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SPECIAL FEATURES

REGULAR FEATURES

CONTRIBUTIONS

Contributions are welcome as are comments and criticism. No payments can be made for manuscripts submitted for publication. Call the Editor at DSN 246-0936 or send correspondence to Editor, *Flying Safety* Magazine, HQ AFSC/PA, 9700 G Ave., S.E., Ste 282, Kirtland Air Force Base, New Mexico 87117-5670. The Editor reserves the right to make any editorial changes in manuscripts which he believes will improve the material without altering the intended meaning.

THERE I WAS...

Props, Pooches, and Panic!

As a new Civil Air Patrol (CAP) observer/scanner, I find myself participating in a variety of missions. Although the CAP is involved in a variety of activities from emergency services to customs surveillance, it seems like the most effort and energy so far in my short career has been devoted to hunting down and disarming emergency locator transmitters (ELT). ELTs are designed to activate and transmit in case of an aircraft crash, but all too often they are activated accidentally by dropping or bumping the ELT unit or switching the unit on by mistake. Most ELT missions are looking for just these accidental transmissions.

I received a call at 0310 that an ELT was going off southeast of Dallas. We were airborne in our corporate Cessna 172P by 0400 and over the target area by 0430. We couldn't pick up the signal on the onboard direction finder (DF) equipment, but we were able to acquire it on VHF comm with the squelch turned all the way up.

After about an hour of orbiting the general area and doing many 360s looking for a direction to go, the pilot in command (PIC) decided to land at a nearby uncontrolled airport and contact the mission coordinator (MC) by land line (the MCs usually have radios, but this one didn't). We were told the AFRCC satellite's last orbit turned up a negative hit (which meant no more ELT signal). Our new instructions were to wait until dawn, then go over the search area again for one last look to see if the signal could be reacquired.

Now for the good part. After we landed and parked at the rural airport, we were greeted by a friendly four-legged creature of the canine variety. Nice little fellow—a little underfed, but full of energy. He seemed to like belly rubs the best. Dawn came and we were ready to go. Although not on the "preflight" checklist, the question came up almost immediately: "Where's the dog?" I told the PIC he was over by some buildings, a safe distance from us. We started engines (well, engine anyhow) and proceeded to the end of the taxiway for our "before flight" checks. As the PIC turned the aircraft into the wind for the power check, our eyes got as big as saucers as we noticed our furry buddy coming right towards the aircraft—or more specifically, the propeller!

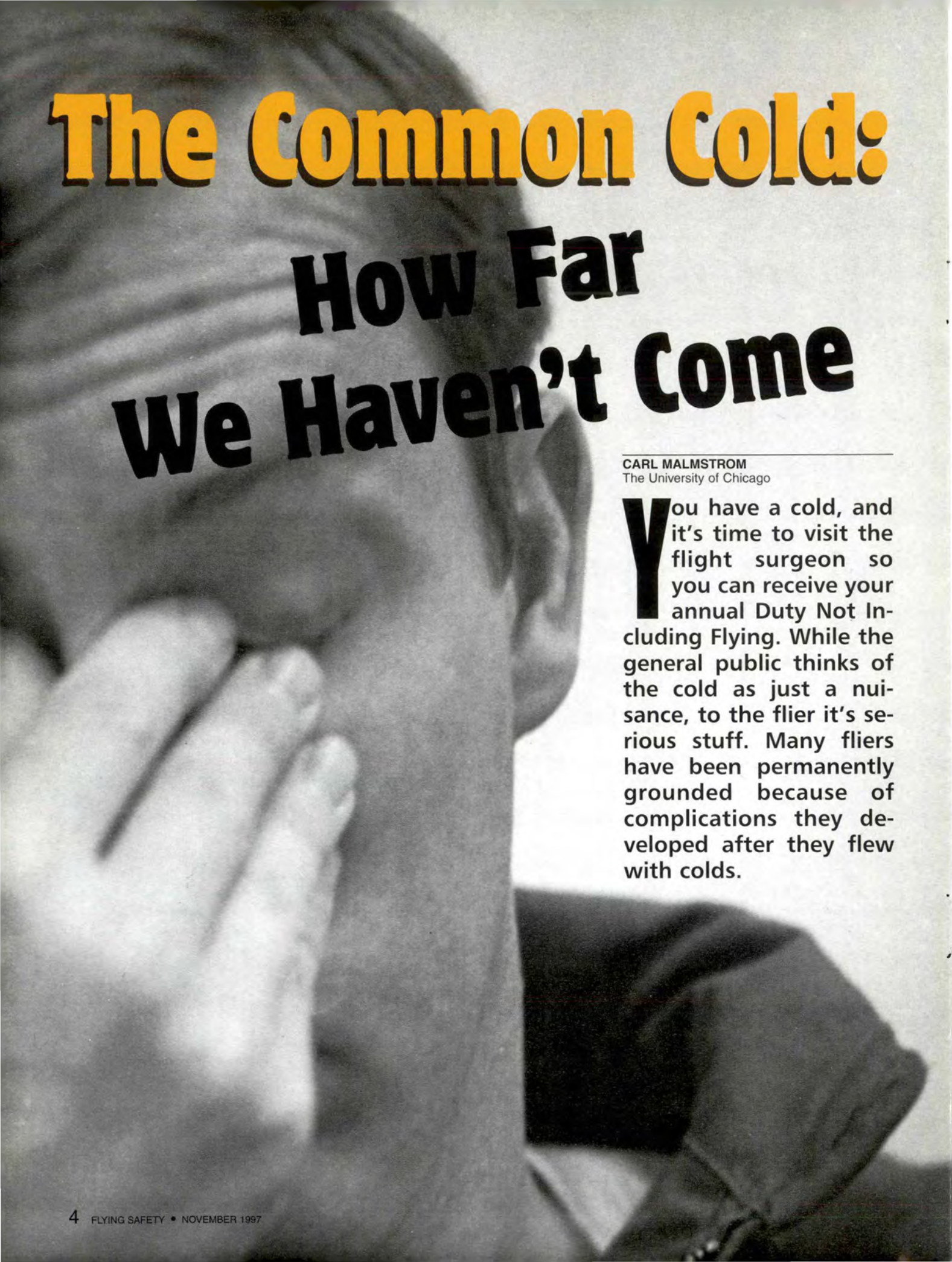
After a quick shutdown and visions of dog parts flying all over the windscreen, we looked down. The little feller's nose was inches from the now-stilled prop. So, there we were, as the title goes. Two fairly smart adults, sitting in an all too quiet cockpit, at the mercy of a "dumb" animal.

Because of the early hour, the FBO was closed, and there wasn't another soul around anywhere. As the minutes ticked by and our lame suggestions on how to get off the ground without harm to man or beast proved useless, the dog started to wander away on his own. He got about 50 yards away on the other side of the airstrip and seemed to find something to occupy his curious nature. That seemed like the time for us to start engines (engine, sorry) and boogie!

But as our mighty power plant came up to speed, so did Fido's renewed interest. He came trotting our way, and my only thought was "Floor it!" The PIC did just that. As we were gaining ground speed, I looked back. Rover was right behind us, but fortunately he was losing ground. We made it to the other end of the taxiway, made a quick, but thorough, visual check of our surroundings, and took off to the relative safety of the wild blue.

Lesson learned: Expect the unexpected and deal with it the best, safe way possible. Rural, unmanned airports pose dangers and excitement that nice controlled airports or air bases usually don't. Dogs, deer, or horses can be a real hazard—not only to a smurf plane like our Cessna, but even a "heavy" would have a hard time dealing with a 1,000-pound cow in its path on takeoff roll. ✈

The Common Cold: How Far We Haven't Come



CARL MALMSTROM
The University of Chicago

You have a cold, and it's time to visit the flight surgeon so you can receive your annual Duty Not Including Flying. While the general public thinks of the cold as just a nuisance, to the flier it's serious stuff. Many fliers have been permanently grounded because of complications they developed after they flew with colds.

In the past century, the human race has made great strides in conquering disease. But for all of these advances, we still have made no major ones against one of our oldest enemies—the common cold. Alexander the Great and Julius Caesar had just about as much luck and ability treating colds as we do today.

According to Peter Radetsky's insightful book, *The Invisible Invaders: Viruses and the Scientists Who Pursue Them*, we Americans spend $5 **billion** each year on cold medicines, 800 of them currently available as nonprescription preparations. Additional millions are wasted each year on prescription antibiotics which have absolutely no effect on the virus. Colds also cause us to miss an incredible 30 million annual work (or school) days and who-knows-how- many flying hours.

You would think something this harmful (or profitable if you're a drug company) would generate more notice in a country terribly concerned with productivity and health. Perhaps it's because the big research grants just don't go to something that won't kill you. Whatever the reason, cold research, while not being completely ignored, certainly isn't on the forefront of medical research today.

So the question is this: What can we do to fight colds?

The short answer is *almost nothing*. However, I don't want to get too far ahead of myself. If we want to know how to beat the common cold, we must know a little about it, so...

Just What Causes Colds?

Well, the obvious answer is—a virus. However, it isn't just one virus that causes the disease but a family of a hundred or more. The official term for any of these cold-causing viruses is the Human Rhinovirus, or HRV, for short. The mechanism of just how the rhinoviruses invade the cell is not that important, but it is important to know they usually begin by attacking the cells of your nasal lining.

The Human Rhinovirus can be spread by sneezing, by contact with a person or object that has been contaminated with the virus, or by breathing HRV-contaminated air. Antibiotics have no effect on HRV. Neither soap nor water seems to hurt it, and it seems that both hot and cold temperatures have little effect on it.

In spite of the ease of transmission and the toughness of HRV, simply coming in contact with the virus is not enough to guarantee you'll come down with a cold. Becoming infected by the virus is largely a matter of chance.

Every day you breathe in countless infectious microorganisms, but your tonsils and the cells lining your nasal passages keep most of them from infecting you. In fact, your tonsils (for those of you who haven't had them removed) have one main purpose—to filter out all the disease-causing crud you breathe in. They work constantly to keep filth out of your lungs. They do their job incredibly well. And they almost never break down. Indeed, in recent years, doctors have been much more reluctant to remove a patient's tonsils because they do so much good.

