

# AEROSPACE

SAFETY • MAGAZINE FOR AIRCREWS

NOVEMBER 1980



For Eagle Drivers Only ... see page 14



# fly<sup>ing</sup>

SAFETY

ANNOUNCING

By BRIG GEN LELAND K. LUKENS  
Director of Aerospace Safety

■ 1944 was a watershed year for the U.S. Army Air Force. Its planes and crews were doing their share in driving back the Japanese. The Greater East Asia co-prosperity sphere was about to collapse.

Europe was invaded; by the end of the year, B-17s, B-24s, B-25s and B-26s were bombing the enemy at will protected by the greatest fleet of fighters ever assembled.

1944 was a good year for American military aviation, but there were

16,128 major aircraft accidents  
1,963 fatal aircraft accidents  
4,793 fatalities

for a major aircraft accident rate of 45 per 100,000 flying hours. These figures were for CONUS accidents only.

Flying safety then as now was the responsibility of commanders. However, they had no safety staffs such as we have today. The safety program consisted primarily of instructors and squadron commanders telling their crews to be careful. Occasionally, the crews would get a lecture in the theatre.

There were some rather feeble attempts to issue printed "flyers" that were distributed to places where crews congregated, but they were few and issued on an "as needed" basis. "As needed" meant that there were too many accidents—too many being an arbitrary figure—and something had to be done.

With the number of accidents reaching an intolerable height, Air Transport Command (ATC)—which has since become MAC—established in December 1944 the first periodical issued on a regular basis and dedicated to preventing aircraft accidents. The new magazine was titled *Flying Safety Journal*.

Its importance to ATC was emphasized in a 1946 letter of justification for continued publication of the *Journal*, from ATC to the commanding general of the AAF. The magazine was credited with a large role in saving \$41 million and 401 lives from mid-1944 to mid-1945. The rate dropped from 46 to 29 in ATC.

The impact of the *Flying Safety Journal* was not lost on the Air Staff, and in 1947 the magazine gained further status by becoming the official Army Air Force flying safety magazine. According to AAF Letter 62-8 of 15 August 1947, "1. *Flying Safety* a new monthly magazine, is being published by this Headquarters (Flying Safety Division, Office of the Air Inspector). The purpose of this magazine is to communicate ideas, techniques, and suggestions which will aid in reducing the AAF accident rate."

Distribution was to be worldwide and flying safety officers were encouraged to use it as a source of discussion material at safety meetings. ". . . The magazine exists for the benefit of all and can best accomplish its purpose when everyone contributes to its contents." The number of copies was increased from 4,000 to 20,000. Subsequently, after the establishment of the Department of Defense and a separate Air Force, *Flying Safety* became an Air Force periodical.

In 1960 two forces combined to change the title of the magazine. Missiles were coming into the inventory and the Ground Safety Division had moved to Norton AFB and had become part of the safety directorate. Publication of ground and missile safety material was combined with flying safety in one magazine—*Aerospace Safety*.

Now that the magazine is once again devoted entirely to flying safety, it is appropriate to change the title to reflect that. Therefore, effective with the January 1981 issue, the magazine will once again bear the title *Flying Safety* magazine. Its mission: mishap prevention through education. It is intended for aircrews, their commanders and supervisors, and personnel in direct support of flying operations. We solicit your contributions and promise to provide the best material possible in each issue. We are confident the magazine has contributed to some degree in the reduction of the 45 major accidents per 100,000 flying hours in 1944 to the 2.5 rate we are experiencing to date this year. That's the name of the game as well as of the magazine. Fly safe! ■



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**HON HANS M. MARK**  
Secretary of the Air Force

**LT GEN HOWARD W. LEAF**  
The Inspector General, USAF

**MAJ GEN LEN C. RUSSELL**  
Commander, Air Force Inspection  
and Safety Center

**BRIG GEN LELAND K. LUKENS**  
Director of Aerospace Safety

**COL WARREN L. BUSCH**  
Chief, Safety Education Division

**ROBERT W. HARRISON**  
Editor

**MAJ DAVID V. FROELICH**  
Assistant Editor

**PATRICIA MACK**  
Editorial Assistant

**DAVID C. BAER**  
Art Editor

**CHRISTINE SEDMACK**  
Assistant Art Editor

**CLIFF MUNKACSY**  
Staff Photographer

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# Ice, Snow & 10 Below



*Migrating birds have gone South, or are presently in the process, to wait out the winter. Many retired folks are heading for Florida and Southern California. But we can't pack up and move all our people and planes South, so we had better be prepared for the problems of winter.*

■ During final approach, ice accumulated on the wings and left engine of a CT-39. The pilot increased speed to compensate for the aerodynamic effects, but the right wing stalled when the aircraft was about 10 feet above the runway. The wing tip struck the ground and was damaged.

Ice on the wings is just one of the annoyances of winter but an important one. No crew, of course, would take off with a load of ice. But it has happened. Frost or snow may be removed but there's no

guarantee that the aircraft won't pick up more if fuel is loaded after the wings have been cleaned. The fuel may melt ice and snow but it also may cause condensation on the wing surface and subsequent freezing.

Blowing snow can create ice. Heat from aircraft ahead, or a differential in temperature from a lighted or protected ramp to a cold, windy runway may turn snow or water into ice. The aircraft may leave the ramp clean but engine blast from another aircraft may blow almost invisible particles of snow onto the surfaces of the aircraft behind it. The result may be flight

control difficulties from ice formed by freezing of snow or water. Another problem is that snow or ice on wings may adversely affect their aerodynamic properties, lengthening takeoff, or even making it impossible for the aircraft to get off in the runway length available.

Slush picked up during taxiing can freeze and cause gear, flap or engine inlet icing. Another danger results from frequent applications of high thrust to "break away." The blast may throw ice and snow that



can cause damage and injuries, so check six before you boost the power.

Taxi as if you have a load of eggs. Here's a scenario for one reason why. You start to taxi, up comes the power and you begin to move. It's kinda dark and snow and slush make the taxi lines hard to see. You overshoot a turn and try to correct. Even though you're moving slowly, the bird slides sideways. If you're not lucky, you may go off the pavement, hit a light standard, a fire cart, some AGE or another airplane. Just keep that possibility in mind. Go very slow; if you can't see the lines you may have to stop and get a tow. Sloping taxiways are particularly dangerous when slick.

For a clean airplane, takeoff normally doesn't produce trouble; however, standing water, slush and snow can cause inlet icing problems for some aircraft. Heat may be necessary. Consult your dash one.

During cruise a major consideration is clear air turbulence. The jet stream has moved South and frequently is very intense. You should concentrate on conditions ahead, including destination weather, whether you'll have to go to an alternate, icing conditions, runway condition, fuel state in case you have to hold.

One problem reported several times last winter was holding or descent early into icing conditions. Icing can be serious at temperatures between 0° and -8°C in cumuloform clouds and freezing

precipitation. Remember the rule: Heat before ice, not vice versa.

In winter expect more low visibility approaches. You may have to go around. Don't hesitate; it's far better to make a missed approach than to try to salvage a bad one. With low viz and snow covered landscape, illusions are possible. If it doesn't look right, it might not be right. Landings on snow covered overruns can result in some nasty surprises.

Landings can be a real adventure in conditions like these: Slick runway, snow covered overruns, berms placed beside the runway by snow plows, strong crosswind, low visibility approach. This is the time for your best instrument flying— on speed, on glideslope. A nice, firm touchdown— a grease job may start

the bird hydroplaning. Remember the rubber and oil deposits on the far end will be slick, so get your speed down in the best part of the runway.

What this all adds up to is an alert crew that plans ahead and is prepared for contingencies such as blowing snow, WX below minimums, a possible missed approach. This crew has an A/C who knows his, the crew's and the aircraft's capabilities— and never exceeds them.

This article is certainly not all inclusive; its purpose is to get your attention. Remember how it was last winter. If you're a new guy on the winter block, learn from the old heads. They can save you a dented bird and maybe your life. ■





# Little Things Mean A Lot

By LT COL EUGENE LA MOTHE  
Directorate of Aerospace Safety

■ Little things mean a lot. If you don't believe it, read on and see what little things can do to an airplane. It took about ten seconds research to come up with a number of recent mishaps in which a minor oversight or failure of a small part played a major role. My purpose is not to highlight individual errors, but to show that these things do happen, and under the right circumstances could happen to you.



The pin that everyone missed. This cost us a destroyed aircraft when the wing folded on takeoff.



If the engine had run ten seconds longer, he probably would have made it. Fuel starvation due to a mis-positioned switch.

A flight of four fighters was taking off for a range mission. As nr 2 lifted off, the aircraft entered a climbing left bank. A successful ejection was initiated at approximately 700 feet, and the aircraft crashed on base. Everyone who helped prepare that aircraft for flight had missed one little thing—a pin sticking up on the left wing. The wing tip was not locked, and it folded as the aircraft rotated for takeoff.

The pilot of a fighter aircraft entered a precautionary landing pattern after experiencing a fuel system problem. This became a flameout landing pattern

when the engine quit due to fuel starvation during the base turn. The pilot successfully ejected at 100 feet above the overrun and watched the fire trucks put out the fire. After air refueling, he failed to do one little thing—close the air refueling door. This trapped fuel in the external tanks and although the fuel totalizer showed 2,300 pounds, none of this was available to the engine.

Have you ever seen an 8 million dollar pin? There is one out there somewhere because it was never installed during assembly of a valve. The cross section shows how the pin keeps the slide portion of the valve from turning. In our case, the one and only engine in a fighter belched coming off a bomb pass. The pilot shut it down and tried to restart it. The engine could not start because the pin was not there and the sleeve had rotated. Just a little thing.

Little things break. Take for example a feedback cable that tells the fuel control how

Transfer valve cutaways showing anti-rotation pin in place and missing. Missing pin allowed slide to turn in valve assembly and cost us an aircraft.







