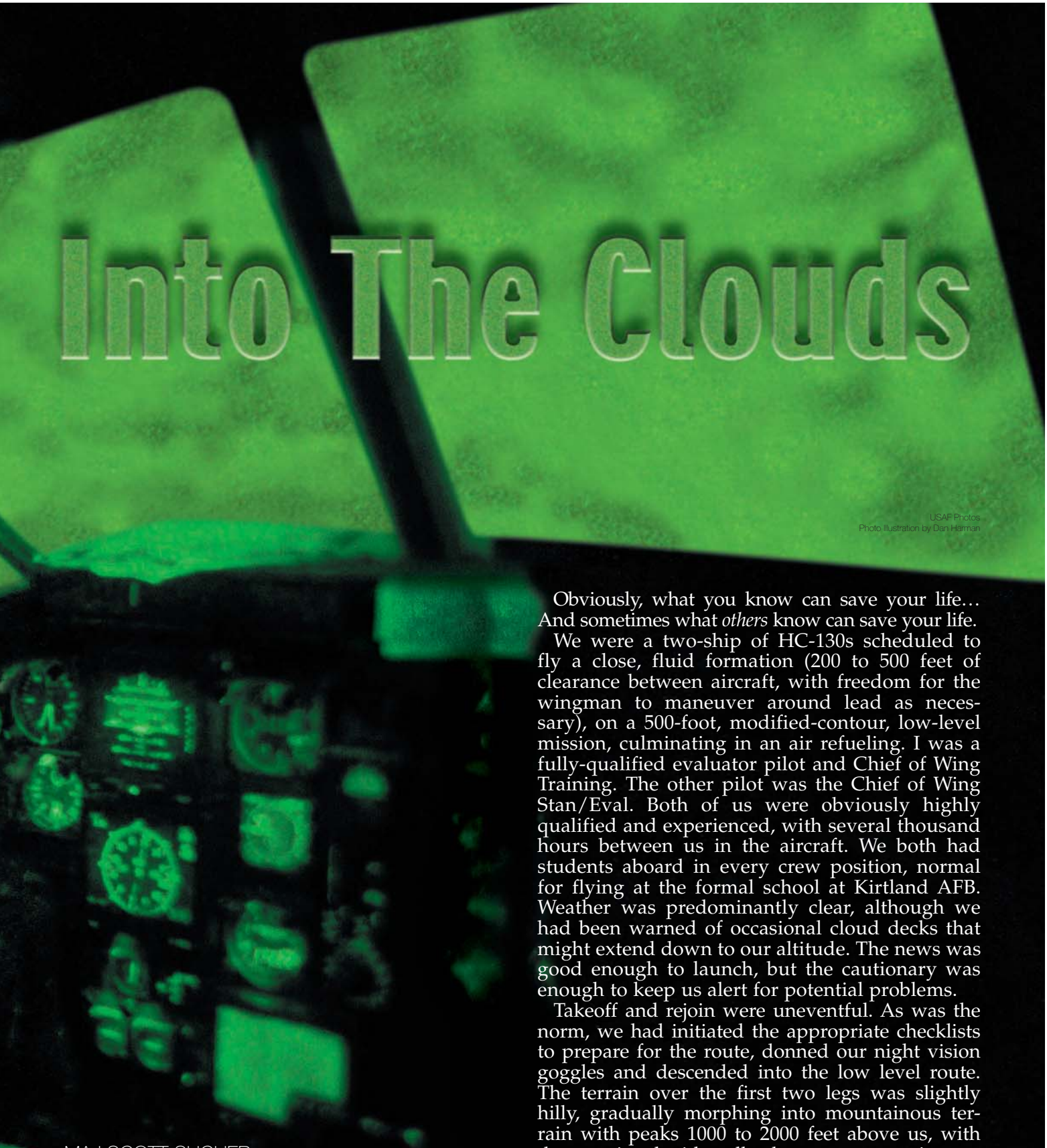
We demand disciplined application of airpower in the air. We need to demand that same level of discipline on the ground—on and off duty. This means being aggressive in communicating the standards in our roll calls and commanders calls, doing what it takes to go beyond that to ingrain the standards of conduct of behavior in our young folks from the moment they set foot on our installations. From our commanders and supervisors, to our newest accessions, we need to emphasize the importance of watching out for each other, on and off duty. Standards are standards; and if someone fails to comply, we need on-the-spot corrections. Be tough and don't let things slide. That means enforcing things like speeding on base, being late for work, missing an appointment, and other deficiencies that underpin our culture of discipline and proper behavior 24/7. A dose of "tough love" in appropriate cases may get the attention of reckless individuals and ultimately save lives.

We need every single member in ACC to accomplish our mission, and we have a moral imperative to stop this needless loss of life and preserve our combat capability. We must create a culture of attention to detail and eliminate the wrong notion that there is a distinction between on duty and off duty when it comes to safety matters. Our newest accessions need to have the culture of discipline 24/7. We are all airmen 24/7, and standards don't end at the base gates.

Every airman is a leader on and off duty. We need all ranks, civilians, and family members to understand this serious issue. Every one of us has a personal responsibility to keep our Air Force family safe, alive, and well. Thanks for your cooperation and thanks for your leadership...let's all "push it up" and see if we can save more lives.

Lt Gen Bruce A. Wright
Vice Commander, Air Combat Command

Into The Clouds



USAF Photos
Photo Illustration by Dan Harman

MAJ SCOTT SUCHER
USAF, Ret.

(Editor's Note: This is a fascinating "There I Was" story that has a happy ending. Your own actions in a similar situation might be very different from those of the author but his advice, on "chair-flying" and learning from publications like this one, is very valid.)

Obviously, what you know can save your life… And sometimes what *others* know can save your life.

We were a two-ship of HC-130s scheduled to fly a close, fluid formation (200 to 500 feet of clearance between aircraft, with freedom for the wingman to maneuver around lead as necessary), on a 500-foot, modified-contour, low-level mission, culminating in an air refueling. I was a fully-qualified evaluator pilot and Chief of Wing Training. The other pilot was the Chief of Wing Stan/Eval. Both of us were obviously highly qualified and experienced, with several thousand hours between us in the aircraft. We both had students aboard in every crew position, normal for flying at the formal school at Kirtland AFB. Weather was predominantly clear, although we had been warned of occasional cloud decks that might extend down to our altitude. The news was good enough to launch, but the cautionary was enough to keep us alert for potential problems.

Takeoff and rejoin were uneventful. As was the norm, we had initiated the appropriate checklists to prepare for the route, donned our night vision goggles and descended into the low level route. The terrain over the first two legs was slightly hilly, gradually morphing into mountainous terrain with peaks 1000 to 2000 feet above us, with the occasional wide valley between mountains.

The first few legs were uneventful. My student was a copilot upgrading to aircraft commander, with a demonstrated knowledge of the regulations and good flying skills. Students were occupying all the other positions under the supervision of their respective instructors. Things were proceeding quite smoothly as we started to cross a wide plain,

so the instructor navigator requested a trip to the back for a nature call. A quick visual check ahead, along with a radar scan for terrain, revealed nothing of importance for the next few minutes, so his request was granted.

Within a minute, all hell broke loose—far faster than what it takes to tell it here. We were in a wide, low, right echelon position approximately 500 feet from lead, with my student flying the aircraft. Suddenly, lead's shadow appeared in front of us. This was the realization of a major "uh-oh" moment, as this only happens when you are within a second or two of entering the clouds. The shadow is the result of lead's aircraft obscuring his wingman's rotating beacon (carried for the formation, as lead's is off). Lead saw his shadow the same time we did, and I expected him to continue straight ahead, declare "Inadvertent weather penetration," and then start a climb to our minimum safe altitude. I would also climb and slow a little bit to get separation, ensuring we wouldn't collide in the weather.

Maybe, but NOT tonight!

Rather than proceed straight ahead, lead started what looked to be a climbing, 60-degree bank turn into us, and then he disappeared into the clouds! Our closure rate was quite impressive the instant he started his bank (remember, we were about 500 feet away and moving about five miles a minute). I yelled at the copilot, "My aircraft!" while simultaneously trying to figure out what we needed to do to stay alive, as impact appeared imminent. I decided what we needed was to out-climb and out-turn lead, so I firewalled the throttles and put my aircraft initially into a 60-degree right turn (I'll cover why *right*, and not *left*, later). The last thing I saw before entering the clouds was the top of lead's aircraft turning into us at an ever-increasing rate. The clouds engulfed us, with me expecting another brief visual of lead prior to impact.

Not knowing what lead's intentions were, we started to climb like a bat out of hell, attempting to get away from both the ground and lead at the same time. Meanwhile, I yelled, "Where's lead?" at the student navigator every few seconds, and his steady response was, "I don't know, but his squawk is all around us!" I was wishing the instructor nav was at the station, but he was coming back to the flight deck when this started and was now pinned to the floor/fuselage clawing his way up, not having an inkling what was happening. To add insult to injury, I was now in the weather, at night, about 60 degrees of bank, on goggles, and our rotating beacon was flashing every second, ruining my view of the instruments! I flipped my goggles up, told the engineer to turn off the rotating beacon, and directed the copilot to stay on NVGs.

It took all I had to concentrate on—and trust—the instruments. The student nav kept reporting that he wasn't getting any separation from lead. Throttles were at max torque and we were trading airspeed for altitude as fast as we could. Things were happening so fast and I was concentrating so hard on the instruments that I didn't even think to direct lead to pick an altitude and stay there. (This would have been appropriate, but I was so mentally overloaded trying to maintain the routine stuff that I didn't even think of all the non-standard procedures.)

It took us no time at all to climb about 8000 feet before we broke out of the clouds. The rotating beacon was turned back on, as we were now up with the commercial guys. Hopefully, this would also allow lead to locate us, as we still had no idea of where he was except he was "close," per our radar. All eyes were directed to look outside, searching for traffic of any kind, particularly lead. Our loadmaster quickly reported a "Tally-ho," and that lead was 1000 feet *directly beneath us!* Apparently he was turning as hard as I was and the only thing that kept us apart was that I used more power and pulled harder.

I reported that I had him in sight and asked him to state his intentions. Not really aware of what had just happened, he said he would proceed down track, wait for a break in the clouds and then descend to continue the low-level route. I took a quick look around the cockpit and saw nothing but white faces (including the instructor nav who was trying to catch up on events). I told him to stand by while

Our loadmaster reported that lead was 1000 feet directly beneath us!

we decided what we were going to to. I gave the aircraft back to the student pilot, coordinated a holding pattern with ATC and then discussed options with the crew. I knew we were all too shook up to go back into a low-level environment, but there was a lot of high priority air refueling training that needed to be accomplished. We eventually decided to proceed to the AR track and orbit at altitude for an hour while lead finished his route. Then we would take psychological stock of our situation and decide to AR or go home. Lead eventually entered the AR track, we rejoined him, and the rest of the AR and flight went uneventfully.