However, it isn't the virus itself causing all those unpleasant symptoms. It's the body's defense to the cold which makes you feel so awful. Headache, fever, a stuffy and runny nose, and sneezing are all side effects of your body's fight against the common cold. By the time you start to feel these symptoms, your body is probably winning the fight against the virus infecting you.

Since it seems to be largely a matter of luck whether or not a person will come down with a cold, the next question is...

Is There Anything That Will *Increase* Susceptibility to Colds?

The answer to this is *probably*. There have been some strongly suspected links between susceptibility and certain activities, but they may not be what you think they are. One of the most effective ways to increase your susceptibility seems to be having your tonsils out.

Beyond this, the associations be-

continued on next page

Flying Safety

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tween activities and colds become weaker, but it also seems people with young children tend to get colds more frequently. Young kids tend to be breeding grounds for all manner of colds, flus, and other assorted diseases. This probably won't come as a surprise to those of you who have small children, especially if they are just entering school age. Why little kids are more susceptible to colds may be the result of any number of reasons, but they do seem to be good at passing their bugs on to their parents.

Also, frequent nose-picking and eye-rubbing, especially in the winter, seem to greatly aid transmission. The virus is easily passed onto fingers in any number of ways, and peoples' fingers tend to find their way sooner or later to the insides of their noses or eyelids. From either of these locations, the virus's battle is half won.

Well, since we do so much to help the cold virus...

Is There Anything Effective in Curing or Preventing Colds?

I'm sorry to say there is no way to cure colds, and not much more can be done to prevent them. There is research being done right now in a couple of interesting directions, but no medications have as yet been released on the market. The first of these new ideas involves "filling up" the interior of the cold virus with an inert material that would effectively kill it. "Capping" receptor sites on the virus that bind to the surfaces of cells and allow them to gain access to the cells' interiors is also an idea being pursued. However, for long and involved reasons, some scientists see both of these ideas as impractical.

Can anything else effectively kill the virus? Yes. Citric acid or iodine will do the job nicely. However, iodine tends to horribly stain anything it touches, and citric acid can be a bit caustic. A few years ago, a company tried test-marketing tissues soaked in citric acid which were then dried. While the tissues appeared to be partially effective, no one seemed to buy them. Don't expect to find them on the market.

The only real way colds can be treated is by treating the symptoms. This means trying to stop the runny nose, headache, and sore throat. This is all any of the 800 brands of over-the-counter cold medicines can do. If any of them claim to cure colds, avoid them—they're lying!

Likewise, antibiotics are useless. Actually, they're worse than useless. Not only do they have no effect on viruses (after all, antibiotics are meant to kill bacterial diseases), taking them unnecessarily will only cause bacteria to become resistant to them. Believe it or not, this is actually becoming a serious problem in the field of medicine. Pharmaceutical companies are constantly looking for new antibiotics to kill strains of diseases (like malaria and strep throat) that have become resistant to old antibiotics. So when you see the flight surgeon next time you have a cold, don't expect antibiotics.

The most basic method of prevention you were taught as a child doesn't appear to be all that effective. I'm referring to hand-washing. In adults, this serves little purpose. Neither soap nor water can kill the virus, although the action of simply washing your hands may help dislodge some of the viruses. And, of course, washing may kill non-HRV microorganisms.

The news is somewhat better for children, but we're not completely sure why. A study published in the January 1997 *Journal of Pediatric Care* states there is a link between children washing their hands and catching colds. Since children are so good at picking up colds and sticking their fingers in eyes, noses, etc., any action dislodging HRV may be helpful. So, the bottom line with handwashing is—go ahead.

Do Cold Remedies Work?

Well, not to sound too vague, the answer is—it depends. If you have a headache or muscle pain, the usual answer is to take a pain reliever like aspirin, acetaminophen (Tylenol), or ibuprofen (Advil). However, for relief of other symptoms, little has been found to be effective. A 1993 article published in *JAMA, The Journal of the American Medical Association*, reviewed cold remedies and reported which drugs had provided the most relief. Take note here: You may want to take a copy of the accompanying table with you the next time you're on the way to your local pharmacy looking for a cold medicine.

There may be other medicines out there that will relieve cold symptoms, but I, personally, would stick with the ones on this list. Remember, also, your body produces all that mucus and swelling for a reason. To fight it is to hinder your body's progress.

What About Conventional Remedies Like Humidifiers and Vitamin C?

They won't do much good, but they won't do any harm either.

Let's start with vitamin C. Most people I've met say vitamin C will help you fight colds or will build up your immunity to them. However, most of the studies done seem to show it has no direct effect on the virus. Studies disagree as to whether or not it helps symptomatically, but I think it's fairly safe to say the majority of studies show vitamin C will not help you get over colds faster. A study in the *British Journal of Medicine* from 1995 shows vitamin C may help reduce the risk of respiratory and cardiovascular disease, so if, after reading this article, you aren't convinced about the effects (or lack thereof) of vitamin C, go ahead and take it anyway. It certainly won't do you any harm.

Humidifiers are another thing many people swear are effective. Studies have, for the most part, shown them to be utterly ineffective. A study from the April 1994 *JAMA, The Journal of the American Medical Association* showed that hot, humidified air injected directly into the nose at a temperature of 42°C (107.6°F) had no effect when it came to killing the virus. Therefore, I find it unlikely most humidifiers, which are usually kept at a farther distance and have cooled to a lower temperature when the air reaches your nose, would be any more effective. However, like vitamin C, if you're unconvinced, I won't stop you. The only harm in buying a humidifier will be

to your wallet.

So, having reviewed all of these medicines, remedies, and ways of catching colds…

Is There Anything That Will Help?

Well, there's not much help for curing the common cold, but I can give you two pieces of advice when it comes to prevention. First: Avoid picking your nose and rubbing your eyes. These may not seem like real problems, but I'll bet we all do it more frequently than we realize.

Second: Ventilate your house, car, or aircraft. Get some air exchange, especially in wintertime. This may be contrary to everything else you learned about colds while growing up, but air exchange means you get all the HRV-infested air out and the relatively cleaner cold air in. I'm not saying you should leave your door open all winter, but turning the air-conditioner or heat pump on to the "air exchange" mode is bound to help. I realize this won't lower your heating bill, but you may save on cold medicines and sick days.

So with that advice, I guess it's time to wrap everything up with a…

Conclusion

I hate to say it, but colds are here to stay. We've lived with them for millennia, and they haven't killed too many of us yet. However, the complications of flying with a cold have ruined many flying careers. If you are unfortunate enough to have come down with a cold, some of the above-listed ingredients in those cold remedies may lessen your symptoms. Vitamin C may help, although just how much is doubtful. The only thing that seems to help at all is taking a pain reliever.

If you're trying to ward off a cold, avoid picking your nose and rubbing your eyes, ventilate your house, car, or aircraft occasionally, and have your kids wash their hands frequently. If you're planning that big flight, you might also want to avoid contact with young children. The Human Rhinovirus is incredibly hardy, and even these steps are not total prevention.

If you still want to take vitamin C or use a humidifier, by all means do so. Your only benefit may be psychological, but if it makes you feel better—go for it. There's very little we can do for colds, but if the Romans and Greeks could suffer through them, so can we. ✈

TYPE OF MEDICINE	EFFECT ON BODY	WHAT DRUGS (IF ANY) HAVE EFFECTS
Antihistamines	Reduction of mucus	Chloropheniramine Maleate
Decongestants	Reduction of tissue swelling	Pseudophedrine, Oxymetazdrine, Phenylpropylamine
Anticholinergics	Sneeze Suppressants	Ipratopium Bromide, Atropine Methonitrate
Anticough medicines	Reduces Coughing	None

The Aftereffects of Alcohol

COL GRANT B. McNAUGHTON, MC
Flying Safety, Oct 84

Review of toxicology in Air Force mishaps seldom reveals a positive blood alcohol. The reason is due to the fact that alcohol is metabolized at a constant rate; the 12-hour bottle-to-throttle rule allows the body time to clear the blood. (We know of one mishap where the crew was drinking up until 9 hours before takeoff, but no remains of the primary crewmembers were ever recovered from the crash, which occurred in the ocean 40 minutes into the flight.) Review of the 72-hour histories, however, reveals a high percentage of crewmembers that admit to or were observed taking some form of alcohol 12 to 18 hours before takeoff. Since the members were "legal," alcohol as a factor has almost always been discounted, with an occasional exception.

One of these involved a fighter pilot who drank sufficiently at parties Friday night to require being driven home; who drank at home Saturday night; and who drank 15 to 17 glasses of wine on a wine-tasting trip which ended at 2130, Sunday. After his usual breakfast of coffee and possibly a bread roll, he took off, aerial refueled, shot one low approach, then entered the low-level route. While still heavyweight, he had maneuvered around a town, through a valley, and initiated a 70-degree banked 4- to 5-G turn into the low-lying morning sun when he hit the trees on subtly rising terrain. His remains were negative for alcohol, but then it had been at least 14 hours between his last drink and the crash. The Safety Investigation Board noted as contributing factors fatigue, judgment, and glare and wondered what role, if any, was played by the residual effects of alcohol.

Though the answer to that will never be known, it is known that alcohol does leave measurable residual effects. One recent study by Dr. Leon Wise ("Residual Effects of Alcohol," *Flight Crew,* Vol 5, No 4, Fall 1983, pp 54-56), Chairman of the Psychology Department, Heidelberg College, Tiffin, Ohio, is revealing in this regard. Dr. Wise set out to determine what, if any, residual behavioral effects could be observed when alcohol ingestion was combined with a fairly simple flight-related task—that of a preflight check, in a flight simulator.

For control-comparison, Dr. Wise tested his subjects in three states: no alcohol; 30 minutes post-ingestion of sufficient alcohol to produce a blood alcohol level of 0.08% (legal driving limit in Ohio is 0.10%); and 14 hours post-ingestion. In this study, the measure of alcohol effects was based on oversight errors during the preflight. Before each subject entered the simulator, the experimenter had preset the following errors:

Landing gear handle placed up.

Speed brake switch—deployed.

Wing flaps set at 50 percent (excessive for "takeoff" in this "aircraft").