Broken feedback cable due to bending loads imposed by frozen uniball in actuating layer. This resulted in engine failure and a destroyed aircraft.

things are doing in the engine. This cable is attached to the actuating lever by a simple ball bearing arrangement (uniball) that rotates as the lever moves up and down. If this ball bearing freezes up, the cable flexes and breaks. The engine will still run unless the pilot makes large throttle excursions. He had no way of knowing this as lead turned into him and he pulled up into a “yo-yo” maneuver. His only engine quit, and he successfully ejected at 800 feet above the ground. Just a little ball bearing. . . .

Recently, a multi-motored aircraft attempted to mate with a blast fence, although the inadvisability of this aciton is clearly evident. The crew started engines in response to an alert klaxon. All systems appeared to operate normally, and the pilot advanced power to taxi. As a right turn was attempted, braking and steering capability were lost, and the aircraft continued straight ahead. The pilot shut down the engines and the aircraft continued lumbering toward the blast fence which absorbed the energy normally handled by the brakes. Come to find out two little hydraulic system pressure switches were leaning the wrong way. Only a little thing, but it had taken a combination of errors to turn them off.

What’s the bottom line? There are a lot of little things that can bite you—too many to keep track of. That’s why we have maintenance tech data and operational procedures. They provide our best defense. The professional approach required to maintain and operate USAF aircraft necessitates strict adherence to tech data and flight manual procedures. If you don’t operate this way, you can be sure there are more little things around than you can step on. One of them is going to get you! ■

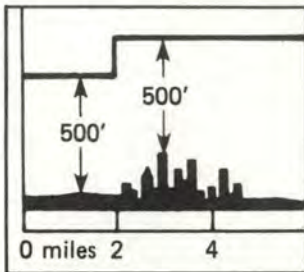


Wandering heavy vs blast fence after loss of nose wheel steering and brakes. A combination of errors resulted in two mis-positioned cockpit switches. Just a little thing. . . .





# OPS topics



## CORRECTION

■ The second paragraph of "MSAW - Pilot's Friend," September 1980, *Aerospace Safety* should be corrected to read:

"Those pilots who are not familiar with this program may ask, 'How do I participate?'" Very easily, indeed! Aircraft on an IFR flight plan that are equipped with an operating altitude encoding transponder automatically participate. That is, no specific request is necessary. Pilots on VFR or no flight plan may, provided they are equipped with an operating altitude encoding transponder, participate by asking the controller. Example: 'Los Angeles Center, (call sign) request MSAW.' However, it must be remembered, participating in the MSAW program does not relieve the pilot of the responsibility for safe altitude management."

## How Not To Hunt

Have you ever heard of a hunting accident that wasn't as tragic as it was avoidable?

Hunter climbing fence, shotgun goes off and blows a hole in his head. . . . Didn't know rifle was loaded, pointed it at his buddy and BLAM! Safety wasn't on, hunter thought it was . . . a fatal mistake.

Judge for yourself what kind of mistake led to this tragedy. Four of our finest were on a hunting trip. They had rented a houseboat and, because they

couldn't get the engine started, were floating downstream. Suddenly a moose appeared, and they started blasting away, but they didn't get him. He then turned back and started swimming down the river. Two of the foursome laid down on the bow, one tended the boat, and the other hunter began firing over the two lying down. Sure enough, one raised his head just as the man behind fired and was hit in the back of the head. By the time they got him to the hospital, he was DOA.

## Stick Grip

An A-10 pilot had his hands full (literally) when the stick grip came off. The aircraft was in a steep, turning dive, fortunately at 10,000 AGL. The pilot dropped the grip, grabbed the stick and recovered to level flight. Subsequently, he got the grip reconnected to the stick and made a safe landing at home plate.

## BLACKBIRD REUNION

A Blackbird reunion for all associated with SR-71 and U-2 programs, is slated for 15, 16, and 17 May 1981. For Blackbird reunion/banquet reservation information write: Blackbird Reunion c/o 9 SRW/CCE Beale AFB, California 95903 (916) 634-2692

## SAC Studies Possible Trainer

Strategic Air Command is currently studying the possibility of using a Companion Trainer Aircraft for B-52 training which could reduce operating costs and still maintain B-52 aircrew flying proficiency.

CTA is basically a low cost off-the-shelf business jet minimally modified with avionics equipment to include radar, electronic countermeasures equipment and navigation equipment.

If procured, the aircraft would be used to augment B-52 aircrew training at a fraction of the cost associated with the B-52.

SAC estimates a 25 percent reduction in B-52 flying time, supplemented with a CTA, would result in an annual savings of more than \$100 million for fuel alone.

The program calls for tests to begin in August 1981 with full scale development of the CTA system to begin in October 1982.





### Hang Glider

As if other aircraft and birds were not enough, we now have to watch out for hang gliders. Seems one of our pilots saw that speck on the windshield turn into a hang glider. The miss

distance was estimated at 300 feet. Naturally, they will be on our low level training routes. So be especially vigilant in that arena. Even the wake of one of our birds could be fatal to a hang glider.

### 781 Woes

The aircrew arrived at the aircraft at "O-dark thirty" for an airlift mission. A look at the magic maintenance book (781) showed a relatively non-scary write-up detailing a 5-mile error in the copilot's DME. The rub, however, was that a check of the cockpit showed a gaping hole in the dashboard where the copilot's RMI (with DME) used to be. A recheck of the forms showed the aircraft on a red diagonal (signed off) and *no mention anywhere of any piece of equipment being removed*. Several of the folks threw up their hands and said "well, it's

aircraft commanders discretion if you take it or not." They were certainly right, but the thrust of this incident is twofold: First—yes, it is always the aircraft commander's discretion to take or not take a machine, regardless of what the forms say. Second—that 781 is the history and current status of your machine. It is a two-way communication vehicle—make sure it reflects what really happens and also be conscientious about the write-ups you add. ALL TOWARD THE SAME END . . . SAFE MISSION ACCOMPLISHMENT!

### Cleared to Land?

A contractor was working concrete on a taxiway adjacent to the main runway. One of those world-famous "new guys" was moving some equipment and decided since the infield was muddy, he would just "go around the other way." He entered the active runway, drove approximately 3,000 feet and exited on the next taxiway. No metal belt or clothes torn! Fortunately, there were no injuries, but maybe only because the copilot of the multi-motor didn't completely trust the "cleared to land" and told his boss to go around. Trust everybody, but that extra look down the runway may save a catastrophe!



### Cockpit FOD

At 600 KCAS an F-4D began a slow roll to the left and the pilot had to use full right roll trim and 30 lbs or so of right stick force to level the wings. A controllability check indicated the aircraft could be landed, which the pilot proceeded to do. A two-inch tear in the aft cockpit stick well boot and a felt tip marker in the stick well apparently was the cause of the unwanted left roll.

### Sleeves Down

It just wasn't an A-7 pilot's day. On rollout following a formation landing the FLIP Supplement, which had been placed on the right glareshield, fell down to the right console. The pilot in attempting to get it snagged his sleeve on the telescoping canopy locking handle. The handle was exposed because the plastic guard was broken and the handle was in the extended position. The canopy opened and wind carried it back along the top of the fuselage to the vertical stabilizer where it embedded and stayed. Another reason for keeping one's sleeves rolled down. ■





# Food For Thought

By SQN LDR JOHN C. GRIFFITHS, RAAF  
Directorate of Aerospace Safety

■ Are you one of the estimated three out of four people who skipped breakfast this morning? If you did, you could be a candidate for an accident according to Dr. J.E. Monagle of the Department of National Health and Welfare, Canada.

He points out that your blood sugar after an overnight fast may be at a reduced level when you wake

up. This condition, known as hypoglycemia, may cause morning headache, irritability, irrational emotional responses, grogginess, and confusion.

Add to these the effect of sudden stress or emotional reaction, such as a last minute glitch in our trusty crew transport. This stimulates a sudden release of adrenalin, which raises blood sugar, and causes other disturbing symptoms such as fear,

anxiety, headache, shakiness, weakness, dizziness, shortness of breath and palpitations of the heart. The preoccupation and distraction from these symptoms may increase your chances of an accident. The anxiety may cause hyperventilation, producing additional disconcerting symptoms such as numbness, tingling, warmth and dizziness, with



or without respiratory symptoms. Dr. Monagle cautions that when you're in this state, it's unwise to do things requiring alertness, concentration, mental and physical responses.

Studies at a university add to these facts. Students who didn't have breakfast showed markedly poorer classroom performance. In London, police have noted that traffic accidents happening around 10 or 11 a.m. frequently involve persons who have not eaten, or at least not properly. Certain people, especially those with emotional problems, will develop hypoglycemic symptoms 2 to 3 hours after ingesting a meal rich in carbohydrates.

While we have no definitive statistics on accidents to non-breakfasted pilots, the points made here apply also to pilots. To be mentally and physically alert, the breakfast should contain some protein— an egg, glass of milk, or even a sausage or some bacon *before* flight planning.

Many individuals routinely skip breakfast. However, aircrews should not deviate from their usual dietary habits when flying— that includes lunch. Lunch at the candy machine (while checking weather and NOTAMs on a stopover flight plan) is rapidly overshadowing the Fighter Pilot's Breakfast on the list of aircrew favorites. By the time supper comes around we could eat a horse— washed down with some "Colorado Cool Aide," of course. That's one hell of a way to treat the

most sophisticated piece of data management in your airplane.

A typical scenario for the hypoglycemia incident would to something like this. Remember, the most likely person to experience this would be someone subjected to severe psychological stress in the form of anxiety. (A student pilot in an advanced jet trainer appears to rate highest in this act).

0430 Awoke and ate toast and coffee

0505 Arrived at squadron

0515-0540 Preflight planning

0545-0630 IP briefing

0630-0710 Aircraft preflight

0710 Taxi takeoff

This was the student's first flight in advanced instruments, and it had been one month since he had last flown instruments. Ten minutes into the instrument portion of the mission, he began to come unglued. He began to over-correct, and when the IP noticed that the aircraft was climbing after a rollout from a turn, he queried the student who reported symptoms of dizziness, tingling and generalized warmth. The IP then declared an emergency (altitude 29,000, cabin altitude 12,000 feet) and began a descent. The student made a PRICE check and went to 100 percent oxygen— no malfunctions were detected.