The formation debrief that night was a little excited, generated mostly by my crew, as most of them saw what transpired. All but one of lead's crew had no idea of what had happened real-time except for the communications system operator, who was acting as the right scanner at the time of the incident and saw us in a nearly head-on profile just before they went into the clouds. The two crews extensively debriefed both the routine and non-standard aspects of the mission. When we were done, everyone was leaving as I pulled the other aircraft commander over for a one-on-one debrief that lasted two hours.

As everyone knows, many accidents happen due to a series of minor actions which result in major consequences. This one proved to be no different. I think the accident investigation board would have come up with the following:

CAUSE: Lead failed to follow appropriate inadvertent weather penetration procedures.

We had flown together about a month earlier when he intentionally led us into the weather. We had plenty of time and maneuvering room to avoid it, but he failed to do so. I chastised him then, but as a result he said he was going to do everything possible to avoid the weather in the future. When he saw his shadow this time, he turned to avoid it.

CAUSE: Lead did not know his wingman was in right echelon prior to executing a right turn.

Prior to any turn, the pilot gets a "Clear" confirmation from his scanner on that side. In this instance, his scanner reported clear but, because we were at the fringes of the operating envelope and hence his visual range, we were reported clear when in fact we weren't. The rest of the events happened far too quickly for lead to change his actions once "Clear" was declared.

CAUSE: Wingman turned right instead of left to avoid lead, thereby staying inside of the turn and increasing the risk.

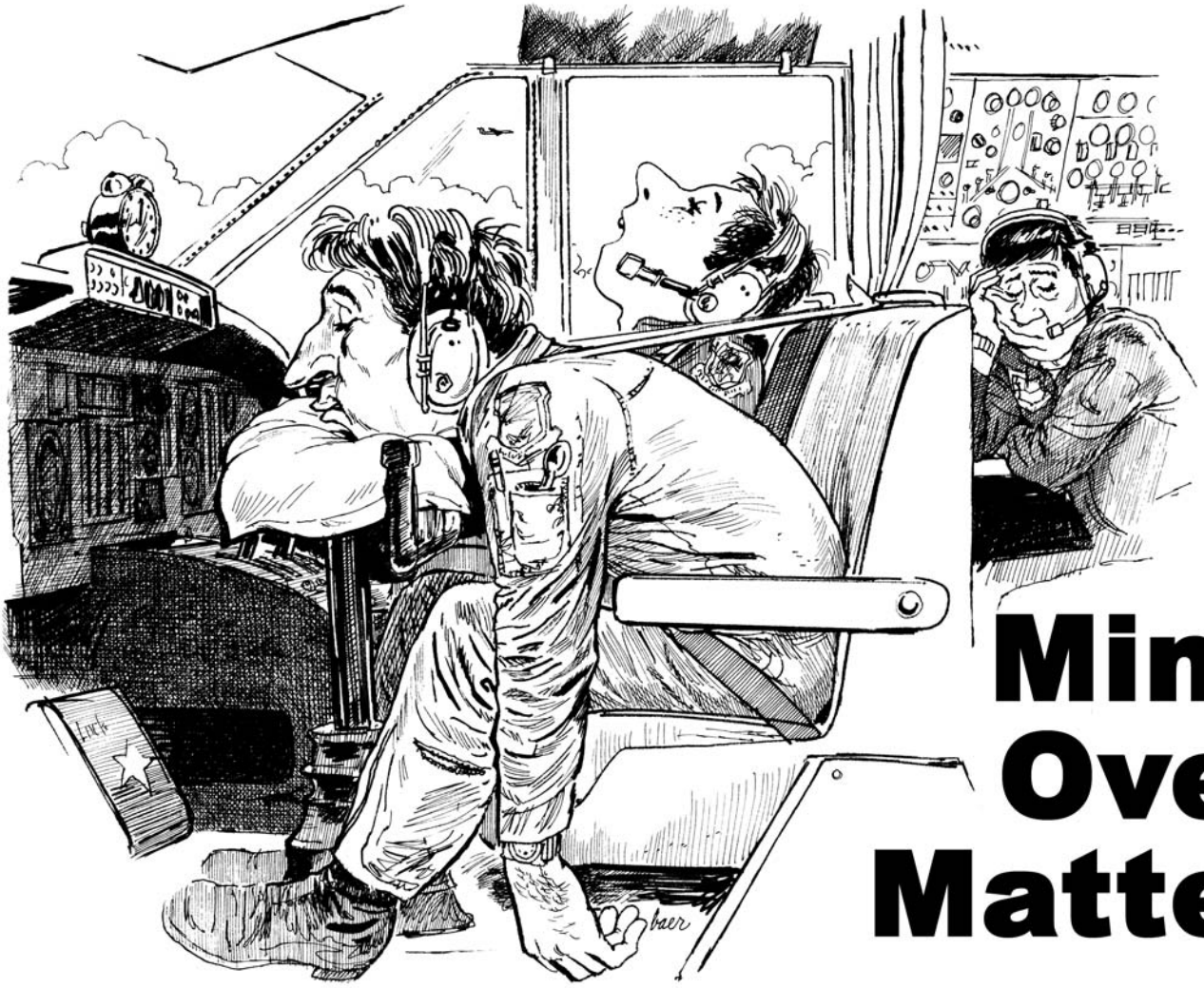
This was a judgment call on my part, and it took maybe a millisecond for me to decide. Standard procedure when overtaking lead in a C-130 formation is to go to the outside of the turn. In this case, that meant a left turn. This provides maximum clearance in minimum time and provides both aircraft far more room for maneuverability than if a right turn were executed. I had chair-flown this scenario numerous times prior to this by putting myself in various positions. At the time of the incident, everything was being executed by pure reaction. I thought dipping the left wing in the direction of lead to turn left increased our chance of collision, as our overtake was phenomenal, so I turned right, hoping to out-turn and out-climb lead. Regardless of anyone's personal thoughts on what they would have done, we survived.

Everything was being executed by pure reaction.

What's the lesson of this story? First, read those safety magazines and accident reports. You don't have enough time to make all the mistakes yourself and learn what not to do. Most of us can't even dream up all the possible scenarios that occur in the real world! "A smart man learns from his mistakes. A wise man learns from the mistakes of others."

Second, chair-fly, and when you get tired, chair-fly some more. It works in pilot training; it works in the real world. And it doesn't pertain to just pilots. All crew positions should mentally put themselves in another's place and think about what they would have done.

Third, know the regulations. Know what you should do and when you should do it. But remember, the regulations can't dictate every situation, and nor should they. When you get into a non-standard situation, good judgment and common sense, tempered by experience and chair-flying, may just someday save your butt, and those that entrust you with theirs.



Mind Over Matter

LCDR ROBERT SHAVER, USN (Ret.)

My naval aviator career spanned 22 years from 1958 to 1980. During those years I logged over 5400 pilot hours in six squadrons with almost 400 left-seat carrier landings. I completed the Aerospace Safety Officer program at USC and served three tours as Aviation Safety Officer (ASO) and one as NATOPS Officer. I served as the senior member on several aircraft investigating boards, and personally wrote many aircraft incident and accident reports while serving in the Med, CONUS and Vietnam. I cite this brief autobiography only to give credence to this personal sea story, for I believe it still has application today.

I was an aircraft commander flying C-130s out of Rota, Spain. Our route that day was a routine Rota-Sigonella-Naples-Palma-Rota turnaround flight. Crew briefing was at 0600 (local time) with an ETA back at Rota prior to midnight. Every aspect of the flight that day was routine, except that we experienced delays at each destination. Loading and unloading times were exceeded for a variety of reasons, none of which was crew-related. As a result, we fell behind on our flight plan. Even our usual "watering hole" at Naples was closed that day due to an employee walkout over some minor point of "honor" with management.

Since we were running behind time, we pushed on without our usual mid-flight plate of pasta at Naples. As we approached Palma, we phone-patched our controlling agency and asked if we could remain overnight at Palma, since our crew duty was about to expire. (A maximum VR crew duty day then was not to exceed 18 hours from crew-brief to the completion of the post-flight inspection.) Another option, rather than RON at Palma, was to overfly the stop and continue straight back to Rota. Their instructions to us were to make the landing at Palma and get back into the air before the expiration of our crew duty time. Once airborne, we were authorized to continue to our next stop (Rota), even though we were now over crew duty. While this was not a desirable situation, it was legal; the aircraft was needed back at Rota for another flight that morning. We were all feeling pretty good at this time and pressed on, arriving about two hours over crew duty at Rota. This is where my sea story begins.

About half an hour out of Rota, I ate my usual pack of Starburst candies. That little shot of sugar always helped me to do my best on approaches. I used this trick back in my VS days prior to a night carrier landing after a six-hour flight. It worked like a charm then and did at Rota, too. Of course, there is a big difference between maybe an eight-hour VX crew duty day then, and the 20 hours I was facing over Rota. The ceiling at Rota was reported on the deck, with less than a quarter of a mile of visibility. We shot a GCA down to minimums. My copilot said he thought he saw the glow from the approach lights, so we tried one more approach. We really wanted to land, but this is not a "go-home-itis" story. On our second approach we saw nothing at minimums and took a missed approach with a clearance to our alternate, Torrejon Air Base, Madrid. Our fuel load would have permitted another approach, but I felt it was time to go.

The flight to Torrejon was uneventful, except that my entire crew fell asleep on the way. I thought it got real quiet there in the middle of the flight. About half an hour out I got one more cup of that wonderful "24-hour coffee" from our heated galley pot. My stomach was burning pretty good now since I really had had nothing of substance to eat since breakfast. With nothing to eat at Naples and Palma, my loadmaster was going through some passenger box lunches left from that morning. We shared what was available; I don't remember what I had, if anything. An apple with a bite out of it does not turn me on.

Since it was around 0400 on our arrival at Torrejon and there was no other traffic, we were given priority for our approach. (Our crew duty at this time was about 22 hours.) The ceiling was reported at 500 feet with ragged scud below. The visibility was pretty good, with about two miles in rain showers and fog. The controller asked if we would accept a short approach with radar vectors to intercept the ILS localizer; I accepted. As a result, I was still trying to let down and slow down as he turned me on a base leg toward the localizer. In a very short time I was on the localizer, above the glide slope but correcting. I was concentrating on flying that approach with every fiber of my being and thought I was doing just fine. However, on final approach I experienced at least one, maybe two "micro-winks." You know, those little periods of sleep when you wake up and don't know how long you have been asleep, but are sure you were.

I guess my concentration was not as good as I thought, for I remember the controller who was monitoring our ILS approach on his GCA radar coming up and giving me an oral command to "Disregard your gyro; turn right." Within a few seconds of that command we broke out very close to runway centerline about 400 feet AGL, and still a little high on the runway glideslope lights. A GCA was always my preferred precision approach, and I certainly would have elected to fly one that night if I had known that it was up and manned at that hour. Anyway, we landed a little long using full reverse and brakes, and another VR uneventful landing was logged, or at least I wanted everyone to think that.