Fuel selector placed to tip tanks. (This is a three-position switch: TIP TANKS, OFF, MAIN TANKS. Were the pilot to move the switch one detent in the proper direction, he would shut off his fuel.)

Parking brakes were left off.

Altimeter miss-set 1,000 feet high.

The subjects were provided with a checklist, which, if they followed carefully, would have uncovered each error. The results were interesting.

Condition	Subjects Missing at Least One Preset Error (%)
No alcohol	10
30 minutes later	89
14 hours later	68

Dr. Wise observed that responses at 14 hours were much closer to those at 30 minutes than to the no-alcohol state. The subjects did not anticipate errors; hence, they found none. Dr. Wise was careful *not* to say that these subjects were hungover. In fact, they were not suffering from any of the symptoms associated with hangover. They were feeling no different than the guy who knocks back two or three at the bar the night before a morning hop.

The observation that these subjects did not *anticipate* errors is astute—and worrisome. In the hierarchy of human cerebral functions, the ability to anticipate is right near the top. One of the reasons for the frontal lobotomy of the 1950s was to cut the circuitry that was somehow involved in anticipation; the patients no longer anticipated bad things, hence, they became placid and complacent.

More research is undoubtedly needed to classify the basic biochemical-neurologic-psychological interactions, but suffice it to say, there are more likely than not some residual effects of alcohol which are not conducive to good piloting. The 12-hour bottle-to-throttle rule may satisfy the legal constraints but not necessarily the physiologic. Keep that in mind if you've got a demanding go in the morning. ✈

Ouch! That Smarts!

"Never use unauthorized tools."
"Don't rush."

AMH1 DANIEL R. SQUIER
Courtesy *Mech*, Jan-Mar 97

How often have we heard these phrases? Not often enough, as my recent experience suggests.

For the airframes shop, it was just another night of working on SH-60Bs—more authorized overtime for the fourth night in a row. Why, you might ask, was the LPO (Leading Petty Officer) working nights? We'd formed a third shift that week to groom our nine helicopters for an upcoming command inspection while supporting high-tempo ops.

The maintenance meeting was as cheerful as ever. Airframes had to complete four major maintenance tasks during the shift. This news added pressure to the already heavy workload and helped ensure that we would be fatigued and prey to poor judgment. To top it off, I still had to work off as many up-gripes as I could and clean the aircraft. The command inspection would kick off Monday at 0800. I didn't yet know what stress could do.

After the meeting, I went to work with a PO3 (senior NCO) to install a stabilator panel that had just been repaired by AIMD (Aircraft Intermediate Maintenance Department). The panel was unusually hard to line up. Upon closer inspection, we saw that one of the bushings had been installed wrong. This discovery caused a great deal of frustration because, in the middle of a hectic shift, we had just wasted 2 hours trying to install a non-RFI (ready for issue) stab panel. We had to waste even more time to undo the installation.

We also had to decide who would repair the bushing, us or AIMD. To avoid more delays in dealing with AIMD again, I decided to make the repair myself. I tried to remove the adhesive around the bushing with a hammer and a straight-slot screwdriver. This method proved ineffective. That's when fatigue and poor judgment came into play.

I decided to remove the adhesive with an ordinary pocket knife. Yes, I added an unauthorized tool to an already bad situation. Me, the LPO. In 14 years of service, I'd never used anything other than the tools issued in tool boxes.

This knife does a better job of removing fingers than anything else in your toolbox.

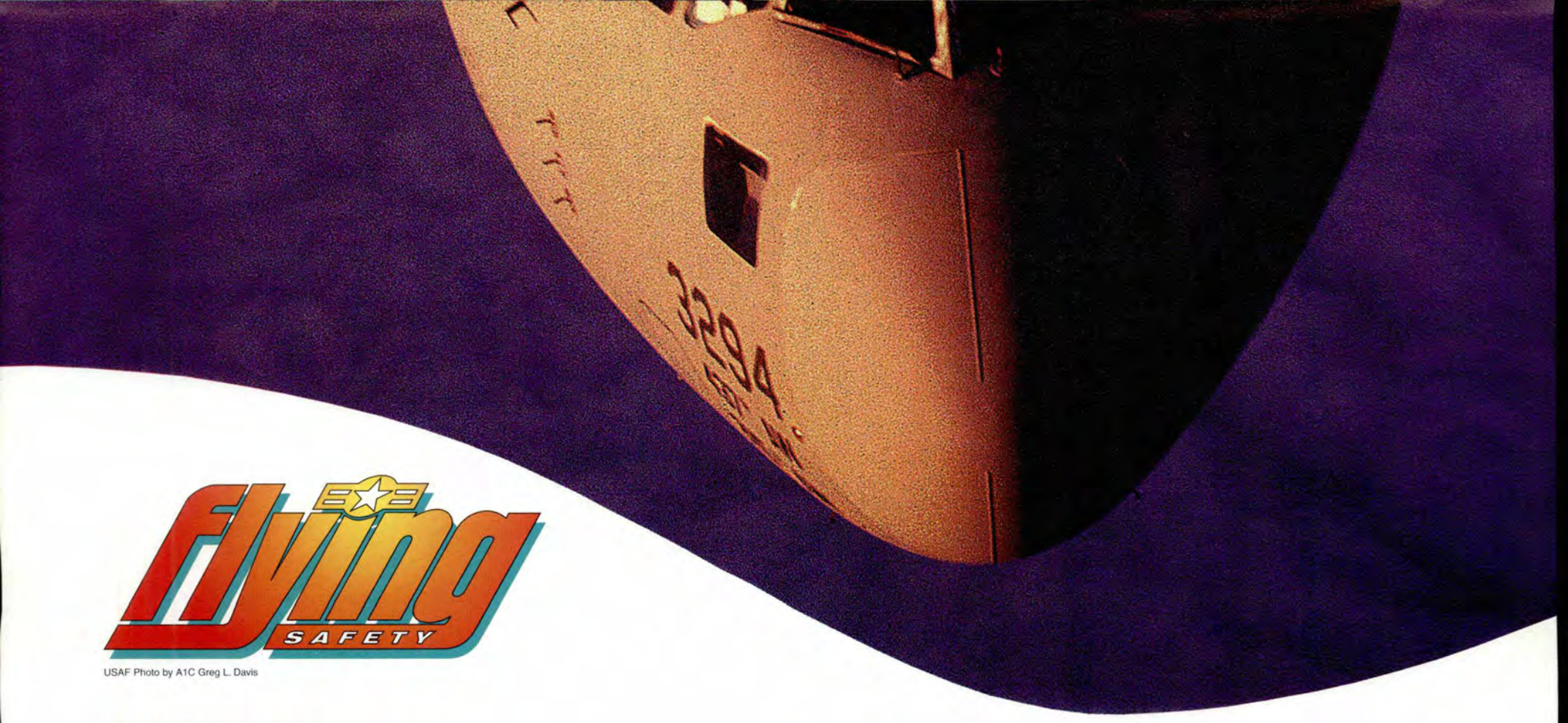
The first few scrapes were successful, but on the fourth slice, with me using a great deal of force, the knife slipped off the work area. I'd held the knife in my right hand. The blade cut to the bone in my left ring finger and sliced skin off my pinky.

I was in the emergency room more than 9 hours. Surgery was the only option to repair the injury. I'd severed the nerve in my ring finger and cut an artery. The good news was that I hadn't done major damage to the tendon, which could have ended my career. The result was permanent partial loss of feeling in the left side of my ring finger—I was lucky at that.

The MIMs have procedures for every aspect of aircraft maintenance. We don't need unauthorized tools—they only invite unanticipated and dangerous situations. ✈

AMH1 Squier is the airframes LPO in HSL-37.


AIR FORCE



Flying SAFETY

USAF Photo by A1C Greg L. Davis

JANUARY

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CRM is more than just doing your job... it's helping the rest of the crew do theirs.

USAF Photo by MSgt Perry J. Heimer

FOD awareness is like good health. You take it for granted until it goes bad!

MARCH

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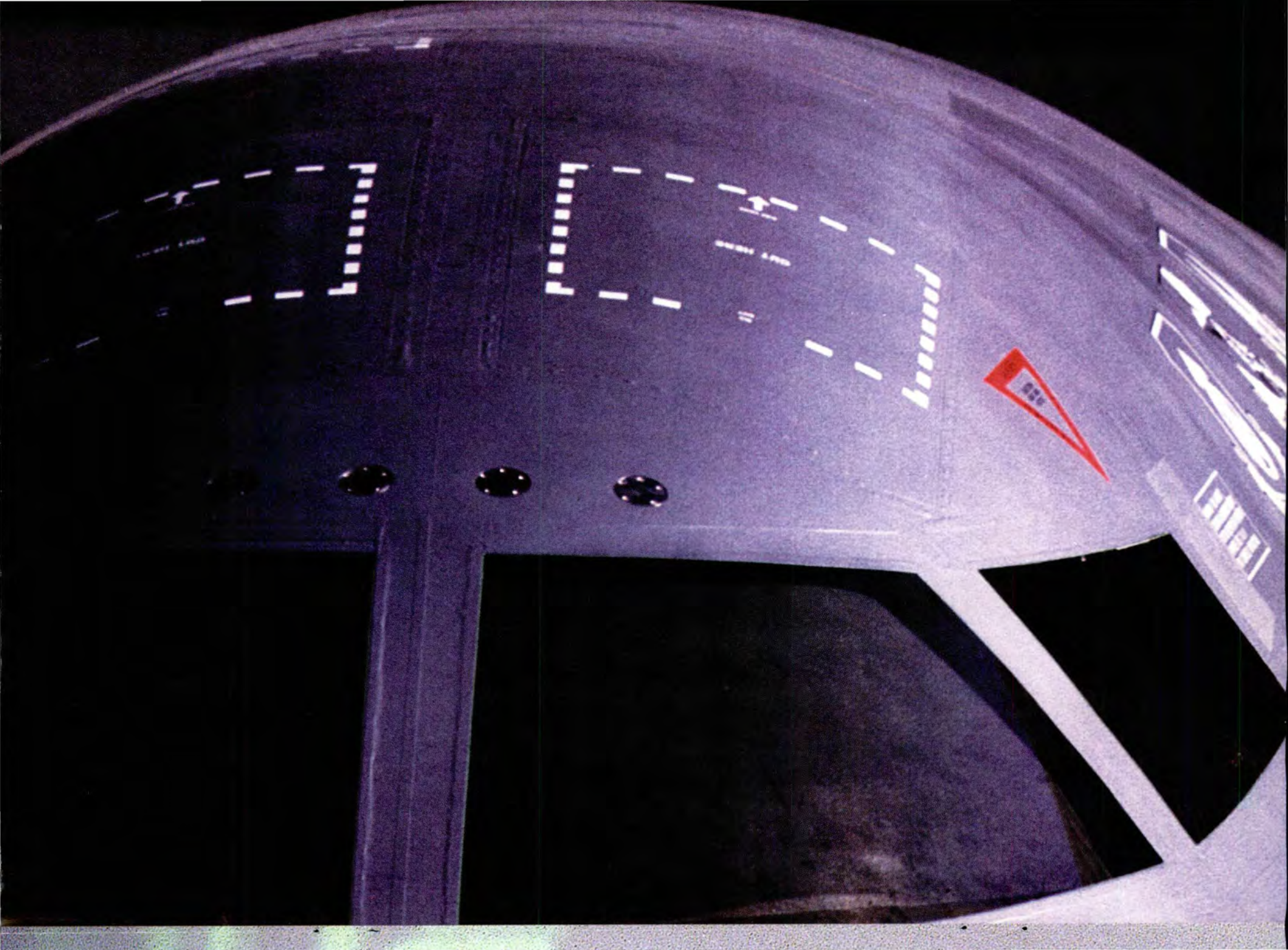