Dizziness gradually cleared during the descent and the student reported he was "completely normal at the time of landing." The student never reported heavy breathing and the IP did not recall the student pilot breathing heavily, but because the symptoms are compatible with hyperventilation, that was

considered to be the most likely possibility.

But, is it the only factor to be considered? Could the hyperventilation symptoms have been produced by the anxiety of adrenalin released in response to lowered blood sugar? Let's put the pieces together in a logical manner. The student had become accustomed, through the years, to a diet of heavy meals at regular intervals. But, after the customary evening meal the night before, breakfast on the day in question consisted only of toast and coffee, and that at a much earlier hour than normal. As in any normal individual, the amount of sugar in his blood is controlled by the type of food consumed and by two body chemicals, insulin, which lowers the blood sugar level, and adrenalin, which raises it by "squeezing" sugar from the liver and muscles (where it is stored as glycogen). However, if prolonged fasting has reduced the usual body stores of glycogen, the elevation of blood sugar may be minimal, whereas the unpleasant effects of adrenalin may be maximal. Normally, the amount of sugar in the blood rises rapidly after eating; this triggers the secretion of insulin by the pancreas and within two or three hours the level is back to normal limits. The level of sugar in the blood is a critical factor in the functioning of brain cells, since they use sugar almost exclusively as their source of energy.







# Food For Thought continued

In this particular case, the student "fasted" from 1900 the night before until the time of his reaction (about 0730). This is a fast of more than 12 hours, broken only by coffee and toast. It is entirely possible that the toast and coffee triggered the insulin mechanism and brought his blood sugar down to a borderline level. At this point, three hours after eating, he was subjected to severe psychological stress in the form of anxiety. Under these conditions, adrenalin (or epinephrine) is released into the bloodstream. Adrenalin can cause the symptoms of dizziness, weakness, sweating, and produce the anxiety which leads to hyperventilation, as in this student.

When the IP takes over, declares an emergency and begins a descent, the student's emergency is over; he can relax, so the level of adrenalin rapidly diminishes. His symptoms disappear by the time the IP lands the aircraft.

A blood test taken post-flight revealed that his blood sugar level was still in a "borderline" status. The real culprit here is hypoglycemia and every crewmember must realize his own vulnerability under similar conditions. You may get away with lapses and omissions occasionally, but as long as the laws of probability are valid, you can expect to have a reaction at some unspecified time and under conditions which may be more dangerous than this student's. Try speculating on what might have been the outcome had he been solo.

Let's run this by again and see what our student should have consumed prior to his mission. (The January 1978 *Aerospace Safety* gave an excellent appraisal of proper nutrition under the title "The Fighter Pilot's Breakfast.") We do not need a gourmet's delight in every meal we eat; what we do need is a balanced diet. All the food groups should be represented including:

1. Breads, enriched or whole grain; cereal or potatoes.
2. Citrus fruits, other fruits and vegetables.
3. Dark green or deep yellow vegetables.
4. Fats: Butter, margarine and other fat spreads.
5. Meat: Fish, poultry; cheese or eggs.
6. Milk.

That's right, we all need some fats in our diet, and, would you believe, carbohydrates as well. I'm not proposing that we live on Big Macs and fries; what I do suggest, though, is have a good look at the meals you are now eating and see if you are doing your body justice. Try to spread the daily intake into three balanced meals.

Remember also that crash diets have no place in the life of the aircrew member. If you are finding it difficult to make those weigh-ins, check with the Flight Surgeon first; he will advise you what your ideal body weight should be and how best to maintain it. Crash dieting may result in some immediate weight loss, but you don't get the nutrition required for proper health. As well

as loss in the fatty tissue, you will lose needed protein and muscle tissue. What's more, the body will quickly regain those lost pounds when the crash diet is terminated—quite often the dieter ends up heavier than when he started. Some diets are dangerous. For example, the liquid protein fad has been associated with a number of sudden deaths attributed to severe chemical imbalances.

Back to our student, there is no requirement for a fancy breakfast of pancakes and all the trimmings—a glass of orange juice, milk and cereal, perhaps with toast and butter or jelly will provide many of the food groups he needs. As aircrew members, it behooves us to realize that we have some control over those early morning butterflies. As supervisors and IPs we should be cognizant of the stressful environment the trainee pilot is forced into—part of our supervisory role obviously involves the man of the man/machine system. Let's ensure that the man has the opportunity to take in those well-earned vitamins. That includes time out for an adequate lunch (at least a sandwich) instead of a trip to the candy machine.

Footnote: For those fortunate enough to be a crewmember of multiplace aircraft, don't forget some commands lay down additional guidelines on *when* we can eat those inflight delights. ■



# THERE I WAS



The response to "There I Was . . ." requests has been great. Letters relating lessons learned from personal sagas of narrow escape continue to arrive each week. The following account relates how a pilot can fall into a trap by relying on "old habit patterns" and not on checklist procedures. A similar circumstance may apply to many of us, so "listen up" to There I Was . . .

■ An A-10 IP chasing another pilot during landing patterns. He was fast on downwind and I was lagging behind a bit. At 200 kts, he extended 40 percent speedbrakes, his gear and then flaps rather quickly. I did also and was rather busy staying with him. I checked his configuration turning base, checked my own gear all O.K. On short final at 120 kts, I started feeling very uncomfortable, like a high sink rate was commencing and a nose high attitude. Then it hit me. My flaps had not extended due to high airspeed which automatically retracts them above about 185-200 kts. Quickly, I lowered them, and all was well. The speed range of the auto-

matic retract feature allowed my student's flaps to extend but not mine. My habit pattern from previous aircraft did not include a check of the flap gage (there was none). Without flaps my power was at idle and a few more seconds would have resulted in a high sink rate. Before the fan lag was over and go-around thrust available, I would have hit the ground off the side of the runway. Dumb!

Thanks to the A-10 pilot for relating his experience. We hope it will help you Wart Hog drivers.



Having spent three fun weeks of TDY and flying only when required, I was ready to go home and say hi to momma.

We finally got the word to go via three intermediate stops. My crew reported at O-Dark-Thirty, rested and ready to go. Then we got the classic, STANDBY. After several hours I was told to go into crew rest. At about 1800 that evening I received a call to take off at 2200. The flight to the intermediate stops was uneventful. On the approach to the home

patch, I felt tired but okay. The approach and flare seemed okay until 50 feet when the aircraft just dropped out of the sky. On the way back up, full power was added and a fabulous recovery was made. It had to be fabulous, the top of the bounce was about 75 feet and NO airspeed. I almost did not walk away.

After getting out of the aircraft, I noticed a big sinking sensation similar to that in the aircraft. I could barely stay awake. Then I realized I had been awake 36 hours and had just logged 12 hours flying time. I now take crew rest more seriously. I will NOT endanger myself and more importantly, my passengers, to factors amounting to excessive fatigue.

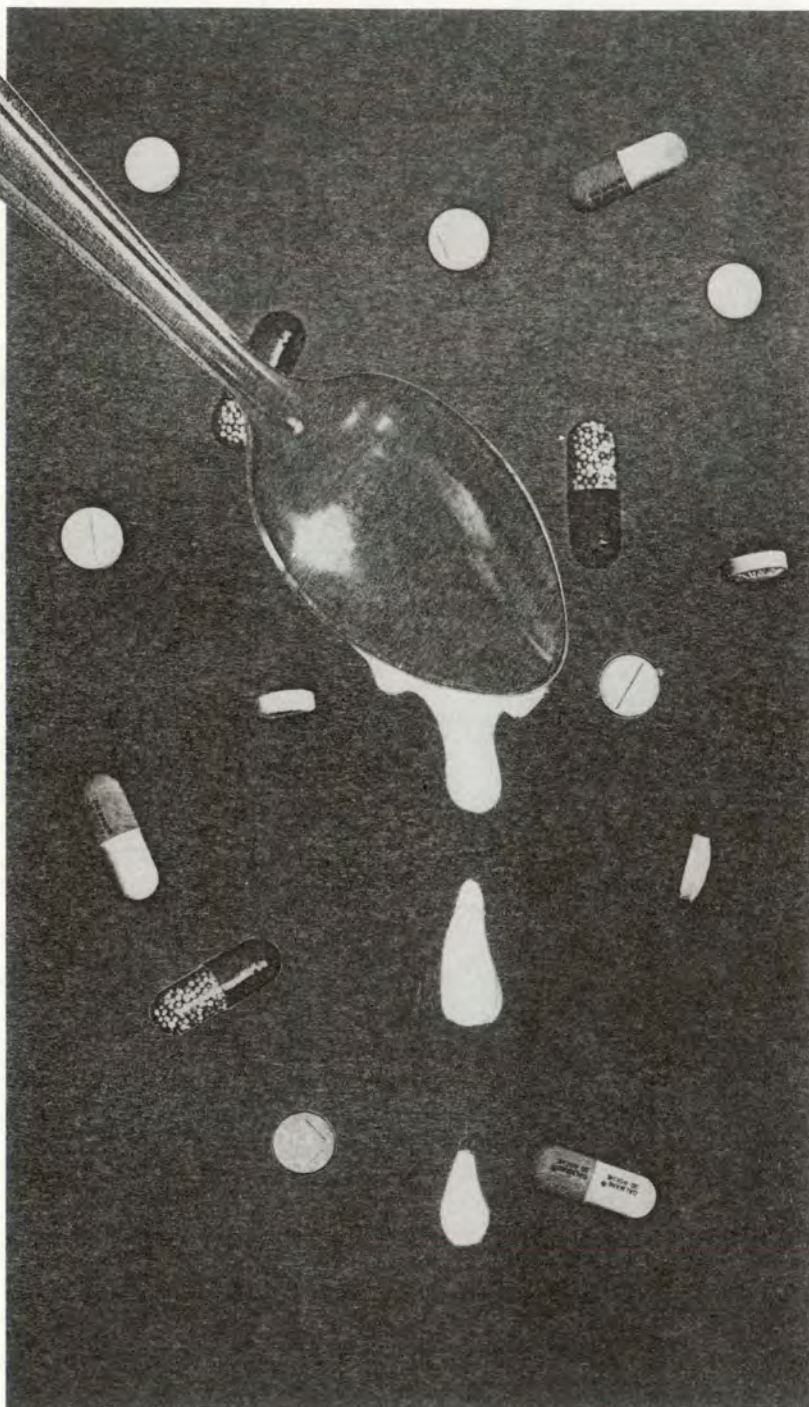
*In my opinion this aircraft commander has learned a good lesson the hard way, the way many of us have. In the final analysis, he has the sole responsibility to insure he is ready to fly, but others can learn from this incident. Commanders, Operations Officers and Schedulers should take careful note of this young man's problem. He didn't build that box all by himself, he had help. Try going back to sleep for crew rest after you've just had a good night's sleep sometime. Thanks. ■*