The point of my story is just this: When it came to mind over matter, I always believed that the mind could prevail, given enough determination. In this case, with all my concentration, skill and desire to fly the best IMC ILS approach I could, my body just shut down when I needed it the most, no matter how hard I was trying; mind over matter did not prevail this time. Only shortly before I retired from active duty did I mention this incident to a flight surgeon. I never said anything to anyone before that time for fear of looking less than professional and for not being able to handle any flying situation; after all, nothing really had happened. Anyway, we came to the conclusion that I was suffering from fatigue coupled with a very low blood-sugar level. The candy eaten several hours earlier had initially raised my blood-sugar level but then caused it to fall below where it would have been if I had not eaten the candy in the first place. Also, I had "maxed out" on coffee all day (caffeine), and my liver had nothing left to give to help the low blood-sugar level situation. I literally ran out of gas on final. My thanks to that alert Air Force controller.

Later, when I asked my flight-deck crew about the approach, they said they never noticed anything out of the ordinary, except that I was a little high. Maybe they were too tired to notice, or they had so much confidence in my ability to be professional no matter what the situation; I don't know. I still don't think the approach was all that bad (22 years of hindsight will do that), but it's probably time for those long crew-duty day aviation communities to reconsider mission requirements and physiological conditions that can cause "micro-winks." I know this is not a new subject, but it's still worthy of a second look.

I don't think it's necessary to expound on the potential consequences of falling asleep close to minimums on an IMC approach, even with a qualified copilot aboard. If this could happen to me, I believe it could happen to anyone; thus my belated true confession.

When I was an ASO in a training squadron back in the '60s, I had a sign over my desk that read, "One million dollars to the aviator who makes a new mistake and lives to brag about it." It was a safe bet, as it's all been done before. If we can just learn from our mistakes and not repeat them, our pilot-error accident rate could go to zero. Think about it.

What Do You Mean They Went Inadvertent

HQ AFSC Photos by TSgt Michael Featherston
Photo Illustration by Dan Harman

CW3 MICHAEL K. PHILLIPS, USA
Aviation Safety Officer
57th Medical Company (AA)/TFME

"What do you mean 'They went inadvertent IMC'?"

As the unit Safety Officer, that was my response when I heard one of our crews had "punched in." Of all the times for it to happen, it occurred during a deployment to Bosnia, over mountainous terrain and at night, while wearing NVGs. If that wasn't bad enough, the flight was a medevac mission with a patient on board, and the two pilots had about 800 flight hours combined. (The pilot-in-command did have some additional civilian flight experience and is considered one of the more squared-away PICs in the company.)

I used to consider inadvertent IMC (IIMC) as a "self-induced emergency caused by pilot error." For the most part, I still think that's true. But I guess there are times when you just cannot see the clouds. Or, if you're wearing NVGs, by the time you realize you're in a cloud, it's too late to continue VMC.

I used to consider it a "self-induced emergency caused by pilot error."

I never gave IIMC much thought until that day. We're not supposed to do it, we have procedures in place in case we do it, and nobody ever does it. So why worry about it? I've been in Army aviation for more than 11 years and had never been in a unit when a crew had gone IIMC. This perfect track record had lulled me into a false sense of security. It allowed me to think it couldn't happen, or wouldn't happen. Not on my watch, anyway.

Why would it happen? We train our crews to avoid it at all costs. We tell them over and over, "Don't attempt to fly VFR in IFR conditions. It's dangerous." We've all seen the Safety Center posters showing the catastrophic results. If weather is bad, don't fly. If weather gets bad, turn around and go back, or

land where you are and wait it out. Or, if you are trained, equipped, prepared and proficient for IMC flight, request an IFR clearance from ATC and continue the mission IMC. (That last option may not always be available in Bosnia, or on other deployments, based on local NAVAIDS and instrument approaches.)

Have we all been lulled into a false sense of security? We've all heard the old pilot joke: "If it's too bad to go IFR, we'll go VFR." To avoid going IFR, many of us have gone "scud running." A Federal Aviation Administration publication defined scud running as "pushing the capabilities of the pilot and the aircraft to the limits by trying to maintain visual contact with the terrain while trying to avoid physical contact with it."

I've had several encounters with deteriorating weather while flying VFR. There have been many times when I simply turned around and went home. On a few occasions, I radioed ATC and received an IFR clearance so that I could continue the mission IMC. But, I've never gone inadvertent. I've turned down countless missions (including medevac missions) because of poor weather. Somehow it's easier to refuse a mission while standing in the flight operations office, compared to refusing to continue to fly a mission while in the air. We all want to succeed in our mission, especially if that mission is to save a life.

There are times when a patient's only hope of survival may be via a flight on an Army helicopter. Air ambulance units, like the one I'm in now, are frequently called upon to fly in poor weather and at a moment's notice. All too often, Dustoff crews will fly a medevac mission in weather that they wouldn't even consider on a training flight. (Been there, done that.) The desire to succeed can easily turn into a perceived pressure to complete a mission, particularly a medevac mission. That pressure is almost always self-induced and is felt by pilots and even non-rated crewmembers. Commanders will always support crews that turn down missions for safety reasons.

According to an NTSB study, unplanned entry into IMC is the single most common factor in fatal emergency medical service helicopter crashes. Because most of the IIMC accidents result in pilot fatalities, accident investigators are able to learn little about the events that led to the accidents. In cases where pilots lived to tell their story, it's like the Safety Center has been telling us all along: The pilots tried to fly VFR in IFR conditions. They also felt pressure to accomplish the mission, in spite of deteriorating weather conditions.

Fortunately for those of us in Army aviation, there are established procedures in place that prepare us in the event that we do go IIMC (*Air Force has those, too. Ed.*). We brief IIMC procedures with the crew prior to every flight. The Aircrew Training Manual (ATM) clearly states, step-by-step, what to do after encountering IIMC. Local standard operating procedures (SOP) also provide guidance in case we accidentally punch in.

On this night when our crew went inadvertent, they did everything by the book, just like they were taught. The PIC briefed IIMC procedures to the crew prior to the mission. The pilots obtained a valid weather briefing and had even updated it just prior to takeoff. The PIC had the only available instrument approach procedure open and strapped to his kneeboard, and approach control frequencies were set in the radios. (The weather forecast called for better-than-VFR conditions, but proved to be incorrect.)

About five minutes after takeoff, the pilots watched as the ground lights started to fade, flickered and then disappeared. They controlled the aircraft just like the ATM told them and began the local IIMC recovery procedures. The initial feelings following going IIMC included fear, anxiety and nervousness; the first 30 seconds were the worst. Once they knew the aircraft was under control and they transitioned from NVGs to instruments, they felt much better. Thankfully, this crew was prepared for the worst when it happened. With the assistance of ATC, the aircraft broke out on final of an ILS approach and landed safely.

Now, I know that sometimes aircrews really do go inadvertent IMC. Now I know that pilots can't always see the clouds as they approach them. Now I know that the IIMC procedures in the ATM work. Now I know that the IIMC procedures in the SOP work.

And now *you* know.

The desire to succeed can easily turn into a perceived pressure to complete a mission.

An Almost Fatal Distraction

BOB VAN ELSBERG
HQ AFSC/SEMM

"I have high expectations for myself because I did well in the simulator."

Teaching a student pilot can be a dicey business—especially when an inexperienced student is paired with an inexperienced instructor pilot. Maj. Jim McDonald, currently Chief of Flight Safety for the 314th Airlift Wing at Little Rock AFB AR, was a brand-new instructor pilot (IP) at Little Rock during the fall of 2000. He learned very quickly how a little distraction mixed with a lot of inexperience could get a flight crew into serious trouble.

"This was my second ride in the Buddy Instructor Program," Maj McDonald said. "This was a Phase One check, so we were doing proficiency/instrument work at the Springfield, Mo., Regional Airport. I had a couple of Day One copilots on their very first ride in a C-130 with me on this day. Both of these guys were high-strung, gung-ho. Each had the attitude, 'I have high expectations for myself because I did well in the simulator. Now I'm going to translate that into the C-130.'"

The five-hour-long mission launched uneventfully out of Little Rock. On board, both new copilots were slated for 2-1/2 hours each to bone up on some right-seat skills. McDonald laid out the itinerary for the flight.

"The basic plan is that you take off and fly someplace with one student in the seat and perform holding, procedure turns,

USAF Photo by SSgt Jerry Morrison

instrument approaches and VFR touch-and-go landings. You get them used to flying instruments and learning how to land the aircraft—basic aircraft control. Halfway through the sortie you swap students. Then the second student gets to do the same things the first one did, then fly back to the base where you started."

The student copilot did well at first.

"He was eager and seemed very sharp," McDonald said. "He had his initial procedures down. He knew his checklist responses and how to run a checklist. As a copilot on a C-130, running a checklist is an important thing."

The flight had gone well so far, and the student was scheduled to shoot some practice landings.

"The first approach we were going to shoot was an NDB (Non-Directional Bearing) procedure turn after holding," McDonald said. "He approached the NDB and went into holding, so now we were burning a circle over the NDB. We were about five miles off the runway to the northwest, about 4000 feet above the approach altitude. He seemed to understand what he was doing and was getting experience with the aircraft, so I felt he was ready."

They had dropped down below the weather as they circled. The student copilot could look out the window to see where he was going to land. That's when the problem started.

"As long as he was looking at his instruments, he was fine," McDonald said. "But circling is a visual maneuver. By that, I mean you look outside, find the runway and fly your aircraft around by looking at the runway. Now, that does not mean that you take your instruments out of your crosscheck. You still have to maintain your circling airspeed and altitude and keep proper spacing from the runway and keep your orientation."

However, while watching the runway the student got into the classic "head-up and locked" condition.

McDonald said, "He came down to his MDA (Minimum Descent Altitude), saw the runway and began his circling maneuver. Springfield had crossed runways. He shot the approach to one runway, then we began to circle around to the other runway. As he began his circling turn, I told him, 'You're 45 degrees off'—which is the normal place where we'd 'perch' to begin our turn to final. He said, 'OK.' Then he began his bank. He went to 30 degrees bank and held his airspeed, but did nothing else. So, I asked him, 'Are you looking for the runway; are you looking outside?' His answer was, 'No.' So I said to him, 'Remember, circling is a visual maneuver.' Right then, I think he threw out his instrument crosscheck because that was when things started to get hairy. He looked out at the runway, which was off his left side because he was in the right seat. As he looked left, he banked the aircraft past 40 degrees. I don't think he was ever aware of what he was doing to the aircraft because he never responded to our inputs."

"I think he threw out his instrument crosscheck because that was when things started to get hairy."

McDonald looked at the young copilot. He was so fixated on the runway during his final turn that he didn't realize how far he'd banked the aircraft or that he was also leaning forward against the yoke. And there was another problem. Anticipating that he was about to land, the student had reduced power. With increasing bank and decreasing power, the Hercules was rapidly losing speed and altitude.

"My first call to him was, 'You're at 40 degrees of bank, you're 100 feet low and 10 knots slow!' There was not a word from him—he didn't acknowledge. I looked over at him and he was looking past me to the runway. I looked back at the instruments. He was now 15 knots slow, 200 feet low and he was still in a 40-degree bank. I stated to him, '200 low, 15 slow and 40 degrees of bank, what are you going to do?' He said nothing. He was so fixated on the runway and trying to get there that he lost his situational awareness."