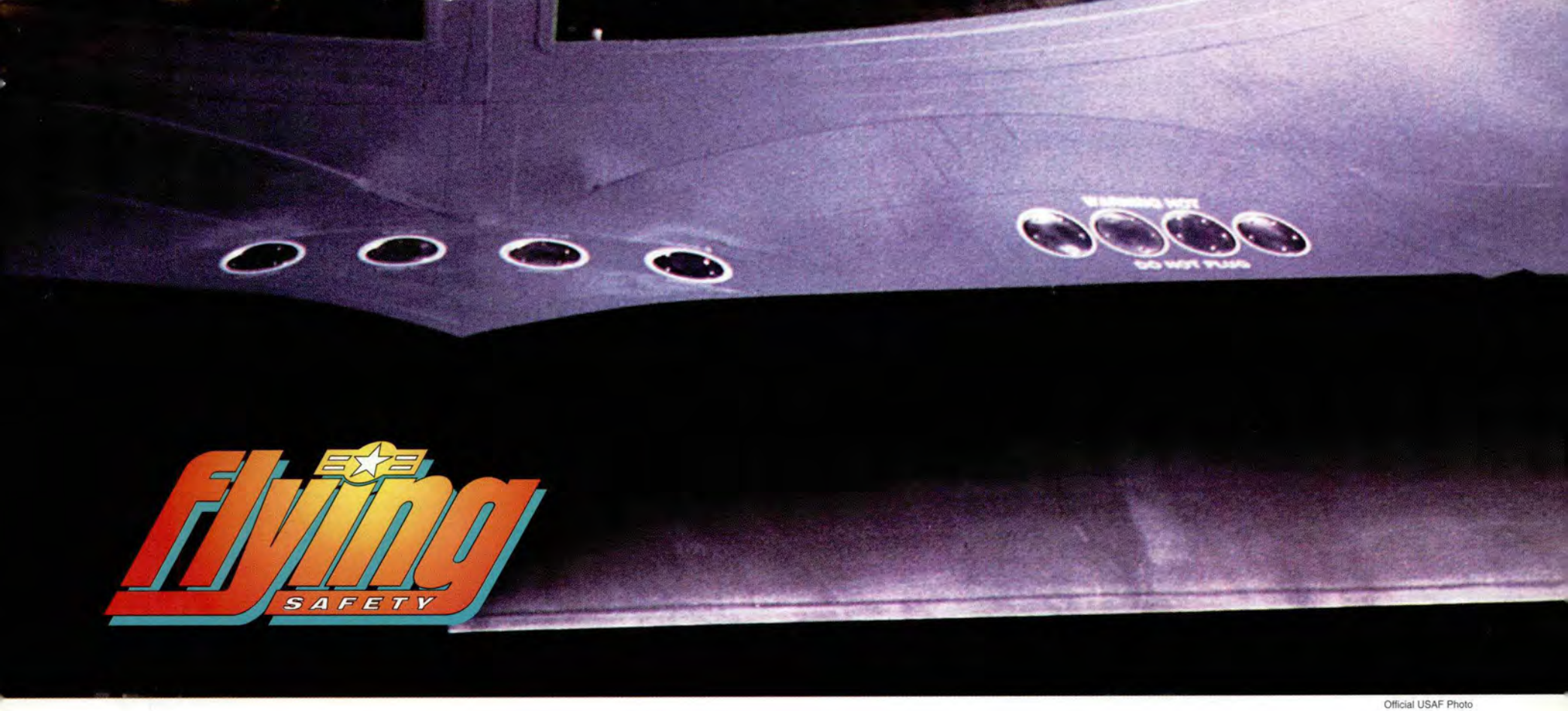

flying SAFETY

Official USAF Photo

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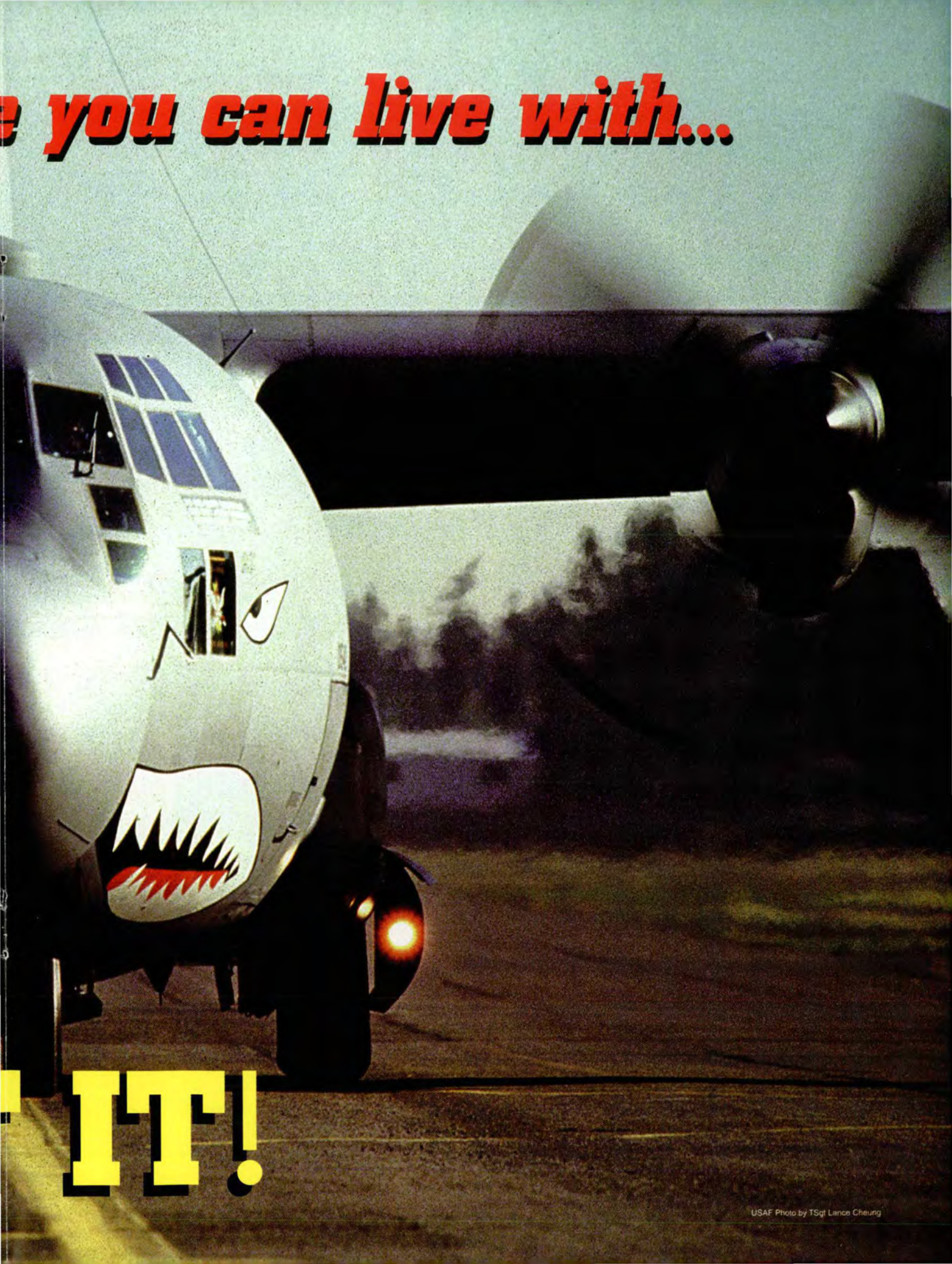
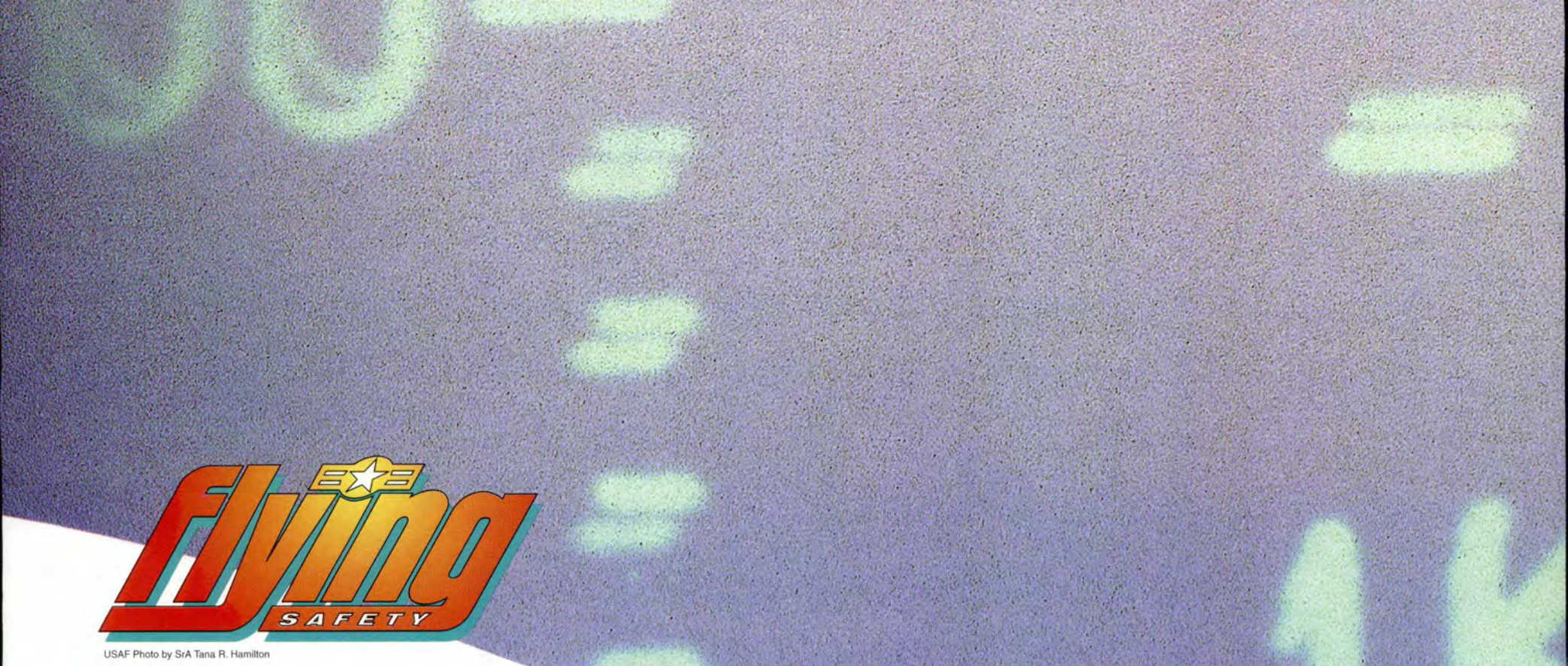
Not a single sortie we fly is worth compromising the integrity of an aircraft or the life of an airman.