**Brig Gen Leland K. Lukens**  
Director of Aerospace Safety



# Self Medication Do as I

By MAJOR PETER J. EDGETTE



■ By way of introduction I would like to mention some articles I wrote in the June and July 1978 issues of the *Army Aviation Digest* ("Altitude Physiology Training— Yes or No" in the June issue and "Stresses Encountered Before Flight" in the July issue). When I wrote those articles, I was assigned to the U.S. Army Aeromedical Center, Aeromedical Activity, Fort Rucker, as an instructor. I viewed the publishing of articles in the *Aviation Digest* as an extension of my teaching/instructing. I was responsible for teaching the entire aeromedical block of instruction— altitude physiology, night vision, stress and fatigue, and one particular segment of instruction entitled "Aviation Medicine." The classes were and presently are taught to initial entry students and a combination of these classes is taught in the transition courses at Fort Rucker.

Back to the particular subject of instruction mentioned above— aviation medicine. I am sure all of you who have attended the Initial Entry Course especially remember not the instructor as much as the cute slides depicting a flight surgeon wearing a modified Mickey Mouse hat with a rotor attached. Captions such as "The flight surgeon is your friend" and "Don't self-medicate" were tossed about the classroom and openly discussed by whomever. I can remember, clear as day, getting wrapped around the axle in discussing what medication we as aviators can take without a prescription. The discussion even



# teach...NOT as I did!

went so far as aspirin and the letter of the law. Could we as aviators self-medicate with aspirin?

I must have taught that class more than 300 times. I distinctly remember bringing to class one type of training aid, a copy of *U.S. News and World Report* which had an article titled "Over-the-Counter Prescriptions." The article stressed the idea that the various daytime calmatives calm you by making you drowsy in your seat, and that the last thing a heavy equipment operator or an airline pilot needs is to be drowsy in his seat. Enough of the introduction.

The title of the article you are reading/scanning/burning/using in any of a number of ways is "Do As I Teach, Not As I Did." The sad point of this particular title is, hopefully, a vivid picture of what could happen with self-medication.

My current assignment is that of a Dustoff unit commander. In that capacity I spend most of my time on the ground but occasionally manage some field grade flying.

About three months ago, I was sitting in my office, talking to one of the pilots, when I developed a sinus headache. I imagine I am normal when it comes to sinus cavities. I have them just like everyone else, but my sinus headaches must be the worst torture in the world. I don't want to talk, I don't want to be in bright light, I don't even want to walk. All I want is to lie down and go to bed. With this in mind, you can imagine how I started to feel knowing a sinus headache was approaching. I don't

want you to get the idea that I have all kinds of time to prepare for a sinus headache. I pass through stages of discomfort just like anyone else. On with the story!

I have known for years that self-medication is taboo. I realize I should not take medication prescribed for a prior illness nor medication prescribed for another member of my family, but remember, I had this awful sinus headache. I remembered a small bottle of Novahistine DM in my desk. I honestly can't remember where I picked it up but the expiration date was June 81 and it was an antihistamine. I wasn't scheduled to fly that day, but unfortunately, I didn't even consider that crucial factor.

After opening the bottle I took a small swig, about one teaspoonful. For one reason or another I looked at the clock. It was 1500. I continued with some paperwork, not even giving my self-medication a second thought, when all of a sudden I began to sweat profusely. I noticed the time. It was 1515. My pulse rate became very rapid and my vision blurred. I felt hot all over and tried to get up from my seat. My admin officer looked over at me and said, "You look like a ghost. What's wrong?" I muttered something and could not even stand up. I thought that I must be having a heart attack. I had never felt that way before.

After sitting there for a few minutes I remembered the self-medication. All of the classes I had taught concerning aviation medicine

flashed through my head. Why did I take that medicine?

I finally managed to get downstairs and across the parking lot to the flight surgeon. I must have still looked terrible because the medic came around the counter and had me sit down. I told the flight surgeon what had happened and showed him the partially consumed bottle. He immediately grounded me and told me exactly what I had taken. Novahistine DH contains codeine and a warning about possible drowsiness for people who operate heavy machinery. I had a severe reaction to the drug.

What if I had been scheduled to fly that day? I realize that with the sinus problem I could not have flown, just as I realize I should not self-medicate. But, what if I had completed my preflight at 1500 that day and at 1515 had been IFR at 6,000 feet?

I was fortunate that afternoon in that I was not scheduled to fly and that I did not suffer any permanent damage. I cannot stress, teach, instruct enough concerning self-medication. Please, don't self-medicate. The responsibility rests with you. ■

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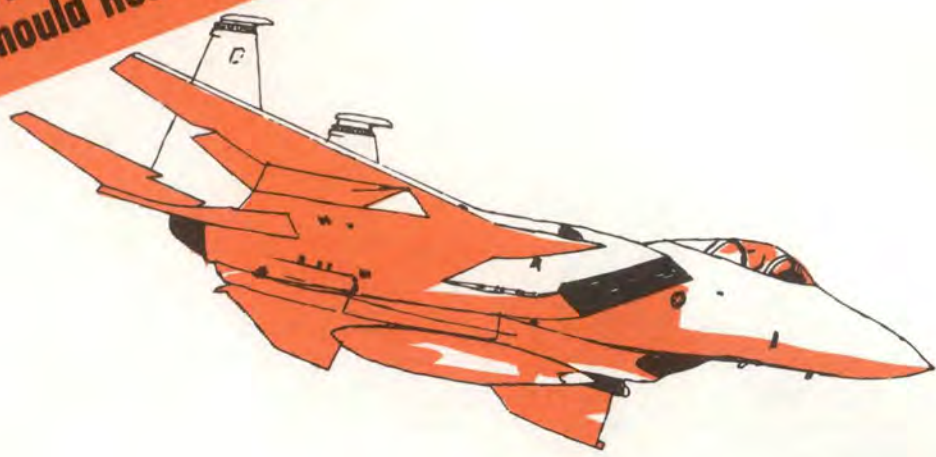
#### About The Author

Major Edgette is a Medical Service Corps officer. He has his Masters in Hospital Administration from Baylor University and a Masters in Public Administration from the University of Northern Colorado. He is currently commander of the 57th Medical Detachment, Fort Bragg.



# FOR EAGLE DRIVERS ONLY

But Other Types Should Read It, Too



By CAPT PAUL Q. G. WOODFORD  
32 TFS/DOO

“Back to the basics.” How many times have you read, heard or said those words. We all recognize the concept but often the words are only lip service. The author goes beyond that in this article we lifted from USAF’s *Airscoop*, August 1980.

■ **Some Thoughts to Live By**

You’re entering the area at 5,000 feet above a solid cloud layer. Haven’t called ready to play, but suddenly the controller is giving you urgent bullseye calls on two bogeys who sound pretty close. No contact. You lower the el and just like magic you get two hits, 20 right, 15 and 16 miles. Sampling the close target, you see a beam aspect, crossing right to left, level at 200 feet. That’s

low for certain, so you start a shallow descent as you break lock and sample the second bogey. Same aspect, right on the water. You’re entering the cloud layer as you take a final lock on the close man, now just inside 10 miles. Cut to the left, push it up, and check your pitch attitude again— can’t let your nose get buried when you’re low and in the weather, and— just ain’t your day, Buckwheat, the radar breaks lock. Beak! Okay, keep searching, you know where they were. Double beak! Just how long does a doppler update last anyway? All right then, you pinkos, auto guns. No contact. Slew it down. Still no contact.

**YGBSM!**

And you’re just thinking about regrouping when you flush out of the bottom of the clouds at 300 feet, going like stink with the VVI

pegged and the nose 12 degrees low. You don’t even have time to say “Oh, sh. . . .”

Before you toss a nickle on the grass and say “It can’t happen to me,” consider a couple of things: It should be blindingly obvious to anyone brighter than a broomstick that pilots in the tactical community are busting their butts at a great rate. It’s also clear that some of the recent fatal accidents are at least partly attributable to breakdowns in aircraft control while pilots are “peaking and tweaking” their systems during IMC flight at low altitude. Some of these breakdowns may result from poor instrument flying skills, but most appear to result from diverted or misdirected attention.



I don't believe our problems stem from a lack of instrument flying experience. We in USAFE probably have more instrument experience than anyone this side of the Hurricane Hunters. The problem, I think, is that we don't respect the absolutely critical importance of maintaining our basic instrument skills. A lot of us think that basic instrument skills are second-nature, like riding a bike. Sadly, that's not true. I'm not saying that any of us can't flail through a TACAN approach once a year for Stan/Eval; I'm saying that really excellent flying requires plenty of practice and attention to basic instrument skills. Further, the combination of mission requirements and European weather that we live with demands excellent flying, all the time.