USAF Photo by SrA Lakisha Croley

McDonald then exercised the "Two Challenge Rule" and immediately took control of the C-130.

"At this point I said, 'My plane.' I was behind him on the controls. I had my left hand right behind the yoke, ready to take it. My right hand was what some people call a 'crab claw'—my fingers were around the throttles so I could keep them from going back or help push them up. My feet were on the rudders—just barely touching them, but enough to help control the aircraft. As I said, 'My plane,' I bumped his hands off, took the throttles and pushed them up, rolled out to 30 degrees of bank and leveled off. I said, 'Look at the configuration of the aircraft right now!' The look on his face said it all. He looked frozen. He was shocked that he was where he was. It was almost a look of disbelief on his face."

After McDonald got the aircraft under control, he conducted a little cross-cockpit counseling.

"I asked him, 'What were you thinking?' He said something like, 'I was looking at the runway, you said it was a visual maneuver.' Then we had a 'slight' discussion on maintaining crosscheck and that he was still performing a pseudo-instrument approach. I told him, 'Yes, it's a visual maneuver, but that doesn't mean you let your aircraft go beyond the realm of your control and below the parameters you set for the maneuver."

Once he straightened out the student copilot, McDonald had some time for reflection.

"It scared me," he said. "He was the first brand-new person I had ever tried to teach in the aircraft, and he took me, as brand-new instructor, almost to my limits to recover the aircraft. We were approximately 250 to 300 feet above the ground when I recovered the aircraft. If you include the wingspan of a C-130 in that, along with the fact there was a tower down there that wasn't on the chart, there is the potential that we could have struck something."

The cross-cockpit counseling worked and the next landing the student shot—a precision approach—went well.

"We went into the visual pattern after that and performed several touch-and-goes. He seemed to have recovered and gotten his situational awareness back and did much better," McDonald said.

Having instructed more than 150 students, McDonald observed that it's not unusual for some to lose situational awareness.

He explained, "Sometimes they just don't have the experience to realize what they are getting themselves into. That's part of the reason we fly with them—to teach them and give them that experience."

McDonald has some advice for student pilots to help them avoid losing situational awareness.

"Chair-fly the mission before you take off," he said. "Before you show up to get in the plane, fly the mission in your head to include radio calls, actions, throttle positions, approaches, minimums, the briefings you're going to give, the checklists you're going to run and when you're going to run them. Visualize everything you are going to do on that mission from the time you sit in the seat until you take your headset off and the engines are stopped at the end of the day. If you do that, knowing what you have to do is half the battle. You're already halfway to a safe and successful flight."

Analyze That!

The MFOQA Process

Lt Col Kay Armstrong
HQ AFSC/SEFE

Welcome back! In the May issue of *Flying Safety*, I talked about the Military Flight Operations Quality Assurance (MFOQA) program, which is designed to make flying safer by constantly reviewing flight data recorder information. Now I want to tell you a bit about how the MFOQA analysis program works.

This won't be an in-depth discussion on computers and recorders and software, so if you're not really a technical person, relax. This program is just a simple flow of data bits. It goes something like this…

Over the years, the great minds that produce and maintain our flying machines realized we can collect data from the aircraft and put it to good use. For example, by collecting information on the stresses a fighter experiences, designers can create new airframes able to sustain even greater stresses.

Maintenance found that by tracking the performance and breakage rates of certain parts, they could predict failures and take precautionary actions. The civilian airlines found they could review the flight data, trend inflight events (i.e., over-rotation on takeoff), apply corrective action (i.e., training), and reduce the number of mishaps with the event as a cause.

Recently, the Air Force incorporated this concept of data collection in the Aircraft Information Program (AIP) (reference AFPD 63-14). The AIP directs us to take an information-centric look at all the data generated by the aircraft, and to use that data for design, system/subsystem integrity programs, maintenance and mishap prevention and investigation.

Many of our USAF aircraft currently have flight data recorders collecting information on the status of the airplane and what it's doing during all phases of flight. The recorder is partitioned to perform many functions.

The crash-survivable recorder should do just that, survive, so investigators can review the data and piece together the sequence of events leading up to a mishap. Other divisions within the recorder track airframe stresses, engine performance and certain other parameters; this data is used to support the Aircraft Structural Integrity Program (ASIP), the Engine Structural Integrity Program (ENSIP), and Reliability Centered Maintenance (RCM). MFOQA, as another element of the AIP, reviews flight data to detect deviations from standard procedures and parameters.

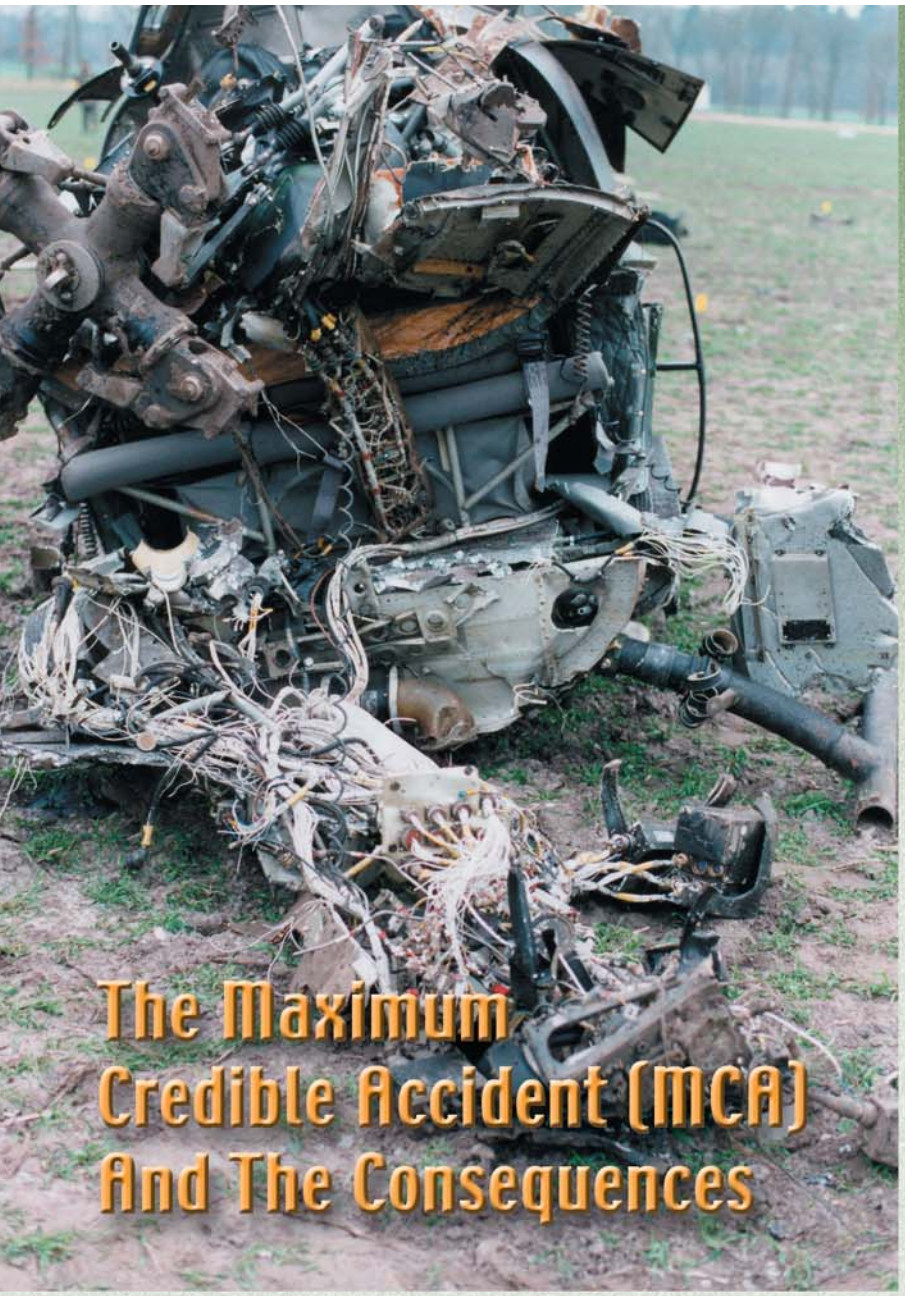
The MFOQA analysis process works like this: Flight data recorders are downloaded from the aircraft on a regular basis. This data is then distributed to various users—structures data to the ASIP program, engine data to the ENSIP program and crash data to the MFOQA program.

The MFOQA analyst processes the data through a secure, high-speed computer software program. First, the data is de-identified, to deter associating a particular crew with a particular flight. The flight data is then compared to an aircraft "event set." This event set is built on the knowledge and experience of subject matter experts—a.k.a. pilots—and is a collection of rules for analyzing the data. The events are based on standard procedures and parameters.

The analyst reviews the results from each batch of data, weeding out events triggered by bad data. Then the output is displayed in graphic format, which can be filtered in a variety of ways—by severity, month, location, etc. This gives an accurate picture of what is happening where. Long-term trending of specific events gives insight to flying program strengths and weaknesses. The analyst also spends time determining the common factors in specific events; squadron and MAJCOM instructors use this information for training and safety program decisions.

Though various vendors are capable of supplying the analysis software, they all offer the same results. These programs give the analyst the ability to identify and track events that are of special interest to the flying unit. They offer tools to uncover the root causes of specific events. The software also allows the analyst to animate the event. We all know a picture is worth a thousand words, and sometimes that picture helps the analyst determine just what happened. Also, it gives the capability to animate specific sequences; for example, squadron instructors might like an animation of a particularly tricky approach to use in pre-flight briefings.

So now you know how the MFOQA process works. That wasn't too bad, was it?



The Maximum Credible Accident (MCA) And The Consequences

Photos Courtesy of Flugsicherheit

Courtesy, German Air Force Flugsicherheit, II/2002

"You have lost a plane; probably all dead."

(Editor's Note: This story, from the German counterpart to Flying Safety*, concerns the reactions of a commander to what we in the USAF would call a Class A flight mishap, an aircraft crash with fatalities. All names of persons and places were changed by the editor of* Flugsicherheit*, who provided the translation.)*

What goes on in the mind of a flying group commander when a flight accident happens in his command? Here are some highlighted, very personal feelings and thoughts on the subject.

It was a wonderful day in 2001. Cool, some cotton ball-like clouds against a steel-blue sky, a good day for flying.

We (that is "my" technical group commander and I) are just spending a break during a joint services meeting with many other battalion/division/group commanders. I am just switching on my mobile phone to check my mailbox, when a buddy aviator, his arms flailing, forces his way to me through a noisy crowd of people, grasps my arm and speaks softly in my ear: "Mr. M., you have lost a plane; probably all dead."

At this moment, the mailbox of my mobile phone answers. I have to get out of the crowd. Get a breath of fresh air, call the wing ops. I press the keys on my phone like mad without realizing what I am really doing. Calm down! Think, breathe, press, speak: "It's me. What's going on?"

There it was, the MCA; what a commander wishes least of all: a flight accident with people killed. I don't know the other three people, but I know my pilot, Captain A—just the one we had so many plans for!