Safety is an attitude
GET


e you can live with...
IT!
USAF Photo by TSgt Lance Cheung



Flying SAFETY

USAF Photo by SrA Tana R. Hamilton

JULY

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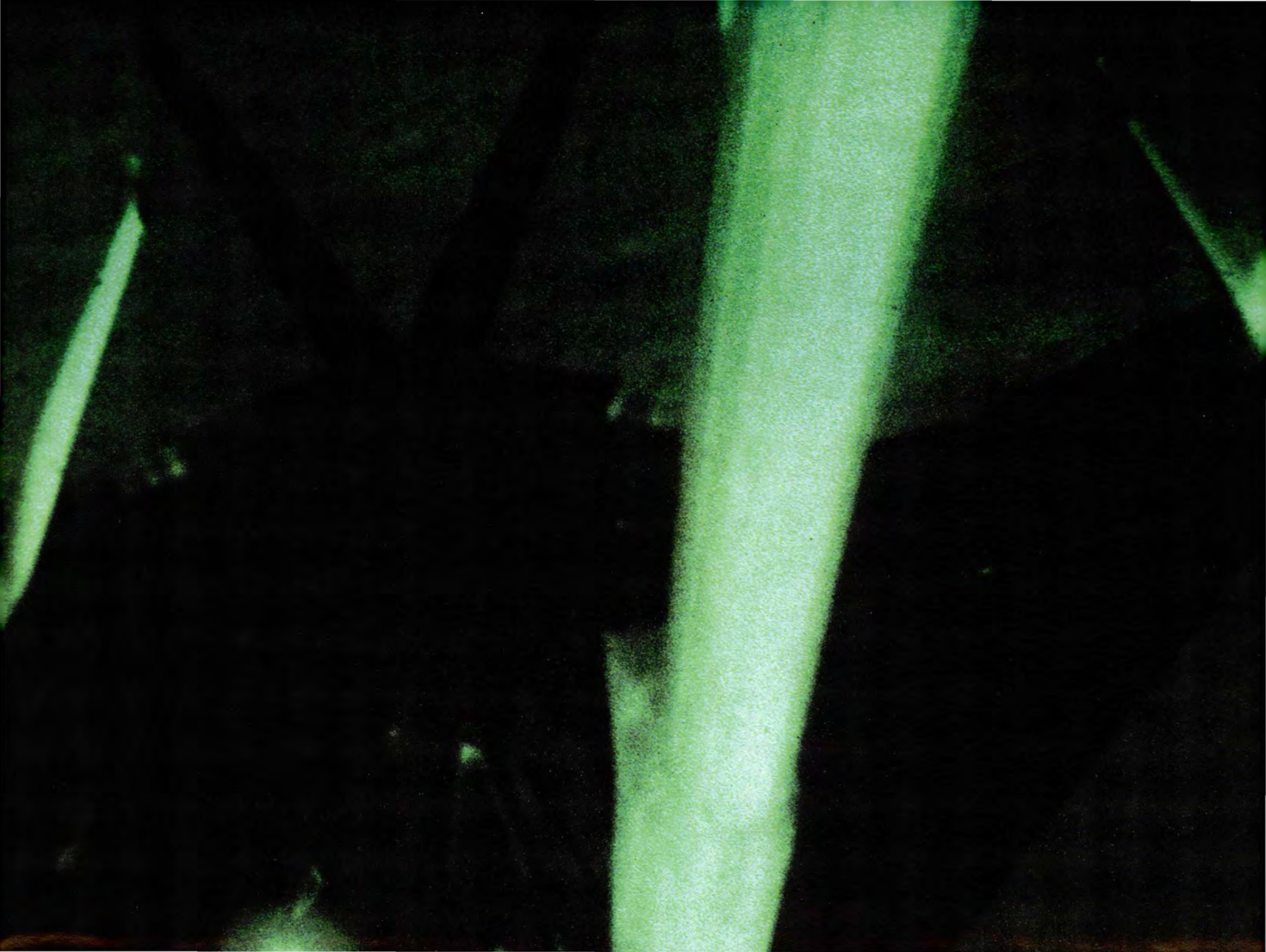
AUGUST

Situational Awareness is the key to getting out of a tight spot.



USAF Photo by SSgt Andrew N. Dunaway, II

Mishap reports are full of stories about good people getting into situations they shouldn't have.

SEPTEMBER

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Wed	02	09	16	23	30
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OCTOBER

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Sun	04	11	18	25	

USAF Photo by MSgt Perry J. Heimer

NOVEMBER

Mon	02	09	16	23	30
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DECEMBER

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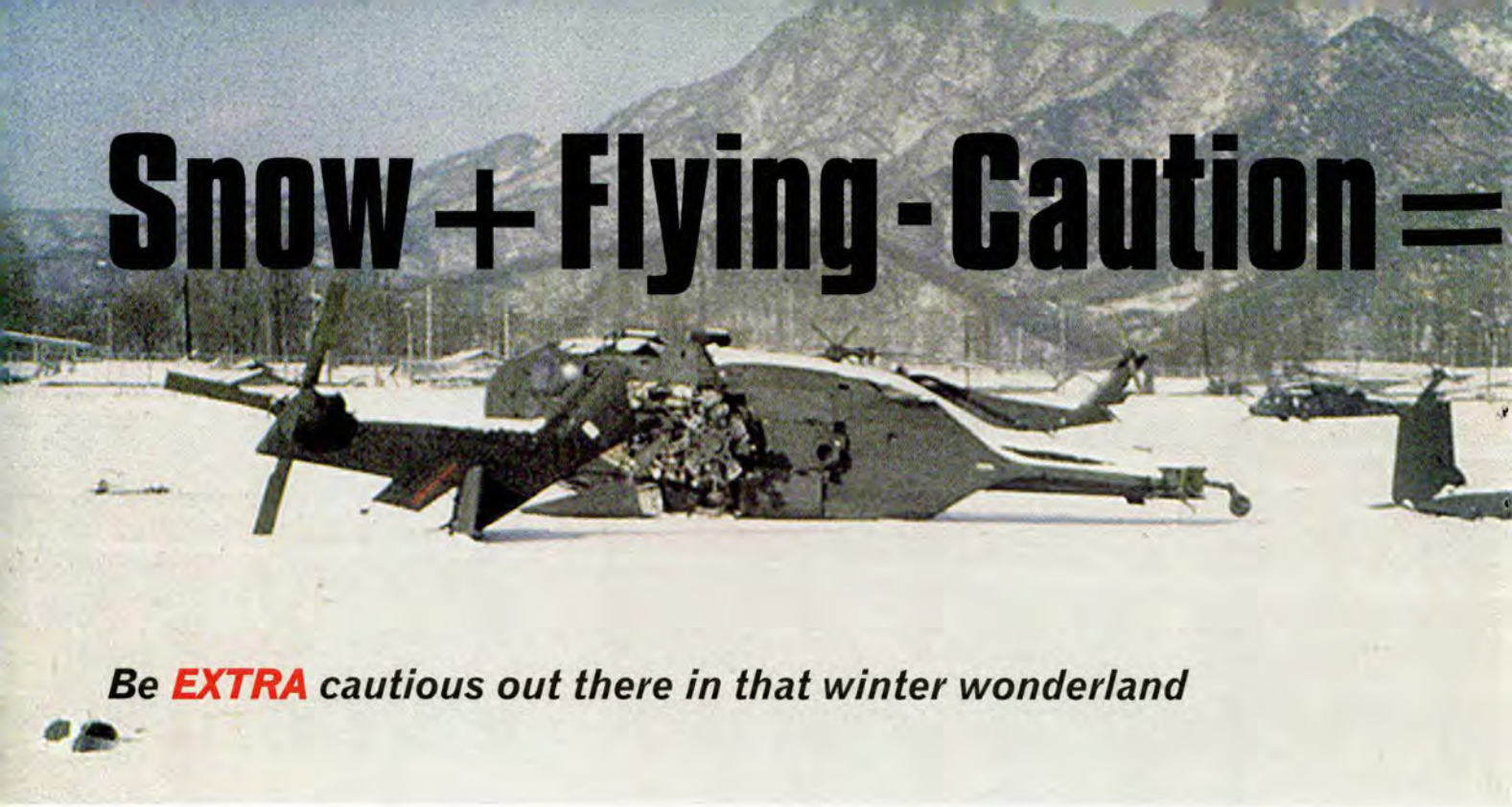
Sun	06	13	20	27	

Use ORM! It's a real-world way of reducing risk and saving lives.