There are several areas where this combination of mission and IMC puts us on the spot: High to low conversions, as in our opening example; trail departures; night flying on the wing; even flying the base defense CAP in minimum acceptable VFR. You can surely think of more examples. The point is that we have to fly and fight (and don't you ever forget it), and we had doggone well better be able to hack the weather. To do this, we need three things: An effective cross check, a well-trimmed airplane, and a sense of priorities.

A cross check, according to AFM 51-37, ". . . is a proper division of attention and the interpretation of the flight instruments." Everything about the F-15's cockpit layout is designed to facilitate this essential task. The eye-level HUD repeats the information displayed by the central cluster of primary flight instruments, and these are backed up by the standby instruments. Everything the pilot needs to know to fly his jet is right in front, with only minimal vertical and horizontal scanning required. Our radar and weapons

controls are optimized for "heads out" flying; they are therefore optimized for instrument flight as well. To be effective, however, a cross check has to be appropriate to the aircraft. How many of us are still using cross check techniques from other times and other planes? To become second-nature, a cross check has to be practiced over and over. How many of us consciously force ourselves to cross check as we work our weapon systems in VMC? It's a skill we have to have mastered before we enter IMC.

Once your cross check is cooking, you trim. Having the best cross check in USAFE is only of marginal use if you're fighting the controls; you should never settle for less than a "hands off" aircraft. A trimmed aircraft will hold a constant attitude, freeing you for other tasks; more importantly, it will help keep you from subconsciously overcorrecting an out of trim condition in IMC or at night when you're busy. Watch out, however, for the lag in the Eagle's automatic trim system: If you're hasty about trimming off pressures after attitude or speed changes, you'll end up fighting a system that's trying to work for you. Don't neglect the rudder trim either—apart from helping you avoid slow and insidious rolling inputs, a centered ball will get you more holes in the DART.

A good cross check and a trimmed jet aren't nearly enough, however. You have to prioritize. Cockpit task prioritization is an extension of the instrument cross check; it is made up of two parts systems knowledge, three parts tactical savvy, and ten parts self-preservation. When can you peak and tweak, when should you let the auto modes do most of the work, and when should you forget the radar and fly the airplane? Every situation demands a different answer: During low altitude intercept work, for example, you

might crank the frame store up more than normal and set the radar the way you want it before you enter the weather. Sometimes it may be appropriate to get on top of the weather and do your sorting where you can devote more attention to it. One thing's certain, though—a healthy fear of death ought to drive your sense of priorities. There is no operational requirement to lock up lead immediately after liftoff on a trail departure, and there's no reason on God's green earth to be doing anything but flying the gages after falling off the wing at night.

These skills—cross checking, trimming, and prioritizing—are as critical as having a blank check in your wallet and as basic as beer. When you're scrambled against a low-flying unknown in the BZ at three o'clock on a cruddy morning, you've got to have it together. Take every chance on every training sortie you fly to develop your basic skills. Don't let an opportunity to fly a TACAN approach go by, and consistent with ROE and flying safety, don't pass up a chance for low altitude work in marginal weather. When you've got to fly a trail departure, do it no-lock and learn from it. If you're a flight lead, try to brief and work some of these opportunities for basic skill practice into your flights. Times are tough, and if you're planning to wait until we get enough flying time to log collateral sorties for instrument practice, you'll probably be interested in some investment property I have in Arizona. . . .

We can never afford to be casual about the basics, and we can't ever assume they're second-nature in our wingmen or ourselves. Our mission and flying environment preclude this kind of thinking. We're here to fly and fight—and live to do it again. So practice, think, and practice some more. And instead of saying "It can't happen to me," say "I won't let it happen to me." ■





# the RUMOR MILL

By MAJOR ARTHUR P. MEIKEL  
 Directorate of Aerospace Safety

“PICK ME UP AT THE HAMMERHEAD”\*

■ Remember the good old days back in 1979 when “pick me up at the hammerhead” meant that some lucky guy/gal wasn’t going to be forced to sit through the air refueling and nav leg. He or she was going to get picked up at the end of the runway to get his or her semiquarterly landing. Often it meant a chance for you to show your new haircut to an important staff IP. “Nice landing, Sir!”, said the IP, bristling with integrity, while the copilot tightened the seat belt in

\*The Hammerhead is also known as the runup pad, apron, or the wide part of the taxiway near the runway.

jump seat. Ah . . . the memories.

Recently our title phrase has taken on a new meaning. There is absolutely no truth to the rumor that SAC or TAC or the Air Force at large is planning a program to bus the entire aircrew to the hammerhead; thus avoiding the recent most perilous danger to large aircraft, the ramp. It would save fuel, but the hammerheads are generally too small for large operations anyway.

As I see it from my small corner of the world, which is the corner which deals with big airplanes, the rumor probably stems from the 1980 parade of Class A ground mishaps

involving large aircraft.

In early January, a \$6,731,000 EC-135 aircraft was destroyed by fire on a TAC base while heating water. The fire developed from shorted electrical components, could not be extinguished, and the aircraft was destroyed.

A little over a month later, a KC-135Q was destroyed by fire during a ground refueling operation. The fuel panel operator suffered second degree burns when an explosion occurred in the aft body fuel tank area. Damage from the explosion and ensuing fire totaled \$3,900,000.

In July, a water truck jumped the





1980 has proven the ramp to be a dangerous area for large aircraft. At left—a C-135 is lost as it is consumed by fire. Right—Fuel truck struck parked aircraft after jumping its chocks.

chocks while servicing a KC-135. The truck hit the aircraft causing almost \$400,000 damage to the truck and aircraft.

In August, a B-52 was completely destroyed by an explosion and subsequent fire while transferring internal fuel between aircraft fuel tanks.

Even though another KC-135 mishap in July was classified as a flight mishap in accordance with the AFR 127-4 definition, it occurred during taxi on an alert exercise in the parking area. In this mishap the aircraft responded to "the horn" for a taxi exercise. As the aircraft pulled out of the chocks it did not respond to steering or brake inputs. It continued forward striking a blast fence causing extensive damage (\$290,000).

The five above mentioned mishaps represent three airframes that will remain only as memories in the Form 5 shop. The other two will be lost for some time. All mishaps were costly and resulted in the loss of USAF resources. In contrast to

Opposite: Early fire detection this year has prevented major damage to at least two aircraft; however, no one was on board this aircraft when fire broke out. Below: Once established fires can be hard to extinguish. Bases may be required to sustain a two or three hour firefighting effort.



ground mishaps (with the exception of the alert taxi mishap), both the C-135 and B-52 have an excellent 1980 Class A flight mishap rate at this point.

Complacency is a fear that comes to mind when things are going well. The example of the July KC-135 alert taxi mishap should scare the complacency out of anyone. One moment you are pulling out of the chocks and 30 seconds later you have hit a blast fence damaging three of your engines. Respect for the machine is one way of deterring complacency. Another good way to avoid complacency is to be active in some aspect of a safety program. In light of recent ground mishaps, perhaps the crewmember should

become more involved in ground operations. For example, fill out an AF Form 847, talk to the maintenance troops, make your next SOF tour more safety oriented, encourage someone to fill out a good AFTO Form 22 or complete an HR on any unsafe ground related problem.

The ground mishaps also point out that disaster can be a moment away. If you look at some of the factors involved in our five ramp disasters they could include:

- Lack of discipline.
- Lack of knowledge.
- Faulty T.O. instructions.
- Faulty equipment designs.
- Poor supervision.
- Poor procedures.

These are general causes that you've all heard before in relation to flight mishaps. Flight safety has been a part of your life for a long enough period for some of its principles to rub off on you. Apply some of your flight safety knowledge to the aircraft ground environment. Give the maintenance troops a boost.

The rumor previously mentioned is obviously the product of a fertile mind. What the captain means is: "Help, stop that trend!" In short, give the guys on the ground the benefit of your experience. An aircraft that is lost is gone forever whether it is on the ground or in the air. ■





# NEWS FOR CREWS

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

## RATED DEPARTMENTAL/ Joint Assignments

By MAJOR RON KARP  
Rated Officer Career Management Branch

■ If you are a rated officer seeking a responsible position in a high-level policy drafting and decision making activity, AFMPC's Rated Departmental/Joint Career Management Section (the old "SPECAT" shop) may have just the challenging job you're looking for. The term "Departmental/Joint" refers to those positions assigned to the Air Staff (Departmental) or to DOD, combined, and allied staffs worldwide (Joint). The significant responsibilities and impacts these activities have on the AF mission means that specialized manning considerations are given to each position.

Departmental/Joint positions typically become vacant due to an incumbent officer's completion of a tour, promotion to colonel, assignment to in-residence PME, or reassignment to higher levels—so positions are always becoming available. Manning requests are initiated by prospective using agencies through formal requisitions which outline their specific requirements for each job—such as grade, weapon system background, academic degree, special experience, etc. Most positions require field grade officers, although some flying jobs call for lesser grade. The key to competing for these high visibility positions is overall sustained superior duty performance. Other considerations in the selection process are gate credit, weapon system currency and viability, and Professional Military Education. Strong writing and briefing skills are also universally requested by all using agencies. In short, the officers most in demand are those who are top performers with strong operational *and* staff credentials. We've outlined below the major Departmental/Joint agencies and what type of general background they require. Further details with a complete requirement

listing can be found in AFP 36-6, The Assignment Information Directory (AID). A copy of the AID should be at your flying squadron and your local CBPO. If you can't find a copy, call us—the AID can be the key to your next assignment!

### Air Staff

Working in the executive part of the Department of the Air Force is undoubtedly one of the most challenging, fast-paced jobs available in the USAF today. Air Staff agencies normally desire previous staff experience since most jobs entail action officer duties at the program management level. Many positions require extensive academic backgrounds in science, engineering, or math. A growing need for officers with advanced degrees in systems analysis and operations research also exists. The AFIT Strategic and Tactical Sciences Program was specifically designed to meet this demand, and recent graduates are some of the most sought-after officers. Air Staff positions are tailor-made for the officer seeking to participate in Air Force management from a "big picture" perspective.