"Do you want us to pick you up?"

"No, we're driving off immediately! Tonight at 1900 all pilots will meet in the officers' club. That's all for now."

Thanks to the mobile, we fairly quickly get a comprehensive picture of the situation directly from the crash site—while we drive along in our car, helpless. The afternoon sun keeps burning in my eyes—or is there maybe something else burning?

To the wing ops: "Did you inform the family?"

"Not yet, but there is a connection via a senior officer from C. which has already been activated; the chaplain has been informed."

Who are the relatives of Captain A. anyhow? And at this moment, a 10-second clip of an old black-and-white film shown during leadership and civic education training reels off in my mind's eye, where a company commander asks his first sergeant: "What do we know about the lives of our soldiers, anyhow?"

"And the others?"

"Civilian employees of the Federal Armed Forces; their office will make the necessary arrangements."

What does one say to the squadron commander, already present at the

crash site, after saying "How is it?" and getting his shocking description of what he sees?

"You won't touch a stick anymore today. Who is there with you?"

"Captain K."

"Let me just speak to him." Captain K. also flies civil aircraft, and is in the SAR business; he is accustomed to the sight of dead bodies. "How are you and—be honest—are you still able to fly or do you want us to have both of you picked up by car?" His voice and choice of words show me that he is still able to fly. "OK, get home as soon as your chief has arrived."

As we reach the barracks, we hear the ringing of a bell. It seems that the officers of the Director of Federal Armed Forces Flight Safety Division have already arrived. First of all, I have to hold my head under cold water—I have to pull myself together and get into the flight ops building. The shock is palpable; none of the otherwise usual noises, no laughter can be heard—all is quiet. My regimental commander is sitting together with our highest ranking generals responsible for flying operations in the large briefing room with a Thermos jug with coffee and some used cups. Silence. Their presence is helpful, a clear sign of solidarity before my pilots and all the men and women under my command.

Situation at the wing ops: absolutely professional elaboration of all reports and coordination of all actions. In this respect, it is reassuring.

From the wing ops: "The parents have been informed—a chaplain well known to the family is taking care of them." This is also difficult, because the parents live about a two-hour drive away from our air base.

Talk with the squadron commander: "Who will inform the family, you or me or both of us?"

"The wife lives near M.; Captain M. is already on his way to her. I will inform the parents in W.; it's on my way back home. The chaplain is still there and I have to get out of here now."

This is courageous, and it also relieves me of a decision, because if I drove to W., I could not attend the meeting with my pilots at 1900—and this is very important to me.

From the wing ops: "Do you want us to hold a helicopter ready to bring you to the crash site?"

"No, I won't go today; I cannot do anything there, anyway. I will stay here." I could not bear the sight of it today anyway.

The flight surgeon is already holding numerous talks. I think to myself, "Will there be anybody to talk to the flight surgeon as well?"

What will we do now, and how are we to go on? Nobody gives me an answer to this question now!

"From tomorrow noon on, everybody who can fly, has a plane and has been given the flight surgeon's OK, take off."

Call to the technical group: "Yes, possible!"

I get the first cautious inquiries, whether soldiers from other areas are also allowed to come to the officers' club at 1900. "Of course; no objections." I am anxious about this meeting.

Somehow it comes closer. "I need some personal data on Captain A., quickly."

I see, as I enter the officers' club, that it is filled with quite a lot of people, together with the regimental commander and the generals. Nobody says a word.

"Everybody, arm yourself with a drink." I order a large beer. Why are most of the others holding a simple mixed drink of apple juice and mineral water, even though we made free official taxis available? Where is the damned paper with the personal data on Captain A.? I have trouble getting out even a single word. "Today…" Again, but louder "Today…" and somehow I get through my text after all. Slowly, the conversations are getting started, the generals mix with the other soldiers.

Sometime in the evening, I call my wife. She has not heard of it yet, even though the media again reacted damned quickly today.

Late in the evening, my flight surgeon asks me: "How do you feel, by the way?"

"How do *you* feel?"

Days later; the cemetery in W.: The formalities and proceedings for the military funeral ceremony are settled down to the last detail. The atmosphere is rather routine. The undertaker shows the premises: "…and here, in this room, is the coffin."

"Can you open the coffin once again for me?"

"Of course." He does so and then leaves the room. What I am feeling now will last.

The shock is palpable; none of the otherwise usual noises.

Obviously everybody has it in for my division.

Weeks later: Something is gnawing at me. Obviously everybody has it in for my division; I have visitors every day now.

Within eight weeks: technical material inspection level C (TMPC) for motor vehicles and weapons: "The findings are really disastrous. This huge number of deficiencies—recognizable even by the operators! And here: 'a completely worn out superstructure' on fire truck 8000!" "The vehicle is 23 years old; the major repairs, long overdue, were repeatedly postponed in the past due to lack of money." But who is interested in this anyway, once it has been recorded in such an inspection report?

Industrial safety supervision: Damn! The officer (pilot), who had just recently been trained to be an industrial safety specialist, was reassigned at short notice and was just now being introduced into his new job. His deputy (also a pilot) had—by order—been assigned to another activity (no flight service, pure staff work) for nine months. Unfortunately, we forgot to report this. So: Confess! The supervisor (thank God) proves to be understanding and accepts the explanation offered.

Personnel Management and Information System Investigation: Here they are, the real masters of bureaucracy.

"SMSgt K., how's things?" SMSgt K. is my Assistant Chief of Staff, G1, Personnel.

"Should be no problem." The result was not overwhelming, but still acceptable!

A general (not an aviator), who is reputed to be just dreadful (he is said to be particularly interested in TMPC, job exchange service and the gun pad used for G3 machine gun firing rather than in our core mission), has announced his visit for supervision. Again, everybody gets into a flap—however, the result is not as bad as expected.

Initial test for the Federal Armed Forces Flight Safety Division check by our superior command: Here, somebody else is taken in tow to check the firefighting facilities. This simplifies matters.

IT-security check: Well, I hope nobody has the "grouse" game still hidden somewhere in his computer.

TMPC for NBC materiel: Here I have to ask, "What is meant by this after all?"

Federal Armed Forces Flight Safety Division check: Actually—and I am serious about this—I am looking forward to it, because life is pulsing here:

- Availability of command personnel on the billets: disastrous; the same applies to the crews;
- Continuation training and follow-on training are almost impossible, just because of the disastrous situation in terms of availability of personnel;
- Flying hours of command personnel: by far not enough—just because they are rarely employed on their actual billets;
- Assignments and minor functions: several pages long; and finally,
- The fascinating prospect of soldiers being permanently deployed outside Germany for an unpredictable period of time.

But, are we capable of accomplishing 100 percent of our emergency procedures?

Actually, the gnawing inside me leads to one result only: I did not lose a man because:

- One vehicle shows deficiencies recognizable by the operator;
- The regular check of the first-aid kit on the floor was omitted in the last quarter and this, in turn, was not found out during the supervision; or
- There was an incorrect entry in the Personnel Management and Information System.

I lost a man, and I am somehow also responsible for the deaths of another three members of the Federal Armed Forces, because:

- Nobody seems to be really interested in the consequences closely connected with the core mission of a flying unit (i.e., flying); what matters most is that the mission is accomplished and the requirements for the professional development of officers are met;
- The flight order and supervision control system has possibly failed; and,
- I did not realize all this and did not take remedial actions in good time.

In the second half-year, I will scarcely see my unit: annual leave, finally, after more than ten years a little rest (again it is gnawing at me: can you really afford this?), preparation for my deployment next year. Oh yes, there is something to be said about my "secondary function" as flying supervisor and "chief standardization officer" in my unit: Sea Survival training is overdue (had to be postponed due to the visit by the general), I have to train in the simulator and also have to perform some flights to get back my instructor pilot and EX ratings, which were suspended during my previous employment at a major HQ, and flights with night vision goggles I only know from hearsay, etc., etc.

Conclusion 1: My time management is absolutely wrong!

Conclusion 2: Our coordination system is shifted to our disadvantage, and the workload limit of flying personnel and—although one really does not like to talk about it—that of other personnel as well. We must go back to the roots and recall our core flight mission.

That is the lesson I learned from Captain A's death.

PS: I leave it to the reader which conclusion he draws for himself. For me, it is perfectly clear!

I lost a man, and I am somehow also responsible for the deaths of another three members of the Federal Armed Forces.

An Independence Day Carol

DONALD V. KELLEHER
ART SVS GRP, Aerospace Corp.
San Bernadino Operations
Aerospace Maintenance Safety, July 1963

Illustrated by Donald V. Kelleher

In the first place it was Independence Day eve, and Major Marley was very much alive. But A/1C Ebenezer Screwge thought he was looking at a ghost when the Major suddenly appeared. One minute Screwge was alone in the room, and the next he was confronted by the distraught pilot. For Jacob Marley, Major, USAF, didn't knock when he entered. He simply walked through the locked door to the splintered squeal of shattered wood. White as a sheet, breathing hard, and hair standing on end, Major Marley stared with an icy eye at the mechanic. Sawdust from the pulverized portal floated through the room and settled to the floor.

"Are you a ghost, Sir?" asked a pop-eyed Ebenezer.

Marley informed him in no uncertain terms that he was not. But Eb needed further proof.

"Then why are you wearing that chain, Sir?" I read a story once about a ghost that wandered about the area wearing a chain he'd forged in life. A heavy chain it was, exceeding long, with old cash boxes and mortgages attached thereto."

I'd like to foreclose your mortgage, thought Marley. Instead, he informed Screwge that his chain was the chain that was forged to be an integral part of the MA-1 runway overrun barrier. Major Marley related to Screwge how, on his latest landing, he had engaged the chain instead of the barrier. "It happened an hour ago," continued Jacob, "and do you know why I didn't engage the barrier?"

Ebenezer didn't know, so Jacob Marley enlightened him.

Marley's accident happened when the brakes on his T-bird (T-33) failed. They failed because the reservoir was empty. The aircraft had contacted the barrier at the extreme left side, going through the same and on into the chain department. The reservoir was supposed to be checked every night during the postflight inspection. That was SOP. But last night it wasn't checked...Screwge didn't check it.

So Jacob Marley determined that Screwge would heed the gospel of Accident Prevention. "Three spirits will haunt you," Marley told his crew chief. He promised that three ghosts would visit Ebenezer Screwge: The Ghost of Accident Prevention Past, Accident Prevention Present, and

the Ghost of Accident Prevention Future. "And I hope they scare you as bad as you scared me," grated the Major through clenched teeth.

"The first spirit will be here at 2400," intoned Jacob Marley as he turned on his heel. With a final sizzling glare, he departed, hair still on end and the chain clanking in his wake.

Tiny Tim poked his head through the doorless doorway. "Hey, Eb," asked Tiny Tim, "what'cha doin' outa bed so late for already?" It was 2355. "And what was Major Marley doin' wrapped up in that there chain?"