Snow + Flying - Caution =

*Be **EXTRA** cautious out there in that winter wonderland*

CW5 BOB BROOKS
Aviation Systems Branch
USASC
Flightfax, Aug 97

It's that time of year when the snow is flying, and we need to talk about this potential hazard.

Inexperience or lack of recent training is a frequent contributor to snow-related accidents. If you are new to an area where a lot of snowfall is expected, get into FM 1-202, *Environmental Flight*, as well as all the local SOPs (standard operating procedures) and TTPs (techniques, tactics, and procedures). Also ask local instructors and safety folks question—lots of questions.

But even if you have lots of winter-flying experience, the summer hiatus degrades winter-flying proficiency. So don't think you're exempt from the need to review. Overconfidence can lead to an accident just as surely as inexperience can.

Here are a couple of examples.

Blowing Snow

The pilot in command (PC) was confident in his abilities, and he had reason to be. He had more than 5,500 hours of military flying time, 4,450 of them in the UH-1. The pilot had almost 4,200 total military flying hours, more than 2,400 in the UH-1.

The pilot was at the controls when the Huey approached the designated landing area. There was a 400-foot ceiling, partial obscuration, snow, fog, and estimated winds of 210 degrees at 8 to 10 knots. Using techniques outlined in FM 1-202 for snow operations, the pilot terminated the approach at a high hover. He then maintained the hover for 1 to 2 minutes in order to blow away newly fallen snow on top of the 1½ to 2 feet of crusted-over snow that already covered the landing site.

When the Huey landed on the crusted snow, the rear of the skids broke through, putting the aircraft in a nose-high, tail-low attitude. When the crew chief reported that the tail was only 2 to 3 feet above the snow, the pilots decided to reposition to another spot to level the aircraft. Because the PC had good visual reference on a grassy area outside the right window, he took over the controls.

As the PC picked up to a 3-foot hover to reposition to the grassy area, he lost his visual reference in blowing snow. The aircraft began drifting left, and the tail rotor struck trees. As the PC attempted to set the aircraft down, the left forward skid struck the snow-covered ground, and the aircraft rolled over onto its left side.

This crew attempted to reposition their aircraft without a plan on what to do if they lost visual contact with the ground. The PC probably should have executed a takeoff when he lost ground reference.

Lesson learned: A takeoff under these conditions amounts to an instrument takeoff (ITO). Practice ITOs until they are routine maneuvers.

Snow-Covered Landing Areas

It was winter, and two flights of five UH-60s were on a troop-insertion mission to unimproved landing areas. Chalk 3 in one flight was piloted by the unit operations officer. Because of his unit duties, he had flown only 17 hours in the past 4 months. In addition, he had not been able to attend mandatory unit training in which snow-landing techniques and procedures were reviewed, nor

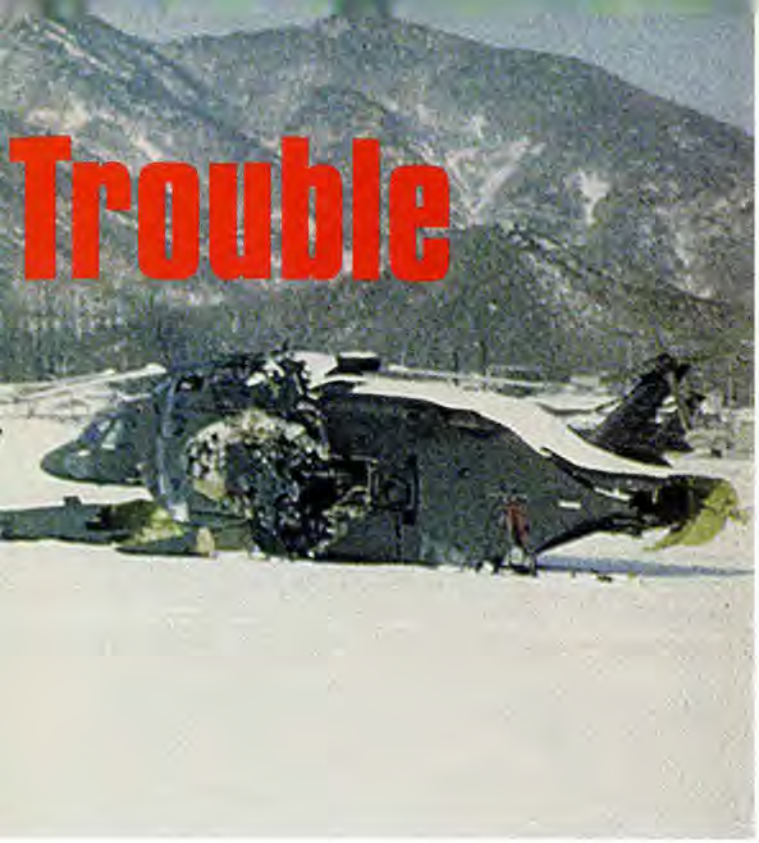


Photo courtesy *Flight Fax*

did he attend makeup classes or engage in hands-on snow-landing operations training. (Although the mishap report didn't state it, this could have been a violation of existing policy. —Ed.)

The flights proceeded normally with 7 miles visibility and 1,000-foot ceilings in scattered snow showers. Then the two flights separated and began a series of false insertions.

Chalk 3's flight encountered a snow shower as they began a formation approach, and visibility was reduced to about 1 mile. The LZ was a large, open, snow-covered field with an apparent upslope in the direction of landing. The crew of Chalk 3 could see a large amount of snow circulating through the rotor systems of the two aircraft ahead of them.

The pilot of Chalk 3 selected a touchdown point downslope and to the left rear of the lead aircraft. Using the up-slope aircraft and distant tree lines as visual references, the pilot made his approach. As effective translational lift (ETL) was lost at about 20 feet above the ground, with a left quartering tailwind of 15 to 25 knots, a snow cloud enveloped the aircraft. The pilot decided to continue the approach without outside references and reduced power to put the aircraft on the anticipated upsloping terrain. The UH-60 touched down hard in a complete whiteout condition on a combination upslope to the front and downslope to the left. The helicopter rolled over and came to rest on its left side.

Several factors contributed to the difficulty of landing at this site:

* The flight was landing downwind to an upslope.
* The aircraft were landing during a snow shower to an LZ with very loose, dry snow.
* There were only limited stationary visual cues.

The worst thing that happened was that the pilot continued the approach when he lost visual contact with his ground references. He had to monitor two slopes and his position simultaneously, which is a difficult task, especially for a pilot with limited recent snow experience. In addition, the rate of descent was excessive, even for an approach to level terrain. FM 1-202 states that an approach to the ground should not be made in dry-powdered snow unless the touchdown area is known to be level and free of obstructions. In this case, the pilot was aware of both the slope and the looseness of the snow. However, he was not aware of his downwind condition.

Lesson learned: Approach and go-around planning are essential for any formation flight. They are even more essential in snow environments. Planning should include—

* Instructions to execute a go-around if visual contact with ground references is lost or if it becomes apparent that visual contact will be lost.
* Timing and spacing aircraft into LZs to reduce effects of blowing snow.
* Specific go-around instructions in premission briefs (what direction to turn, where to land on subsequent approaches, and takeoff procedures).

Other Snow Hazards

One of the most dangerous snow environments may just be the main airport. The large open areas found at most airports do not provide the contrast and definition needed to maintain orientation, especially when snow starts circulating through rotor blades. Moving around the typical airport is a little easier when you can "air taxi" (high hover at a speed just ahead of ETL). Just remember to keep a good scan going to keep from inadvertently descending.

On airfields, the snowbanks that result after snowplows have gone through are usually dirty and provide some contrast and definition unless there is fresh snow. In those cases, watch out for those well-camouflaged snowbanks.

Each geographical location has its own set of winter hazards. Typically, each aviator has some good ideas on how to mitigate the risk associated with those hazards. As part of the winter academic program, it may be useful to survey aircrews to determine which hazards they consider the most severe and then evaluate the effectiveness of controls that are in place. Necessary upgrades and development of new risk controls can then be accomplished.

Summary

Winter has been following summer for as long as anyone can remember. There's nothing we can do about that, even if we wanted to. That very predictability of the seasons can be in our favor. It gives us time to plan our training for the different kinds of flying problems each season can bring. If you haven't already done it, get your refresher training, and be cautious out there in that winter wonderland. ✈

There I Was...

Are We Havin' Fun...Yet?

ANONYMOUS
Flying Safety, May 96

There's nothing like being a brand-new copilot on a C-141 going on your dollar ride to Ramstein AB, Germany. It was going to be great. There were four pilots—an examiner on his "fini" flight, an experienced aircraft commander, a first pilot, and myself. We flew an augmented 24-hour crew duty day two-hop from a west coast base to get to Ramstein.

It was morning, and we were pretty tired when we landed, but hey, we were in Germany, it was summertime, the weather was beautiful, and we wanted to do the countryside. So we found our way to the train station and headed for the little town of Trier. It was early afternoon when we got there, and it was awesome! And wouldn't you know it, there was some festival going on. The beer and wine were flowing.

We had a great time that evening. Around 2100, someone brought up the fact our alert was at 0400 for an 0715 takeoff. (This is not good, Part 1!) It was sort of decided we should be heading back toward Ramstein. In my exhausted and semi-inebriated state, I remember the more-experienced pilots talking about drinking in the window. But we were okay, because with four pilots, we could take turns sleeping in the bunk during the next augmented leg. It was a little after 0100 when we got to our room—only 3 hours to alert.