### Air Staff Agencies

Office of Sec of AF (SAF)  
Office of Chief of Staff (CC)  
Office of Vice Chief of Staff (CV)  
Deputy Chief of Staff, Manpower & Personnel (MP)  
Deputy Chief of Staff, Research, Development & Acquisition (RD)  
Assistant Chief of Staff, Intelligence (IN)  
Deputy Chief of Staff, Programs and Evaluation (PA)  
Deputy Chief of Staff, Logistics and Engineering (LE)  
Assistant Chief of Staff, Studies and Analysis (SA)  
Deputy Chief of Staff, Operations, Plans, and Readiness (XO)  
Legislative Liaison (LL)  
Office of AF Reserve (RE)  
National Guard Bureau (NGB)  
Inspector General of the AF (IG)



## Joint Staff

### Conus Joint Staff

Officers in these positions work at the very highest levels within the United States military establishment. Exceptionally outstanding officers with strong staff and operational backgrounds are required for these high visibility positions. Along with their inter-service counterparts, USAF officers assigned to the Joint Staff are deeply involved in defining the roles and missions of the Air Force and its future contributions to our nation's role in the international political-military arena.

### CONUS Joint Staff Agencies

Office of Sec Defense (OSD)  
Office of Joint Chiefs of Staff (OJCS)  
Defense Intelligence Agency (DIA)  
Defense Logistics Agency (DLA)  
Defense Communications Agency (DCA)  
Defense Mapping Agency (DMA)  
Federal Aviation Agency (FAA)  
National Aeronautics and Space Admin (NASA)  
Readiness Command (REDCOM)  
Atlantic Command (LANTCOM)  
Joint Strategic Target Planning Staff (JSTPS)  
Joint Task Force, Electronic Warfare and Close Air Support (EWCAS)

### Overseas Joint/Allied Staff

USAF officers are assigned to various Joint/Allied staff billets worldwide. Available positions vary from high level staff (SHAPE, NATO, EUCOM, etc.) to the uniquely challenged UN peace observers stationed in the Middle East. Most jobs require previous staff experience. While all types of operational backgrounds are required, the USAF mission and the needs of the combined staff in these areas rely heavily on fighter expertise. Most of the assignments are accompanied tours; however, some of our most interesting billets will give you remote tour credit (Korea, Turkey, Iceland, Israel, and Johnson Atoll).

### Overseas Joint/Allied Staff Agencies

European Command (EUCOM) - Germany  
Supreme HQ Allied Powers Europe (SHAPE) - Belgium  
Allied Forces North (AFNORTH) - Norway  
Allied Forces South (AFSOUTH) - Italy  
Allied Forces Central Europe (AFCENT) - Netherlands  
Allied Air Forces Central Europe (AAFCE) - Germany  
2d Allied Tactical Air Forces (2ATAF) - Germany  
4th Allied Tactical Air Forces (4ATAF) - Germany  
5th Allied Tactical Air Forces (5ATAF) - Italy  
6th Allied Tactical Air Forces (6ATAF) - Turkey  
Pacific Command (PACOM) - Hawaii  
US Forces Korea  
Combined Forces Command (CFC) - Korea  
Southern Command (SOUTHCOM) - Panama  
US Forces Japan  
UN Peace Observers

### Overseas USAF Military Assistance

Military advisor positions in Missions, Military Groups, MAAGs, and other organizations deal with foreign military sales and assistance. Many of these jobs include flying duties (usually in the locally assigned fighter aircraft or the C-12). Thirty countries currently have rated USAF Military Assistance personnel assigned. Most are relatively small operations reporting directly to the Air Attache. Many of these positions require language qualifications and almost all require experience in a specific aircraft. Like the overseas Joint billets, there are many excellent remote opportunities available as a military advisor (Turkey, Saudi Arabia, North Yemen, Kenya, and Egypt).





# NEWS FOR CREWS continued

## Overseas USAF Military Assistance Locations

Indonesia	Zaire	Guatemala
Thailand	Saudi Arabia	Honduras
Korea	Tunisia	Nicaragua
Germany	United Kingdom	Paraguay
Greece	Kuwait	Dominican Republic
Morocco	Kenya	India
Jordan	Panama	Ecuador
Portugal	Bolivia	Venezuela
Turkey	Columbia	Argentina
Spain	El Salvador	Australia

## Professional Military Education Faculty

The USAF has rated instructors and faculty advisors at the Air University and other CONUS military schools. Highly desirable qualifications for these jobs include an advanced academic degree and in-residence completion of an equivalent school. As a faculty instructor, you would be involved in daily class lectures and presentations, preparing instructional material, assisting in overall course design, and doing research for various levels of AF management.

## PME Facilities

Armed Forces Staff College  
Air War College Combined Air Warfare Course  
Air Command and Staff College  
Leadership and Management Development Center  
Army Command and General Staff College  
Army War College  
Navy Command Staff College  
Navy War College

## Selection for Departmental/Joint

The assignment process for rated Departmental/Joint positions is very competitive. We review every rated officer entering the "available cycle" (DEROS, stabilized tour completion, rated supplement completion, or graduation from in-residence PME) or the "eligible cycle" (3 years time on station and completion of the 6 year gate) for possible Departmental/Joint nomination or assignment. The graduating classes from intermediate and

senior service schools can expect to be looked at very closely.

## How to Apply

If you're interested in competing for a Departmental/Joint position, the place to start is the AF Form 90—tell us exactly what you are a volunteer for (pentagon, overseas, etc.), then use the back of the form to relate your expanded preferences and qualifications. Since most Departmental/Joint organizations are of limited size and highly specialized, timing is critical. The job you want (and may be highly qualified for) may be open next month or may not be available for several years. Further, the nominative aspect of the Departmental/Joint assignment process, combined with the dynamic international military-political situation, requires that each position be worked on a responsive, individual basis to meet an existing need.

We have some of the best jobs the Air Force has to offer and we want to make sure that you're aware of all the details. If you're interested in any of these opportunities and have questions about qualifications, locations, or timing, please call us at AUTOVON 487-6261/6262 or write HQ AFMPC/MPCROR1, Randolph AFB, TX 78148. Your interest may be the first step toward the most challenging and rewarding assignment of your career — we'll be waiting to hear from you. ■

## About The Author

Major Karp is the Chief of the Rated Departmental/Joint Career Management Section at AFMPC. He has also served as Deputy Chief of the MPC Fighter Shop and was the F-15 resource manager. Major Karp's flying background includes multiple tours in SEA and in TAC as an F-4 pilot.





# DON'T BREAK A GOOD HABIT

■ It was unreal—like a dream or even a nightmare. You couldn't really be seeing and feeling what had just happened. Let's see. Go back in your mind over the last few minutes. You'd been flying Number Two. It was in those dying moments of the day when it is still not dark enough to see lights well but too dark to see form and motion. Lead had made an easy turn to initial and you were holding well in position with 85%. He pitched. You count one and two, and pitch at five. Nice and easy. Boards out, speed 230. Boards in. Holding 85%, gear. Then a voice from the tower:

"Ghost Flight, turn your lights on bright."

You reach and flick the switch. Now for the turn to base. Where is Lead? There he is. Well clear—boards out now for descent on base. Takeoff a couple per cent. Bleed the speed back to 200. Looks nice—good rate of descent established.

"Ghost two gear down and checked." Lead still in sight. Okay, roundout. Check the airspeed: 175. No sweat! Just leave the power on until roundout is completed. Now power off and touch it down. Squawk! Scrape! Horrors!! No landing gear. "Well, it's too late now. Might as well stopcock and slide it out. Yes,

the handle is still up, the horn is blowing and the light in the gear handle is ON."

How did it happen? Well just as you thought "gear" after the pitch-out, the tower said, "Turn your lights on bright." You flicked the switch. This action somehow filled the habit pattern which normally is satisfied when you place the gear handle DOWN. It doesn't matter that your lights were already on bright and you turned them to dim, or does it? Did your "conscious" say, "The lights are already on bright but the gear is UP," and did the "subconscious" say, "Rog," and tell the hand to move the light switch? Who knows?

We have an old phrase to describe cases like the above—habit pattern interference. It could also fall under the label of distraction. Regardless of the words, the act—or lack of an act—is the important thing. You've just read a case of lack of action—not putting the gear down. Here's the opposite side of the coin—action, but wrong action.

During a B-52 MITO the copilot inadvertently flipped the gear up lever and the aircraft headed for the side of the runway. The IP, on the jump seat, recognized what had happened and briskly moved to place the switch to gear down. Steering was once again available and the aircraft

was steered back to a straight track.