Screwge told him the story and watched the look of blank amazement that came over the Airman Basic's face. Tiny Tim was 19 years old. He was 6 feet 5 inches tall in his stocking feet and weighed 375 pounds. He wore a size 2 hat. Tiny Tim's head looked like a pea on a drum. But he was fearless, so Screwge allowed him to stay. At 2359, A/2C Bob Ratchet puffed into the room. Bob Ratchet was Tiny Tim's supervisor and buddy, and kept a close watch on the kid. At midnight, when the Ghost of Accident Prevention Past taxied up to the barracks in a B-24, there was a roomful of mechanics awaiting him.

The Ghost of Accident Prevention Past was a sight to behold. He appeared to be about 22 years old, and golden bars glistened on his shoulder straps. The airmen stared at his cap. They had heard of the legendary thousand-hour crush. They were awed to be in the presence of a *two*-thousand hour crush. The shavetail sported a gorgeous pink uniform, brown shoes, and an acre or two of white silk scarf. He wore sunglasses and carried a swagger stick. Above the left pocket of his blouse was a pair of silver wings. And he was humming "Bless 'em all."

The young pilot looked at his watch. "There's a war going on," he informed the gaping trio, "so you can understand why I want to make this powwow a short one." He gestured with his swagger stick. "In my time we had aircraft accidents, of course..." The Ghost of Accident Prevention Past motioned impatiently, "…But why talk about it? Come along. You can see for yourself."

The B-24s rendezvoused with their escort of Mustangs and the formation flew into the brightening east.

"That's the coast of France." The Lieutenant pointed and the mechanics looked. Far below, through the broken, fleecy clouds, they saw the coastline. Another type of cloud suddenly appeared close by, and then another; nasty little clouds that spewed snarling chunks of shrapnel, then whipped away into nothingness. The B-24 bucked and steadied, then flew on. "And *that* was flak," remarked the spirit.

Ebenezer Screwge felt the cold sweat run down his back and sides. Bob Ratchet gulped noisily and Tiny Tim shivered. The quartet in the Liberator watched the crew perform their duties.

"Now this is what your accident prevention program is all about." The ghost smiled grimly at their terror. "This is war. Here is why you preserve the potential of a peacetime Air Force. Any Air Force clobbered by accidents isn't about to perform its mission. I understand that if the time ever comes when your USAF must fight, it will have to do so immediately. You won't have the time to build an Air Force from scratch, like we did in my day. Surely you can understand that an accident that puts an aircraft in the salvage yard, or a pilot or mechanic in the hospital, is the most inexcusable sort of waste."

"But Spirit," protested Screwge, "you said yourself that accidents happened in *your* time."

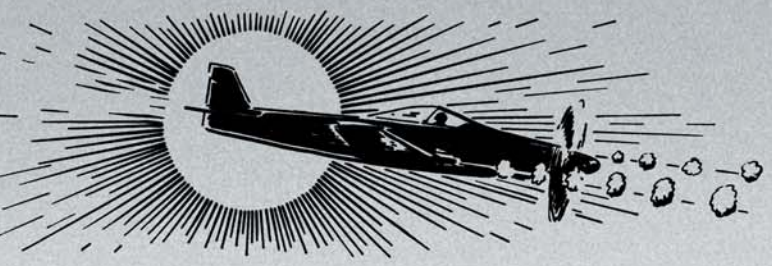
"Yes, I did. But I referred to wartime accidents; to accidents that happened during the heat of battle. There's a difference, Screwge, between your 1963 flight lines and the conditions that existed overseas in 1944. And remember this: you have several years' service and training behind you, and you indicate that the USAF is your life's work. We made no such claims. Office boys and shoe clerks; college boys and farmers. Those were your World War II airmen. We weren't professionals in the 1963 sense of the word. We made beaucoup mistakes and caused accidents to happen. But we also fought a war and won it; then, when the war was over, we gave our Air Force to you because you are professionals."

"I never thought of it that way," Ebenezer answered thoughtfully.

The bombers were over the target and their escort fought off the enemy fighters that swarmed through the formation. "Bombs away!" and a turn for home. Smoke from the shattered target rose into the sky.

"You said you had accidents in your day, Sir," Bob Ratchet ventured. "That doesn't look like a *mistake* to me."

"No," answered the Ghost of Accident Prevention Past, "the mission was successful." They moved through the aircraft, to the cockpit. "As for an accident…stand by one; we'll all participate in one shortly." He chuckled mirthlessly at the frightened airmen. "How in the world do you think I became a spirit?" He pointed to the copilot of the Liberator. *It was himself.*



The enemy fighter dropped out of the sun. They never even saw it. One of the P-51s did what it was supposed to do, but not before the bomber had lost its Nr 3 engine. Riddled by bullets and flak, one engine gone, the "Flying Box-car" lost speed and altitude and dropped behind the formation that was nearing the coast and safety.

Screwge, Ratchet, and Tiny Tim were crawling up the walls.

"Take it easy, troops," the lieutenant reassured them, "this old bird can make it home on three engines...happens all the time. Besides, I promised you an *accident*. Enemy action is no accident."

Number 4 engine sputtered, choked, and stopped.

"Flak?" gasped Ebenezer Screwge.

"Fighters?" chorused Ratchet and Tiny Tim. "

"Neither," answered the spirit. "It's a fuel line connection. It came loose, you see. It wasn't properly secured…only finger tight." The B-24 labored to stay in the air.

"Why doesn't the pilot order the crew to bail out?" shouted Screwge.

The Ghost shrugged. "He thinks there's a chance of reaching the channel. *If* he's able to ditch close enough to England, the Navy will pick them up." He paused a moment and then continued.

"So here's your accident. You can gather from my present condition that this aircraft never reached safety. It would have, but for that fuel line connection. I can only say that we bombed our target before it happened. Perhaps a wartime accident is the one kind that can be justified to any extent at all. But I doubt it."

The Liberator was running out of sky. In the distance the English Channel sparkled in the sunlight. The spirit glanced at his watch, shrugged, and hummed "…there'll be no promotion this side of the ocean."

The B-24 exploded when it went into the beach, not quite to the water's edge.

The Ghost of Accident Prevention Present was a lieutenant colonel. He was around 38 years old, ribbons on his uniform attested to his service.

He drove an F-100 and asked Ebenezer to find him a ladder, instead of jumping to the ground a' la first or second lieutenant. Screwge and his companions saluted the colonel and waited.

"Tiny Tim," began the spirit, "you and Ratchet are excused." When the two airmen were gone, the officer turned to Eb. "You wonder why I dismissed your friends?"

Ebenezer nodded.

The Ghost of Accident Prevention Present put his hand on the mechanic's shoulder. "Tiny Tim has had it, Eb. It isn't right to let either of them know. They're friends, and they'll be working together when it happens.

Screwge felt his knees weaken. "Not Tiny Tim!" he cried. "He's a feather-headed kid, I know, but he's learning, Sir. He has the makings of a fine mechanic and with time and training, he'll be a credit to any flightline!"

The spirit waved him to silence. "There's no time left for Tiny Tim...let's go."

Screwge and the colonel stood on the familiar flightline. It was a sunny morning and they watched the mechanics go to their various aircraft. A day's work was beginning. Tiny Tim and Bob Ratchet carried their boxes to an F-100, and Screwge saw Ratchet give the jumbo airman his instructions. Tiny Tim stood beside the fire bottle while his supervisor climbed into the cockpit and started the engine. The Century began to howl.

"This is going to be a flightline accident," the colonel shouted to Ebenezer above the mounting din. "In a few seconds, Tiny Tim is going to walk in front of that intake. Do you know what happens to a person when he does that?"

"Of course I do!" cried Screwge. "Stop it, Colonel! You can stop this from happening! "

"I can't stop anything. My only purpose here is to point out what you, yourself, are able to prevent. Ah! There he goes...you see?"

Ebenezer screamed a warning to his friend. But a voice, no matter what its volume, cannot be heard when a J57 is turning at 100 percent. The Century screeched like ten thousand angry banshees.

Tiny Tim walked on.

The Ghost of Accident Prevention Future shimmered before Screwge, who put his arm over his eyes and moaned: "Do what you will, Spirit, I'll not resist you." His face was streaked with tears. "I honestly believe I've learned the lessons that you and the others intended. But if there's more to learn, then show on."

The spirit raised a ghostly arm and beckoned. Screwge quietly followed the phantom out into the night.

"Spirit, you can show me nothing worse than what I've seen already. I have truly learned how vital it is to stop this dreadful waste. I've seen a friend taken in an accident, and a bomber and its wartime crew snuffed out because of some mechanic's carelessness. What more can I possibly be shown?"

The Ghost of Accident Prevention Future didn't reply. Nor did he ever say a single word to Screwge during their encounter. He only gestured with that terrible, shining arm.

They were on the outskirts of a town.

"Why, this is my hometown!" cried Ebenezer Screwge. "The place where I was born. Why bring me here, Spirit? And why this road?"

They walked along the silent country lane until they reached a weIl-kept enclosure. Screwge panicked.

"Spirit!" he cried. "Why this place? Why do you bring me here?"

The spectre moved between the graves in the rural cemetery. He finally stopped at a certain spot and pointed. The terrified airman forced himself to look. Carved on a granite headstone was the name: EBENEZER SCREWGE.

Ebenezer collapsed on the grave and sobbed. "What a fool I am," he moaned. "What more can I be shown?" He looked up. "An accident?"

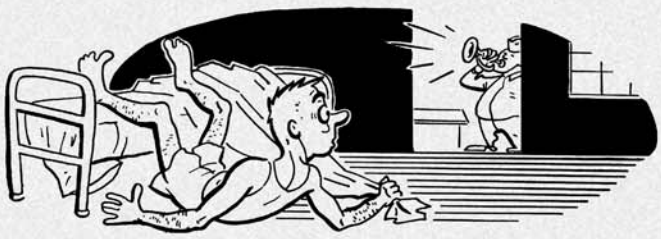
The ghost nodded his dread affirmative.

Ebenezer clutched at the phantom's robe. "Surely this doesn't have to be," he gasped. "Tell me this picture you've painted isn't true. Not this, Spirit, please not this. I've changed, I tell you. I'm not the man I was!"

The spirit shook his head and pointed a relentless finger at the granite stone.

Screwge fainted.

Reveille sounded and Ebenezer Screwge fell out of his bunk in a tangle of bedclothes. When he



finally untied himself, he scrambled to his feet, ran to the window, and opened it wide. It was a beautiful morning. Down below, Screwge saw a young airman walking past the barracks.

"Boy…you, boy!" Eb caught the airman's attention.

"What'cha want, Sarge?"

"Sarge," repeated Screwge. "He called me 'Sarge.' What a fine young man! What a delightful boy! Tell me, my fine fellow, what day is this?"

Ebenezer Screwge chortled.

The young airman eyed him dubiously. "Ya some kind of a nut or sompthin'? It's the Fourth of July, and we've got the day off."

Screwge clapped his hands in glee. "The Fourth of July, he says! What a wonderful completely overwhelmingly fine young representative of the USAF!" He clapped his hands again. "Thank you, my splendid young warrior! And a grand and glorious Fourth to you!"

The airman shrugged his shoulders and headed for the mess hall. "The poor guy is off his rocker," he told himself.