I really couldn't tell how the other three pilots were feeling as we were flight-planning, but I knew I was still tired. Let's see, it was about a 45-minute flight to Gilze-Rijen, Netherlands—one runway, 7,000 feet long, 150 feet wide, and the airfield elevation was...zero. Do you think we really paid much attention to any of this? I know I didn't. I was just the dollar rider who got the nav seat. (This is not good, Part 2!)

We filed our flight plan, got out to the aircraft, and even managed to take off a little early. The aircraft commander was in the left seat, the examiner in the right seat, and the first pilot in the jump seat.

It was an uneventful flight to Gilze-Rijen until we got there. Center then notified us the air base wasn't open yet and asked for our intentions. (We must have missed the airfield operating hours at base ops. (This is not good, Part 3!) WOW! What an opportunity to sight-see! The pilot requested a descent to 4,000 feet and asked to fly VFR around the area. Those small towns, old churches, and castles were really something! The 20 minutes went by, and we were cleared to the base.

The pilot decided he wanted to do a visual approach. We were cleared for it and told to descend to 2,000 feet. The pilot requested a climb to 7,000 feet for the purpose of showing the jump seater and myself the descent capabilities of the fully configured C-141. Okay, I thought. His plan was to have us configured by 12 DME and start down at 10 DME.

It began all right. There was 12 DME, and we were configured with our gear down and flaps at approach. Now, where was the runway? Still level at 7,000, airspeed at 180 knots, and passing 11 DME. I was standing

up behind the pilot's seat looking for the field. Then I saw it.

"There it is, 12 o'clock!"

"I don't see it," said the pilot as we passed 10 DME.

"It's right in front of us. Let's start down."

"I still don't see it," the pilot said as 9 DME clicked over. (This is not good, Part 4!)

"I see it. Flaps landing," the pilot said as he ripped the throttles to idle. The copilot (examiner) set the flaps to landing as the pilot pushed over.

After we started down, there was no more conversation in the cockpit. (This is not good, Part 5!) I quickly got in my seat and strapped in. From my vantage point, I could see the copilot's instruments. We were holding 185 knots, fully configured, with the throttles at idle. I looked to the left of the pilot and could make out the runway from the nav's seat!

At this point, I was just there for the ride, trusting the pilot to get us down. Then 4 DME went by, and we were passing 3,000 feet, still going fast. The pilot started some "S" turns, trying to get us down and slow us down. I thought, "It must be working because we're about 2 miles out and slowing past 150 knots (approach speed was 125 knots.)"

At this point, things were moving fast. I could see we were coming up to the approach end of the runway, a little high and a little fast. We passed the threshold at about approach speed. I saw the 5,000-foot-remaining marker go by as the main gear touched down. Without being told, the copilot pulled out the spoilers as the pilot got the thrust reversers going. I could see the end of the runway coming as the reversers were full out, and the pilot (and maybe the copilot) stood on the brakes! After a few seconds of uncertainty, the aircraft started slowing down enough to ensure we would not go off the end of the runway.

The taxi to parking was quiet. We ran the checklists, got out of the aircraft, and met up outside. The pilot started the conversation with "I thought about going around, but I thought I could get it down." The copilot-examiner said, "I didn't see anything unsafe, so I didn't call for a go-around." That left the first pilot and me. We both thought about calling for a go-around but figured the experienced pilots in the seats knew what they were doing. (This is not good, Part 6!) There would have been one hell of an accident report had we gone off the end of the runway.

I learned a lot of valuable lessons on this one ride, and I've tried to pass them on in the 5 years I was flying the line. When we're called up to fly hard, we usually play hard. Drinking in the window isn't playing hard—it's showing poor judgment and a bad example. This "link" leads to lack of good crew rest, again inhibiting your judgment. And for goodness sake, if you see or feel something you don't like, say something! You could end up just as dead as the guy making the mistake.

I hope these lessons help someone else so you won't find yourself in a similar situation. See you at the next Octoberfest! ✈

Shear Luck—and Training

Courtesy *Callback*, Aug 97
NASA's Aviation Safety Reporting System

Operations delayed us on the ground for over an hour due to thunderstorms approaching our destination. By the time we did get there, the thunderstorms were still overhead the field. We were being vectored for Runway 8, then for Runway 9.

By now we were in the "get it on the ground" mode. [Then] the ILS went down due to a lightning strike. We followed someone else's lead and called for a visual approach in marginal VFR. On final at 500 feet, Tower called the winds at 230 degrees at 17 knots. This was greater than 10 knots of tailwind and on a very wet runway. But in the mindset we were in, rational thought did not appear.

The captain struggled with wind-shear all the way down and floated it halfway down the runway before touchdown. One reverser didn't deploy, and the other was drifting us off centerline. Now on brakes only, we stopped in the last 1,000 feet of rain-soaked, rubber-deposited runway.

It was "shear" luck that this aircraft didn't roll off the end of the runway.

Windshear can come as a big surprise even when the crew is prepared for it, as an air carrier captain reports:

[When we were still at the gate], winds were reported at 260 degrees at 26-35 knots. Windshear loss of 15 knots had been reported by landing aircraft. By pushback and taxi-out, wind was reported at 070 degrees at 4 knots. The last aircraft to land prior to our departure reported no turbulence or airspeed loss.

Takeoff...was normal. At approximately 600-800 feet AGL, windshear was annunciated, both visually and aurally, by the windshear warning system. Airspeed dropped instantly by 25-30 knots to below V_2. The altimeter stopped showing a climb, and the vertical speed indicator showed a 300-foot-per-minute descent. I firewalled the engines. It took about 5-10 seconds for the aircraft to climb or accelerate.

The first officer adds: "Even though we had talked about it during taxi-out, flying into a windshear is an eye-opening experience. Having had windshear training repeatedly in the simulator over the last few years really made the difference."

The crew's awareness of the windshear and training to counteract it were the keys to a safe outcome in this incident. ✈

Skipping a Checklist Is Never a Good Idea

LT ED MARAIST
Courtesy *The Scratching Post*

The day was 7 September 1993, and the "get-home-itis" meter was pegged. I was about to fly off the U.S.S. Seattle (AOE-3) after my first Med Cruise. My CH-46D was spotted on the flight deck and loaded the night before with three huge boxes full of our detachment's personal gear from 6 long months at sea. The helicopter had a gripe about an oil leak in the No. 1 engine, but it was signed off as fixed. We did a 15-minute "penalty turn" on deck of the Seattle before we took off. We really had to get off the deck, because if we didn't launch, we would have to ride the ship into port, and that would delay our homecoming by at least 10 hours! The get-home-itis was hitting us hard at this point.

We launched from about 50 miles out in the Atlantic en route to NAS Norfolk, Virginia, and when we hit the coast, everything was still looking good. At this point I can say we actually did make one good decision that day. Upon entering the Chesapeake Bay, we could swing north into the bay (way out over the water) to avoid the Norfolk Class "C" airspace, or we could talk to Norfolk Approach and request transition through the Class "C" at 200 feet and below. Fortunately, we chose the latter.

As we were passing the Norfolk International Airport, I noticed we had no oil pressure on the No. 1 engine. With the reliability of the engine in question from the get-go, we decided to shut it down in accordance with NATOPS. My aircraft commander turned toward Norfolk International and set our best single-engine airspeed. I was busy declaring the emergency and dumping fuel, as we couldn't maintain level flight.

With the aircraft descending and the runway out in the distance, we were not sure we were going to make it over the Little Creek Amphibious Base and onto the runway. A quick debate ensued over whether or not to put our det's personal gear on the bottom of the Chesapeake in order to make the field, and before we actually started dumping, the HAC (helicopter aircraft commander) said he had the field made.

The helicopter was so underpowered we did not have enough power to hover. So we decided to do a running landing, which in a CH-46 is very similar to the landing profile of a T-34.

We spent the majority of our time doing immediate action items and therefore neglected our landing checklist. But when your gear is three down and welded, how important can that be? Our problem was that since we took off from a ship, where you always set the parking brake to avoid rolling around the deck, we still had it set as we were about to land at 70 knots!

During our landing flare, the crew chief in the back looked forward into the cockpit and noticed the "parking brake" annunciator light illuminated and yelled "BRAKES!" I immediately stepped on the brake pedals which released the brakes just prior to landing.

Had we blown all six tires, we very well could have destroyed the aircraft due to ground resonance.

A breakdown in crew coordination by failure to do a landing checklist almost caused a Class A mishap. Checklists are there for a reason. And I, fortunately without incident, found out why a CH-46 has one for landing.

As for the get-home-itis that we had, we ended up missing the det homecoming party because we were stuck at the wrong airport. ✈

Flying With a Senior Aviator:
ACT Breakdown

LT TOM BUSH
Courtesy *Approach*, Jul-Aug 97

What do you do when you can't tell your copilot to shut up? What do you do when faced with an emergency and the copilot you can't tell to shut up is running the show and making decisions you don't agree with?

The skies were clear, the mission infinitely simple. If I could fly a 200-mile round-robin to Moody AFB, shoot a few approaches, and get us home, I would be instrument-qualified for another year.

Complicating the event, however, was my copilot, who had more than 4,000 hours in various aircraft. He was concerned with the most minute details and had scripted them all in block letters on his brief card. Four thousand hours had also convinced him that no one in the left seat could fly without constant input from the right seat. After an hour in the cockpit, I had succumbed to the notion that I was only a voice-actuated autopilot. All my independent decision-making processes had ceased.

We shot the obligatory high TACAN with unfailing mediocrity, then pressed to the radar pattern for a few simulated precision approaches. Five miles on downwind at the AFB, the master caution light lit with an associated engine-oil-pressure annunciator. I hadn't looked at the instruments for some time, and sure enough, oil pressure on the No. 2 engine was headed south.

Meanwhile, the right seat had become a flurry of activity that included shutdown procedures, canceling our approach, requesting a switch to center and orders to begin climbing and turning toward homeplate, more than 70 miles away.