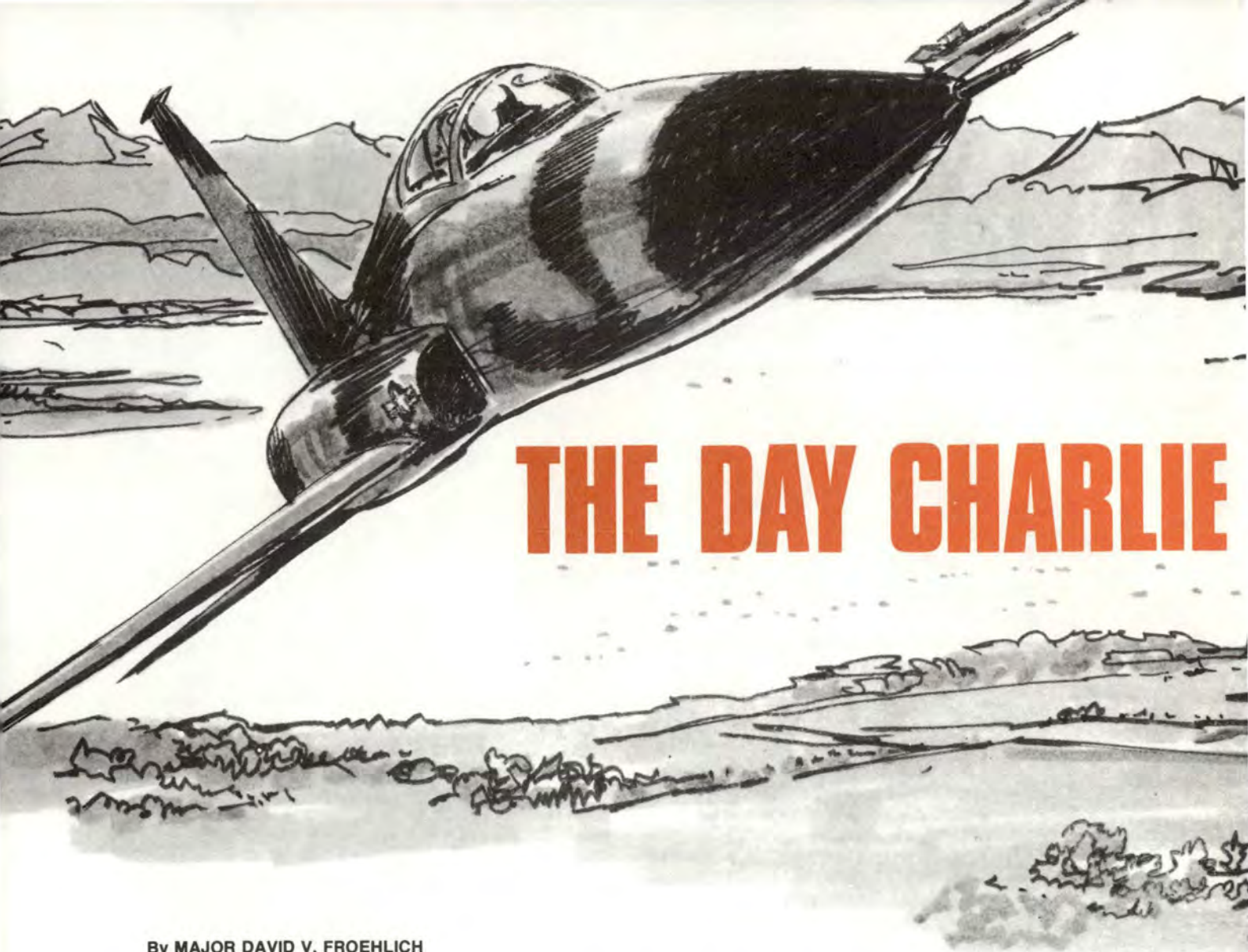
In this instance, both the co and the pilot in the left seat were attempting to reach another switch and the copilot, while looking outside, got the wrong switch.

Every single one of us, no doubt, occasionally has such a lapse, although not necessarily in our aircraft. Could be in your car, at your desk, while hunting, fishing, driving or just puttering in your garage. Sometimes the situation is forgiving; at other times not.

We have a lot of crutches in our aircraft to (1) prevent or (2) mitigate the effects of a wrong action even lack of an act—noise, lights, etc. They don't always do the job. So it's up to you, the crew—one or more—to be aware of what is required and not allow yourself to be distracted.

Easy to say? Right. Hard to always do? Right. Sorry, there isn't any easy answer. But we can reduce this problem to a minimum by knowing all there is to know about the mission, the equipment, and its proper use. In two words: Fly Smart! ■





# THE DAY CHARLIE

By MAJOR DAVID V. FROELICH  
Directorate of Aerospace Safety

■ *Author's Note: Charlie is a fictitious flyer. He is the guy who sat in the left seat, flew on my wing "up North," yelled at me from the back seat or hovered over me while I was pulled up on a cable. Charlie is the aviator that has the mental and physical ability and skill, but through some disregard of rules, limits, or flight discipline, he kills himself (and mayhaps others). We have had two previous episodes of the demise of "Charlie's" but the scenarios never seem to end. Those of us who fly, either have known or will know, a Charlie, before he dies.*

Charlie doesn't just strap on his Eagle jet—he becomes a part of it. After a couple of years, now, he has really become comfortable in the machine. Charlie paid his dues and now rides proud. He came out of UPT just at the end of the "conflict" and grabbed a Phantom. He worked at being good and was! He studied, sat in on extra briefings, took extra looks at films and asked a lot of dumb questions. In the beginning, he took a ration from the old heads at the watering hole, but soon the jibes turned to respect as Charlie gained the reputation of sharp eyes and good hands. As he approached the top of the heap, he was given the chance to go aggressor or Eagle. He chose the latter and began his climb all over

again. "He done good!"

It was to be a normal mission. As normal as one of those complex, very realistic and crowded, ingress/egress bad guys jump good guys scenarios could be. Charlie was as meticulous as ever. He studied and reviewed players, equipment, terrain, and all the parameters. His briefings and questions/comments left no confusion. The participants were skilled, briefed, experienced—the weather was cool and clear—and the machines all FMC. Nothing could go wrong . . . but it did.

The launch was smooth, and the players headed out to positions. Charlie's flight was tasked to protect bomb droppers throughout their ingress/egress route. Things were going along quietly until just prior



# DIED



to the target. A flash caught Charlie's eye about the same time that two told him they had company.

The twisting, turning, and groaning began as the aerial ballet developed. The Eagles were pretty much holding their own against tough F-5 aggressor folks, but Charlie found himself being pushed down lower and slower. He was working hard and calling up all the ideas that were stored in his mental computer. In an instant, Charlie saw daylight and pulled. He flat-plated the big beautiful, blue-grey Eagle and in the same instant thought "God, that guy's good, but he just over-committed an inch and now I can take him."

Unfortunately, in that same split instant there came a "KNOCK IT

OFF, KNOCK IT OFF" over the crowded UHF frequency. I think somewhere, deep down inside, Charlie heard. It was just that his whole being—mind, body and soul—were wrapped up in gaining that single, small advantage that means a victory. The radio call just didn't register! Charlie stayed with the fight.

Maybe the back-seater in the Phantom saw the Eagle or maybe not. Either way, it was probably too late. Charlie never saw or knew what happened! One second there were several beautiful machines seeking each other in the sky and the next instant two were welded into a single fireball and tumbling earthward. No ejection attempts—two aircraft lost and three fatalities.

Nobody ever pushed Charlie to be the best, or to win at *all* costs. Charlie pushed himself! It's been called press-it-is, mental-set, or the mission-completion syndrome. They are all as deadly as the bandit in a comfortable six o'clock.

To be victorious, one must have the desire, but to let that desire block out all else is to ask for disaster. All that remains in Charlie's story is for the dusty blue USAF sedan to pull up in front of his quarters. The grim and uncomfortable occupants will walk past two small rug-rats playing on the lawn on the way to see Charlie's wife. What a waste! ■



# Where I Did I Say Was?



By CDR V. M. VOGEL, MC  
Naval Safety Center

■ Another in a series of articles on vertigo and disorientation from the USN Approach.

**Flicker vertigo.** Flicker vertigo is usually caused by a flickering visual stimulus. Although this illusion is probably more common to you helo driver, the jet jocks and prop drivers also can be affected. How, you ask? Well, how about the spinning prop and an appropriate sun angle. This can result in a flickering light stimulus that can cause flicker vertigo. You jet jocks aren't immune either! How about when you're in the clouds and your strobes are reflecting off of them? (And you always wondered why you're asked to turn off the strobes in clouds!) Not only this, but flashing, anticollision lights can also illuminate the cockpit, either directly or by reflection from clouds or snow.

Okay, now that we know how the flicker gets there, how do we know when we've got flicker vertigo?!? Most aviators describe a feeling of nausea, dizziness, irritability and/or

distraction, along with feelings of uneasiness, nervousness, drowsiness, headache, or even severe pain. Occasionally, an aviator will report *true disorientation*, in which he feels as if he is turning in the direction opposite to that of the moving shadow. In a few, rare, severe cases, people have become unconscious or have suffered epileptic-like seizures (fits or convulsions).

Ah this sounds a little strange, doesn't it? It is caused by the frequency of photic (light) stimuli to the brain. A medical officer will frequently use a strobe light during an electroencephalographic (EEG) test to try to induce seizures in patients. (Remember your preflight physical?) The same mechanism is

present here. Unfortunately, and as usual with vertigo and disorientation problems, you will probably not realize what is happening to you. Although the possibility of your being affected by this form of vertigo is slight, the results understandably could be catastrophic!

The cure—easy, usually. Simply get away from the flickering light. Change course, turn off the strobe or anticollision lights, or change your field of vision. If you find you are suffering from flicker vertigo, and are in a dual-piloted aircraft, close your eyes and turn your head away, *briefly*. You needn't make a production of it!

**Circularvection and linearvection.** These are two illusions produced from a movement in your peripheral field of vision. This will give you a feeling of self-motion. If it is a false sense of rotating motion, it is called *circularvection*. You might experience this from the revolving reflection of your anticollision lights off clouds. It also can be produced on the straight-and-level, parallel



formation flight when aircraft are flying at different speeds.

If the sense of motion is linear, it is called *linearvection*. How many times have you stomped on your brakes at a stop light to keep from rolling backwards when the car next to you actually has crept forward? This illusion can be produced when two aircraft are ahead of you and are rapidly separating. You feel as if an aircraft is approaching you. This also occurs when your approach to a fixed object is misjudged, and you feel as if the object is actually coming towards you. This illusion probably explains some of the problems a few of you had when you first learned formation flying.

#### **Misplacement of horizon.**

Misplacement of the horizon can occur in several different scenarios. Lights normally provide you with critical information, e.g., horizon, attitude, runways, traffic patterns, position in formation, and type of aircraft. This illusion primarily involves a misinterpretation of the meaning of the lights you see or of the distance and appearance of the object at night as compared with its appearance in daylight. It is generally associated with night flying and certain other conditions. Examples:

- At night, approaching ground lights may be confused with stars, giving you a false horizon. Depending upon the lights' relative orientation in relation to the horizon and flight direction, it can give you the feeling that your aircraft is tilting. Some pilots have even reported feeling inverted! A few of you have been known to interpret the shoreline lights as the horizon and to maneuver your aircraft a little too close to the murky depths. Although this doesn't happen all that frequently, you can well imagine the consequences!