"The Fourth of July," sang Screwge. "Only the Fourth. The spirits did it all in one night! What a wonderful day! I'm a new man! And what an appropriate day to really begin to practice accident prevention. Independence Day. The USAF free from accidents. A good thought. An excellent thought. I must tell Tiny Tim and Ratchet."

He ran down the aisle to his friends' double-decker bunks. Eb awoke his pals and told them of his ghastly ghostly visitors and of his resolve that was the happy outcome of the experience. And then, for the rest of that Independence Day, the three friends celebrated.

So that is how A1C Ebenezer Screwge became a different man. Tiny Tim and Bob Ratchet were changed men, too. As a matter of fact, in due time, Tiny Tim wore a size 7 1/2 hat, with matching chevrons, and Ratchet became a model supervisor.

But Screwge was changed the most of all.

And for the remainder of his career, it was said, 'No man in the USAF practiced his accident prevention as well and as diligently as did Ebenezer Screwge.'

(Editor's Note: Accident prevention is as important today as it was in the past, if not more. No matter where you work, the cost of equipment and limits placed on personnel make each person, piece of equipment and aircraft even more important. Are you an advocate of safety/accident prevention or an accident waiting to happen? The choice is up to you!)

Editor's Note: The following accounts are from actual mishaps. They have been screened to prevent the release of privileged information.

Here is a collection of odds and ends that affect aviators. Key to all of them is communication and situational awareness. Make sure you keep your head in the game and fly safe all the time.

What Runway Am I Cleared For?

During a base exercise a vehicle needed to access part of a nearby drop zone, which was also next to a landing strip used by the tenant C-130 unit for assault landings. The vehicle called the tower for clearance to the drop zone, and was cleared to enter but told to stay clear of the runway. The vehicle acknowledged the clearance as required. At the same time, one of the tenant C-130s was performing approaches to the runway and observed a vehicle parked on the runway. The aircrew executed a go-around due to the vehicle. The aircraft called the tower about the same time as the vehicle did to clarify their clearance. The vehicle was once again told they were cleared to the drop zone, but to stay clear of the runway. The aircraft, now thinking they were clear, lined up for another approach only to find the vehicle on the runway again! As they went around again, they called the tower and the base ops folks went out to move the vehicle to the right area.

The base identified several problems from this incident, mainly in the training area. The training program didn't cover all areas of the base in the proper detail, and there was confusion in the base publication over what area was exactly what. In this case, the drop zone has two tactical assault runways within its boundaries. In addition, during base exercises this area is used for UXO exercises. Normally, the tenant unit plays along with the base and keeps the area clear. However, this time they weren't playing so they didn't deconflict the area. Good communication can always help prevent problems, and here is another case where we failed to communicate when we deviated from the norm. Watch out, people; airplanes and vehicles don't mix.

The Crowded Friendly Skies

Here is a case where the airborne controllers made a little mistake. A KC-10 was attempting to rejoin on another tanker when he was given an immediate turn heading for traffic, from the friendly eye in the sky that was controlling the area. Ten seconds later the aircraft received a TCAS resolution advisory to descend for traffic. As they started the descent, they received a reverse TCAS command to climb at 2500 feet per minute (fpm), three seconds later to climb at 3000 fpm and then a few seconds later to climb at 6000 fpm. The aircrew finally was able to see the reason for all the action. They were vectored *into* an air refueling formation, and would pass between the tanker and the aircraft climbing toward the tanker.

The aircrew then leveled off to pass below and behind the tanker and came no closer than 500 feet. At the same time, they passed above the receiver aircraft that had leveled off to avoid the conflict. Good job here of threading the needle, don't you think? We fly close during air-refuelings, but this is ridiculous. How could our "eyes in the sky" vector an aircraft through a refueling

formation? They thought they had vectored the aircraft away from one conflict, only to create another. We are very busy at all our locations, but make sure we get the big picture and look for other causes of accidents. Luckily for the USAF, the KC-10 had a working TCAS, which the other aircraft didn't, and avoided the almost certain mid-air.

They Got Cable!

A seven-ship flight of T-38s was departing for a fun cross-country weekend in Florida when their takeoff caused a few maintenance problems. The aircraft had all been checked by qualified maintenance personnel and cleared for takeoff. All the aircraft had serviceable tires installed, and no aircraft had been towed during their stay. The aircraft were to depart on the 10,000-foot runway, which has a BAK-12 approach end cable up and strung across the runway 2280 feet from the approach end, with 8-point tie downs in-place.

Based upon the minimum acceleration check speed that morning, half the aircraft would have hit the cable at 127 knots. The force exerted upon a nose wheel by a runway cable is a function of weight and velocity. Prior to rotation, weight is virtually constant. Once backpressure on the stick is applied, weight is reduced to the point it negates velocity. The impact force is maximized just prior to rotation when the coupled effects of weight and velocity are maximized.

What happened? All seven aircraft returned to home station with damaged nose wheels, two severely, one moderately, and four with minor damage. You pilots are smart enough to figure out what happened. What lies in your takeoff path? If you don't ask the right questions and make the right calculations, you could damage your aircraft or yourself.

Two Aircraft, Opposite Directions

At one of our very busy overseas locations, a C-130 crew was performing some approach work when they were able to experience a little extra reality thrown in at the same time. After completing a PAR approach, they were executing their transition, and during the climbout the aircraft commander (AC) noticed some unexpected converging traffic on the E-TCAS at the 12 o'clock position. The vertical separation from this intruder was observed to decrease from 800 to 300 feet, and the symbology turned yellow. They did not receive a resolution advisory, but the AC, being aware of what was going on, elected to respond to the intruder, turned away from the aircraft and initiated a descent. At the same time, they made a radio call to ATC informing them of the "intentional" deviation from the issued climbout. E-TCAS indicated a constant 100-foot vertical separation throughout this maneuver. ATC responded with directions, and after compliance by the C-130, the vertical separation was observed to be 700 feet.

What caused this HATR? A breakdown in communications. The offending aircraft was a flight check aircraft checking out the airport's navigation aids. The main problem was that the Herc crew was not told in advance of the flight check aircraft being in the vicinity, so they did not expect another aircraft in their path on climbout. Had they known, they could have reacted differently and would have stopped the entire sequence of events that followed. Unaware of the traffic, the aircrew was left to make choices based on the information they had available. Awareness of their surroundings and E-TCAS allowed this Herc crew to avoid being a statistic.

Get The Door!

A C-130 was returning to base with an IFE for a bleed air problem. The aircrew had isolated the problem and determined it was a gauge problem, but wanted maintenance to check things out anyway. Which is not the topic of this article. The aircraft landed uneventfully and taxied to parking with the inboard engines shut down. The wing Flying Safety officer was on the scene to watch the operation and, much to his surprise, saw things he didn't expect. As soon as the aircraft came to a stop, a fire-crash rescue crewmember approached the aircraft. Then, to everyone's surprise, without talking to the aircrew he opened the crew entrance door from the outside and entered the aircraft.

Now, cargo aircrews know that you *never* open the door from the outside without clearance from the aircrew inside the aircraft. Why, you might ask? How about pressurization for one, and without talking to the aircrew you don't know what is going on inside the aircraft. You needlessly endanger yourself from a crew door that could come open a whole lot faster than you expect. Most aircraft have a warning stenciled above the crew door that states, "With crewmembers aboard, this door will be opened and closed from the inside only." In addition, there is a reference in the maintenance tech order that states "The crew door will be opened by personnel inside the aircraft only after cabin pressure is verified to be zero." No matter what the situation, make sure you follow proper safety procedure to prevent an accident.

Editor's Note: The following accounts are from actual mishaps. They have been screened to prevent the release of privileged information.

Leftovers! Every month when I write this column I have too much material and the graphic artist has to cut some stories. Isn't it terrible that I never have a shortage of screw-ups? Well, here are some more cases where maintenance could have done things a little smarter.

Where Does The O_2 Come From?

An AC-130 Gunship Electronic Warfare Officer and Infrared Operator had some breathing problems a while back. The crew had problems during their pre-breathing and had to switch to the alternate regulators. They wrote up the primary regulators in the aircraft forms, and maintenance did a complete checkout. Unfortunately, maintenance found no problems with the oxygen system. They also checked the crew equipment and found no problems. They signed off the aircraft forms and sent the aircraft back to flight. On the next sortie the crew had the same problem. I guess the checkout wasn't as effective as they had hoped. This time, maintenance did a more detailed checkout and found that the O_2 line that feeds the two operators was kinked.

When the regulator had been installed, the maintenance person who attached the lines must have used some serious torque to kink the line. We in maintenance never invent a new way to do things wrong. We just keep relearning the same mistakes. Make sure you check the entire job before you sign things off.

Extra Parts?

A T-37 had just finished its mission and was heading to the parking spot when they had to declare a ground emergency for an engine fire light. Once the dust settled, maintenance found a flat washer lodged in between the terminals of terminal board number 30, which caused the fire warning light to short circuit. The washer was of the type used on the terminal board itself, but guess what was not missing any washers? If you said the terminal board, you are correct. Now, this terminal board is not easily accessed, as you have to remove the left cockpit interior upholstery panel behind the left seat to access the terminal board. The lesson learned here? Where did the extra hardware come from? We must account for every bit and piece of hardware we use, and never leave anything behind. The extra hardware may do nothing for a long time, but it will eventually come back to make more work for all of US.

Should I Write This Up?

A B-52 came back from a mission and was found to have a damaged trailing edge 30 percent by-pass duct. The duct to be replaced was the second duct installed in this aircraft while at this deployed location. Now we have a trend developing here, don't we? The previous history of this aircraft showed that three weeks after they installed the first duct they found broken aft support strut assembly hardware for the duct while performing other work on the aircraft. The workers removed the broken parts, but they only documented the removal in the turnover log and never entered the removal in the aircraft 781 series forms. Now, is that the proper place to document a removed part? The aircraft then went for a contingency phase inspection, but

the broken part was not replaced. It wasn't part of the phase inspection work package to look at this area. The aircraft had flown only 81.8 hours and six sorties since the previous duct was changed. Did the Air Force get its money's worth out of the $24,000 by-pass duct? Is it standard practice to not document removal of aircraft parts? I don't think it is. *Document everything you do.* The few seconds/minutes you take to write it up may save you a lot more work in the long run.

QD Disconnected At The Wrong Time

A student pilot was completing a T-38 sortie when the crew had to return home via single engine because the right engine RPM wouldn't follow throttle movement. After an uneventful landing, the jet was turned over to maintenance. Upon depaneling the aircraft, the cause of the problem was easily detected. The right throttle control telescopic push-pull assembly quick disconnect (QD) was disengaged. Easy to see why the engine did not respond correctly. As the team looked closer, they found the QD would not lock properly per T.O. 1T-38A-2-6. The QD was replaced and the jet was back in the air.