Now I digress. In the early days of my jet initiation, I was taught to act instinctively whenever something happened to the airplane. Execute the bold face and do it now. Aviate, navigate...you know the routine. All that changed when I got to the multiengine, multicrew side of the house. What the salts in the FRS (Fleet Replacement Squadron) taught was that, except in rare situations, the first step to any S-3 (in reference to an aircraft) emergency was to "wind the clock." Not literally, of course, but the message was to evaluate the situation, identify the malfunction, and then outline the response in accordance with specified procedures, which helps prevent things like securing the good engine instead of the bad engine.

Another neat thing I found in this new training was that other members of the crew were to be included in the handling of emergencies. As time went by, I stopped speeding through memory items without telling my crewmates what I was doing. They, in turn, started knowing almost magically what was wrong with the jet and on what page the problem could be found in the PCL. Together, we would work the switches, dials, and checklists, completing the training or the actual emergency in sync with each other.

Back to the story. In the midst of the activity from the right seat, I had managed to secure the engine, start a single-engine climb, and point the nose toward home. Now I had time to think. Why are we going home? What if the other engine runs out of oil? Did anybody wind the clock? I wonder if this will count for my instrument check? My most important concern was how we were going to land. Some semblance of coordination filtered into the cockpit, enough for us to make it back, fly the field arrestment, and head back to the barn.

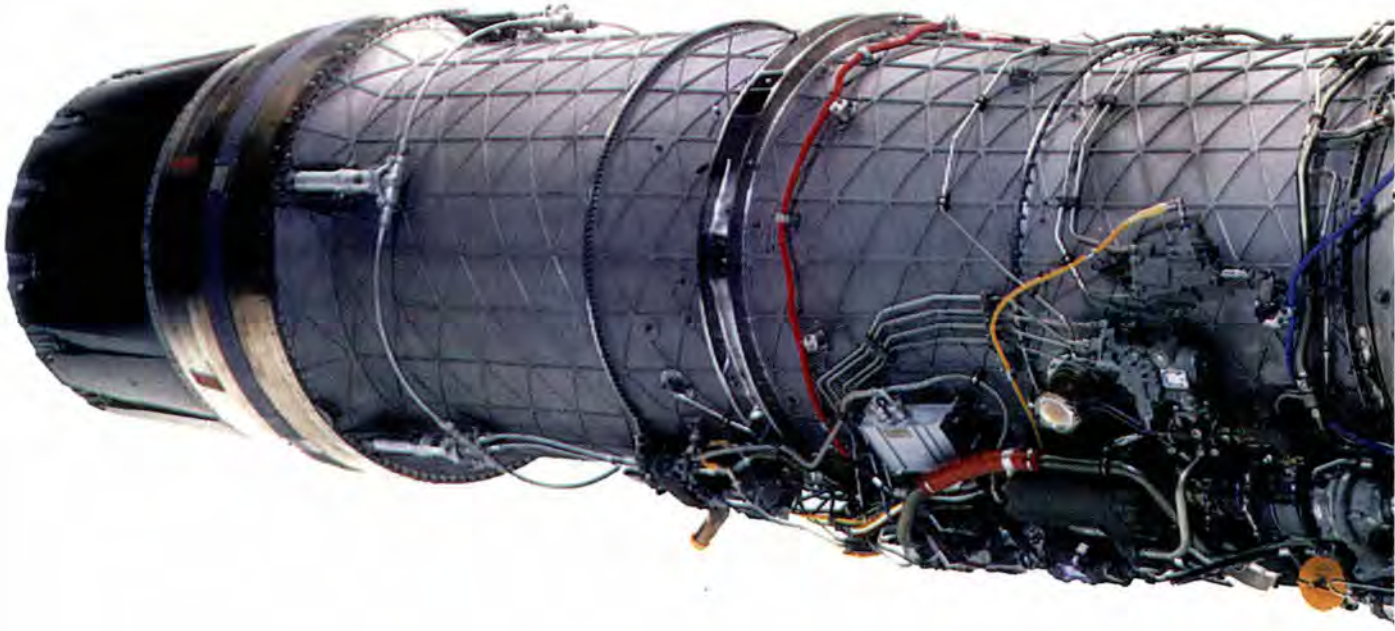
We didn't really debrief the important items, such as how we should have landed immediately. How we jumbled aviating, navigating. How the crew felt about just being along for the ride. How there was no democracy and darned little coordination in the front seats. But we made it back.

Lessons learned? I should have been more assertive when I was losing focus early on. That senior aviator was an awfully good guy. If I had expressed my concern about him saturating my pea brain with information, he possibly would have listened. Had I been on top of the situation, my instrument scan wouldn't have fallen out. We would have had more time to assess the impending engine failure instead of reacting to it.

It is still up for grabs whether going home was better than landing at the excellent facility 5 miles away. If we had landed there, the squadron would have sent a rescue jet, mechanics, more oil. That would have been aggravating, but if we had lost our other engine halfway home, they would have had to send a mishap team to the Okefenokee Swamp. ✈

F100 Maintenance

A Bolt Is Lost, Then Found...or Is It?



JOHN JAMES
FOD Prevention Coordinator
Courtesy Pratt & Whitney *Product Support Quarterly,* Spring 1996

If you work with any aircraft or any engine, you know about foreign object damage (FOD). But did you know that the incidents you will probably have to cope with more than FOD itself are the things that can cause FOD. These are called "Potential Foreign Objects" or "Potential FO."

When maintenance personnel run into potential FO, they must make some really tough decisions. The safest position to take is to closely follow your procedures for investigating and reporting FO. The following is an example of just one of the challenges that can occur. While you are reading it, keep in mind it is based on an incident that really happened, and it resulted in a major jet engine failure on a test stand because the wrong decision was made.

Picture a scene in which mechanics are installing the final hardware on a jet engine that has just gone through a major rebuild. Personnel are working hard to meet their schedule, when one of the mechanics says something that brings everything to a halt. He exclaims, "I just dropped a bolt!"

Another mechanic asks, "Did it go into the engine?"

The first mechanic responds, "I didn't see where it went. It could have."

Everyone knows exactly the impact of his statement and the seriousness of the situation. They also know that their procedures involving possible foreign objects require them to stop all work and search for the lost part.

The mechanic brings in his supervisor as required and explains what happened. He apologizes for dropping the bolt, says he had oil on his hands and he was working with a rear flange bracket bolt. "I caught the nut, but the bolt bounced out of sight. The outer duct slides back, so the bolt could have gone in the engine."

Everybody wants to find the bolt right away. One mechanic gets a light; another finds an extension mirror and a borescope. Everybody starts looking around the area, including inside and outside of the engine. They know their procedures won't allow them to work on the engine until they find the bolt. They also know the engine is scheduled to go to test in the morning. Then it will be installed in an aircraft. But if the engine has to be torn down, it will delay the aircraft flight schedule, and that could affect the whole group's performance rating.

Everyone seems discouraged until a mechanic shouts, "Hey, I found a bolt!"

This provides some relief for the entire crew. They all move to where the mechanic saw the bolt. He is right. There is a bolt balanced on the narrow edge of a floor drain grating almost as if someone had just put it there. However, all mechanics know that parts that are

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Photo courtesy Pratt-Whitney via Rich Greenwood

dropped can end up in the strangest places and the weirdest positions.

They retrieve the bolt, and, because they are experienced maintenance personnel, they don't assume they have found the lost bolt. They immediately start going down their own checklists to be sure the bolt they have found is indeed the one that was missing. This is one of the most critical steps in potential foreign object investigations because it is so easy to be fooled into believing the lost part has been found. But the question must still be asked: What if they continue to build the engine, then send it to test, only to find out, with disastrous results, that the engine still contained the missing bolt?

To avoid this scenario, the mechanics check the tiny part number etched on the head of the bolt. It matches the number in the engine maintenance manual for bolts on the rear flange bracket. The mechanics agree the bolt could have ended up where they found it, considering where it was dropped and how it could have bounced. They are also convinced that after they thoroughly inspected the engine internally with mirrors and a borescope, it looked clean.

Before they can get too confident, another mechanic climbs from under the engine and shouts, "Hey, I just found another bolt! It was on the floor near where we found the first one."

They stop to investigate this bolt, and it turns out to have the same part number as the other bolt. After checking the manual, they remember the part number of these bolts is common and could have come from many locations in this model engine.

"We dropped one bolt, and we found two," one mechanic says. "I'm twice as sure we found the lost bolt."

The supervisor is not convinced. "Wait a minute," he says. "If there were two bolts down there, it means we either dropped two bolts or we didn't follow our procedure to clean the stand of all loose parts before we started working on this engine."

Everybody immediately assures the supervisor that they did not drop any other parts. The supervisor, now visibly frustrated, tries to explain: "The only way we can be certain that the bolt we found was the one that was dropped is to be sure the floor was clean before we started. The fact that we found the second bolt makes this very doubtful. The bolt that was dropped may still be in the engine."

One mechanic spoke up. "We did a good borescope inspection, and the engine looked clean inside." The supervisor responded, "We can't rely 100 percent on the borescope. We've had problems with this model engine because it has some blind spots that we can't see with a borescope."

Having leftover parts from a previous build makes it painfully clear their "parts accountability" for this engine-build isn't very good. The risks of continuing with possible FO in the engine may be too high. Tearing it down will be costly, but nothing can compare to the cost if the engine is cranked up with a loose bolt inside. Everybody knows how much damage "one little bolt" can do to one big and very expensive jet engine.

There are many lessons to learn from this scenario. One of the most important is that when you work on an aircraft or an engine you must keep an accurate count of every part—even the smallest bolt—as well as every tool. To keep the count accurate, you must know what the count is before you start a new project. If you have loose parts under an engine and inside gratings before you begin, that can throw off your count in case something is dropped.

Multimillion dollar engines and people's lives depend on how well you can count. We all know that, but it still bears repeating.

Fortunately, to ensure wrong decisions are not made in cases of potential foreign objects like this, all effective FOD prevention programs require a written report on such incidents. These reports must be approved by area managers before work on the engine can continue. This is the procedure, not because supervisors and managers make better decisions, but because they tend to get all the right people involved in the decisions before they are willing to give their approval.

Keeping in mind this scenario was based on an incident that really happened, and it resulted in a major jet engine failure on a test stand because the wrong decision was made, what do you think the supervisor should have done?

What would you do? ✈

Your Attention Please!

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