What caused the QD to become disconnected inflight? The aircraft had recently undergone extensive maintenance. The aircraft had undergone major fuel cell floor work, it was the "CANN" bird and both engines were time changed. A lot going on, and after the repairs it was prepared for flight. The aircraft passed its check flight and had accumulated 27.6 hours before the incident. The "Book" provided detailed instructions on how to install the QD, and there was a local IPI requirement to ensure the slide collar cover extended beyond the finger segments. The IPI stated, "use every method possible, wiggle, tap, pull, shake, and cycle throttle through the full range to ensure the collar is seated and throttle does not come apart."

The book provided clear direction, and there were procedures to catch the QD. Make sure you follow the book, and the IPI is just one of the many tools available to the maintainer to prevent mishaps.

Oh, My Aching Back!

How often do we load and unload cargo? A lot these days. So, this little note and incident is to remind you of your human limitations when it comes to moving pallets. Here a worker was helping to load a *34,000-pound* pallet onto an aircraft with the assistance of 17 other people. They had twelve personnel pushing the pallet while the other workers were using two 5000-pound ratchet straps to move the cargo. They needed to shift the cargo a little when it got stuck, and one worker, along with two team members, lifted on a strap to help free the cargo. As he lifted, he felt a twinge in his back. But they got the cargo unstuck and loaded.

Twelve hours later, the worker's back decided to inform him that he had exceeded the lift capacity on his warranty card, and he needed to go see the doc. The worker now has a back strain that disqualifies him from worldwide duty due to a permanent partial disability. Is this reason enough to pay attention to the lifting training you are provided and follow it? It is, unless you want to live the rest of your life on medication for consistent back pain. Lift Safe!

Landing Gear Explodes

A C-5 was on takeoff roll when it experienced a catastrophic nose gear failure. The high-pressure piston on the nose landing gear (NLG) failed and the NLG separated from the aircraft. Now, we have this somewhat large C-5 on the roll with no nose gear. When the gear exploded, the packing nut and various other internal parts became projectiles, and the force broke the NLG torque link scissors, freeing the NLG piston axle and wheel assembly. The wheel assembly then struck the underside of the aircraft fuselage, the Number 3 main landing gear bogie and the aircraft keel beam, causing additional damage. The force of the failure also threw pieces and parts into the Number 2 engine.

How could a strut explode? The metallurgical analysis found that the high-pressure piston experienced an instantaneous rupture failure due to *over-pressurization*, with no fatigue or latent defects. I don't know about you, but there aren't too many ways a strut can become over pressurized that I know of. Make sure you follow the book *every time* you service your struts.

Effective Use Of Flying Safety Magazine

A reader sent us a note recently that stated, "My wing is doing a modification on the A-10 for several units. We are required to remove the (ejection) seat as part of the modification. After removal of the seat from one unit's aircraft we discovered a copy of the September 2001 issue of *Flying Safety* Magazine, wrapped up with a black elastic strap. Looking at the index of the issue we found it even more ironic that on page 10 of the issue was an article titled: "USAF ACES II Ejection And You, The Aircrew—Improve Your Odds of Ejection Survival!"

Now, we want everyone to read our magazine. But when you take it along with you, please ensure it doesn't interfere with your ejection seat. Plus, be kind to the maintenance crew and take the magazine back to the office. This way, others may also read all the safety info we publish. Thanks for reading!

The Aviation Well Done Award is presented for outstanding airmanship and professional performance during a hazardous situation and for a significant contribution to the United States Air Force Mishap Prevention Program.

Capt Nathan A. Allerheiligen
61 AS/DOP
Little Rock AFB AR

The 19 Mar 02 mission was to move a wind-damaged C-130E, after temporary repairs, from Gander International Airport, Canada, for final depot-level repairs at Robins AFB GA. The aircraft experienced a total aileron lockup moments after takeoff, which induced a 45-degree roll while less than 50 feet AGL. This required extraordinary crew actions to regain level flight, climb to a safe altitude, and circle and configure for an emergency landing.

Departure weather was marginal—cold with light snow, crosswinds gusting to 25 knots, icy runway, visibility below 2.5 miles, 1500 feet ceiling, occasionally down to 700 feet AGL.

Preflight, start-up, taxi and takeoff roll were uneventful, but at 25 feet AGL, the aircraft began to drift right. Capt Allerheiligen attempted to apply left aileron to return to centerline, but the ailerons were locked and the aircraft continued to roll right; by 50 feet it was approaching 45 degrees of bank and continuing to drift.

Capt Allerheiligen applied full left rudder and full asymmetrical engine power, setting engines 1 and 2 to flight idle and 3 and 4 to max power to counter the roll. The wings began to level as the crew continued to struggle to maintain altitude and then climb.

With partial control returned, 28,000 pounds of fuel was dumped to prepare the aircraft for an emergency landing at Gander.

On short final, under 300 feet AGL, high crosswinds pushed the aircraft right as the ailerons bound again. Full pilot/copilot aileron effort and full asymmetrical power halted the right roll, but they could not land. Aborting the landing, the pilot climbed to clear the weather. With low fuel reserves, the closest airfield with suitable winds was Halifax, Nova Scotia, 30 miles west.

Capt Allerheiligen directed the crew to find the aileron malfunction, and they found the viscous damper had broken free and was blocking the control valve. A radio patch was established with the C-130 engineers to corroborate the safety of removing the failed part. Engineers verified that flight safety was not affected. The part was removed and a controllability check verified free and clear aileron operation.

Descent and landing at Halifax were uneventful, and this extraordinary effort saved nine lives and prevented the loss of an aircraft.

The Aviation Well Done Award is presented for outstanding airmanship and professional performance during a hazardous situation and for a significant contribution to the United States Air Force Mishap Prevention Program.

Capt Jeffrey Jenssen
8 OSS
Kunsan AB, ROK

On 30 Jan 02, Capt Jenssen experienced compounding electrical problems in his F-16 on a night mission. He was #3 of a four-ship flight. On initial climbout, he received "CADC" and "FLCS AOS Fail" warning lights, indicating an electronic flight control problem. After applying the checklist procedures and informing #1, he determined that he had to return to base (RTB) and land as soon as practical. The flight lead needed to retain #4 to accomplish an effective mission, so he sent #2 back with Capt Jenssen to provide assistance. Capt Jenssen turned back with #2 in night vision goggle (NVG) chase, informed the Supervisor of Flying (SOF), declared an emergency, planned to burn down fuel, and formulated a plan for landing, while continuing attempts to reset the faults.

At 15 NM from the field, he received a "Takeoff and Landing Gains" malfunction light, indicating his jet had now gone into a backup flight control mode, and was further degraded. He subsequently lost all navigation equipment, including the HUD, ILS, INS, GPS, TACAN and VHF radio. When he attempted to lower his landing gear, he discovered the gear handle would not move to the down position. By now, he had lost the majority of the lights in his cockpit, including the "Press to Test" light, which would have helped rule out other failures, further complicating his situation.

At this point, the SOF recalled all other jets to RTB and land before Capt Jenssen, anticipating a possible gear-up landing and runway closure. The SOF initiated a "Conference Hotel" with the factory representative in Fort Worth, TX for assistance with this highly irregular emergency. The current weather was broken at 1500 feet with tops at 3500 feet, so Capt Jenssen was orbiting above the weather with no navaids and his wingman in chase. He then received a "Dual FLCS Failure," indicating further degradation to his flight controls and a requirement to "Land As Soon As Possible." While accomplishing formation and checklist procedures in a dark cockpit at night, and not knowing if the jet would soon depart controlled flight, Capt Jenssen began preparing himself for ejection.

After discussion with the SOF, Capt Jenssen went to 100% oxygen, lowered his tail hook, activated his Emergency Power Unit (EPU), and manually overrode the gear handle to get his gear down. After confirmation from #2 that his gear was down, he followed #2 through the cloud deck to land. Without speedbrakes, HUD, interior lights, or AOA indications, and only a "whiskey compass" and a standby ADI to assist him, Capt Jenssen broke out of the weather, picked up the runway visually, and landed uneventfully. While on landing roll out, he determined that he could stop normally, so he raised the hook to prevent an unnecessary cable engagement.

Capt Jenssen's decisive actions, calmness under pressure, and exemplary airmanship prevented possible loss of life and damage or loss of a valuable Combat Air Force asset.

FY03 Flight Mishaps (Oct 02-Jun 03)	FY02 Flight Mishaps (Oct 01-Jun 02)
23 Class A Mishaps	24 Class A Mishaps
10 Fatalities	10 Fatalities
17 Aircraft Destroyed	13 Aircraft Destroyed

18 Oct	✈	A TG-10D glider crashed during a student sortie.
24 Oct		An F-15 experienced an engine failure during takeoff.
25 Oct	✈✶	An RQ-1 Predator crashed during a training mission.
25 Oct	✈✈	Two F-16s collided in midair during a training mission. One pilot did not survive.
13 Nov	✈	An F-16 crashed during a training mission. The pilot did not survive.
04 Dec	✈✈	Two A-10s collided in midair during a training mission. One pilot did not survive.
18 Dec		Two F-16s collided in midair during a training mission.
20 Dec	✈	Two T-37s collided in midair during a training sortie.
02 Jan	✈✶	An RQ-1 Predator crashed during a training mission.
26 Jan	✈	A U-2 crashed during a training mission.
06 Feb		A manned QF-4E departed the runway during takeoff roll.
11 Feb	✈✶	A QF-4 drone crashed during a landing approach.
13 Feb	✈	An MH-53 crashed during a mission.
08 Mar	✈	A T-38A crashed during a training mission.
17 Mar	✈	Two F-15s collided in midair during a training mission.
19 Mar	✈	A T-38 crashed during a runway abort. One pilot did not survive.
23 Mar	✈	An HH-60 crashed during a mission. All crewmembers were killed.
31 Mar		A B-1 received damage during weapons release.

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16 Apr		An F-15 experienced a single-engine failure in-flight.
21 Apr		A C-17 suffered heavy damage to the MLG during a landing.
02 May		A KC-135 experienced a birdstrike during landing roll.
22 May		An MH-53 suffered severe damage to the main rotor system.
29 May	✈	An F-16 crashed during takeoff.
04 Jun	✈	An F-15E departed controlled flight and crashed.
11 Jun	✈	An F-16 crashed during a training sortie.
13 Jun	✈	An F-16 crashed during a training sortie.

- A Class A mishap is defined as one where there is loss of life, injury resulting in permanent total disability, destruction of an AF aircraft, and/or property damage/loss exceeding $1 million.
- These Class A mishap descriptions have been sanitized to protect privilege.
- Unless otherwise stated, all crewmembers successfully ejected/egressed from their aircraft.
- Reflects only USAF military fatalities.
- "✈" Denotes a destroyed aircraft.
- "✶" Denotes a Class A mishap that is of the "non-rate producer" variety. Per AFI 91-204 criteria, only those mishaps categorized as "Flight Mishaps" are used in determining overall Flight Mishap Rates. Non-rate producers include the Class A "Flight-Related," "Flight-Unmanned Vehicle," and "Ground" mishaps that are shown here for information purposes.
- Flight and ground safety statistics are updated frequently and may be viewed at the following web address: http://safety.kirtland.af.mil/AFSC/RDBMS/Flight/stats/statspage.html
- Current as of 17 Jun 03.


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