- When flying over a sloping cloud deck or sloping terrain, without visual reference to the

earth's surface, you may experience a visual form of the *leans*. This can be extremely annoying and may dangerously affect your flying efficiency. The tendency is to accept the sloping terrain/cloud deck as the horizon, ignore the attitude indicator, and align the aircraft with the perceived horizon.

- Ground lights can be confused with stars. This can result in rather bizarre aircraft attitudes in order to keep the "stars" above you! You also may misinterpret your approach to a star or fixed beacon as though you were following the tail lights of another aircraft in formation! Ever join up on a star?! Whenever you're flying in a sensory-deprived environment (few visual cues), your requirement for some point of fixation makes you susceptible to this illusion. You are more susceptible to these illusions if you're under stress. Your best defense against it is to *be aware* of the problem (which you are now) and to watch for it. Also, watch your instruments. A proper scan is of utmost importance!

#### **Another illusion and space**

**myopia.** Another illusion, with no specific name that we are aware of, occurs when you suddenly shift your attention from outside the cockpit to inside the cockpit (to the instruments). Although the eye's ability to accommodate is almost instantaneous, it may require up to 45 seconds for your *mind's eye* to become completely reoriented. Some serious problems understandably may develop during this time period, especially when you consider that this type of shift in attention is often the result of a developing problem with the aircraft! The reverse of this is space myopia, where your eyes remain focused to near vision (cockpit, wing, etc.) while you're scanning the sky for playmates. Solution: *Be aware* of the problem, and get on the instruments in the former case. (We're beginning to sound like a

parrot with a very limited vocabulary.) In the latter case, try to find some far-off, visual point of reference to focus on.

#### **Approach and landing problems.**

As we stated above, when we don't have all our normal visual cues, or they are not what we've become accustomed to, we can make errors of perception. We can overestimate distance in degraded atmospheric conditions, e.g., fog, rain, haze, or snow. If you are making a visual approach, you may feel that you are higher or farther from the runway than you actually are. Your approach may be high, and you may overshoot. On the other hand, if you've become used to flying in the "muck" and the atmospheric conditions are better than what you're accustomed to (e.g., clear, bright conditions at a high altitude airfield), you may feel things are a bit closer than they actually are.

As we explained above, darkness deprives you of a generous amount of your visual field, and you no longer have the various daytime visual cues to depend on. You then rely on what is called your *angular*



"I know this sounds flakey, Bub, but I've misplaced the horizon . . ."





## Where Did I Say I Was continued

land on flat runways, of course).

The same problem can exist when you approach a runway with dimensions that are different from those to which you're accustomed. An unusually wide runway will tend to cause you to underestimate distance, and an unusually narrow runway will tend to cause you to overestimate your distance from the threshold, leading to landing long or overshooting. To carry this just a bit further, the confusion can be even worse on those runways that preserve the expected length/width ratio, but are wider and longer or shorter and narrower than expected.

Last, but not least, local topography is important. An approach over generally featureless terrain ("black hole" approach, smooth sea, snow-covered ground, night conditions over water or dark terrain) can cause serious errors in your perception. Sloping terrain can give a false perception of height just as can sloping runways.

The big problem with these illusions during approach and landing is that you just don't have much time and altitude to correct for any misperceptions. The decision to shoot a missed approach must be immediate, if you're going to avoid a coveted place on the Safety Center's computer tapes! The illusions mentioned above usually don't occur one by one, but rather occur in various and sundry combinations, just to confuse you further. Your error will be one of judgment and inappropriate control. How to avoid this one? Be aware! Be alert! And remember, not all approaches can be saved. Swallow

your pride and go around. After all, we need all the landing practice we can get, don't we?

**Polaroid sunglasses.** Ever wonder why polaroid sunglasses are a "no-no" in the cockpit? Well, there are various reasons, most of which we won't go into. As far as disorientation is concerned, however, the Safety Center received a report which described a strange illusion of a pilot while wearing polaroid sunglasses under a clear visor. He was flying low, over the ocean, in the late afternoon. He looked at a ship underway in the distance, and the forward part of the hull appeared to be suspended over the bottom of the ocean! Because of the sun angle, and his polaroid sunglasses, there was no reflection from the water. The aviator was disturbed and described the feeling as "disconcerting, to say the least." He asked us whether any collided-with-the-water accidents could have been caused by this phenomenon. We don't know, as after someone has collided with the water, there isn't anyone left to talk to. We would probably never find the sunglasses, anyhow. What caused this illusion? Hard to say. It could be attributed to any number of factors, e.g., effect of the visor over the glasses, make of the lens, prism balance, light ray bend, etc. (We do know that certain windshields tend also to polarize light, especially near curves or angles. Certain combinations of orientation of polaroid glasses versus such a windshield might be expected to block light transmission and produce black splotches—which, in fact, happens.) We also know that polaroid glasses are designed to cut glare from the water's surface by polarizing the light rays. They are even advertised for use by fishermen to see the fish through the water! Solution? Simple! Don't wear polaroid sunglasses. Use only authorized, standard issue, (Air Force) sunglasses. ■

*subtend*, or the relative size of the runway and approach light pattern on the back of your eye (retina). This is more difficult if you are making a "black hole" approach (over water or unlighted terrain, for the uninitiated). Many pilots feel that they are higher than they actually are under these conditions and fly a low approach. You can also misjudge distance from the runway threshold (bright lights = underestimation of distance; low lights or poor atmospheric conditions = overestimation of distance).

The runway and surrounding terrain may cause you problems. You may tend to make a low approach and land short on a runway which slopes up from the threshold. Why? You overestimate your altitude and distance to touchdown. Conversely, you are more likely to make a high approach and land beyond the threshold if the runway slopes down. All this happens because your *mind's eye* tries to match up the image of the sloping runway with what it's become accustomed to on the more familiar flat runway using a 2½- to 3-degree glide slope (assuming you normally





## TACTICAL FORMATION Can Be Hazardous To Your Health

By BRIG GEN LELAND K. LUKENS  
Director of Aerospace Safety

■ We fly a lot of tactical formation. That's great for lookout. It allows good cross coverage and mutual support. It is vital in both combat and training—a Cessna 172 can be as effective as a SAM. But spread formation at low altitude can be very hazardous to your health.

Let's take a look at three stories, all of which involved low-level spread formation and had unhappy endings.

The first one is about the lead element of a 4-ship ingressing to a tactical range target. The wingman is on the left, spread 4,000 to 5,000 feet out. The leader has the task of taking the element around a mountain that is standing in the way. He begins a right-hand turn to go around the north side but changes his mind and reverses to go around the south side. The wingman has already committed himself by reacting to the right turn and is a little slow picking up the reversal. He is thrown to the outside, and

before he can get out of there, he bounces off a ridge line on the mountain. Since this is the luckiest day of his life, he is able to successfully eject before his machine hits the second time. Scratch one airplane.

The second story is about a 2-ship returning at low level from tactical range work. The wingman is on the right, spread 3,000 to 4,000 feet out. It comes time to climb from 600 feet or so to initial approach altitude. The leader makes a 3 G, climbing 60° tactical turn into the wingman. When the leader looks for his wingman, he finds him on the inside of the turn, nose low and very close to the ground. As the leader calls for a roll out, the wingman hits the ground. Scratch one airplane and two crewmembers.

A third story concerns a 2-ship on a local orientation and low-level mission. During the descent for low-level entry, the wingman on the right is told to go fighting wing.

Lead begins an aggressive right turn, and the wingman is observed crossing behind. Radio contact is lost, and there is a fireball at Lead's 6 o'clock. Scratch another airplane and two more crewmembers.

There are several things that are common to all of these true stories. They all occurred in the low-level environment. They all occurred during a turn. The wingman was the loser each time. Another interesting fact is that in all three cases the units were in a deployed status. In two of the three airplanes there were two crewmembers. All three mishaps were preventable.

Low-level tactical maneuvering is very demanding. Wingman consideration is an important part of our leadership, but the ultimate responsibility rests with the jock at the controls. Beware the ground; it's as deadly as the SAM or MIG. ■





CAPTAIN  
**Raymond F. Haile**



CAPTAIN  
**John F. Bridges**



CAPTAIN  
**John D. Hauck, Jr.**



STAFF SERGEANT  
**Joe N. Bolden**



TECHNICAL SERGEANT  
**Edward F. McConahy**

**30th Military Airlift Squadron  
McGuire Air Force Base, New Jersey**

■ On 8 February 1980 a C-141 departed McGuire AFB on a local training mission. Captain Haile, flight examiner, was in the right seat, and Captain Hauck was in the left seat for AC upgrade training. Staff Sergeant Bolden was at the flight engineer's panel. Captain Bridges and Technical Sergeant McConahy were also aboard as third pilot and scanner respectively. On the initial takeoff, as the aircraft reached approximately 110' AGL and 130 KCAS, it abruptly entered a 30 degree left bank. While the pilots fought to control the roll and gain altitude, the scanner reported that the left aileron appeared to be jammed almost full up. The crew was able to regain some control through the use of full right yoke, full right aileron trim, rudder and differential power and managed to climb the aircraft to 5,000' AGL. Even after the continued use of control inputs, the aircraft maintained a 10 degree left bank. A conference skyhook was established. For the next three hours various solutions were tried while the pilots took turns hand flying the aircraft. The

crew discovered that depowering or selecting tab operable on the left aileron only served to aggravate the problem. After these and other unsuccessful attempts to alleviate the problem, the crew climbed the aircraft to 10,000 feet and performed a controllability check with 60 degree flaps and gear down. In this configuration, they were finally able to level the wings and, in fact, were able to obtain a few degrees of right bank. After the successful controllability check, a decision was made to land at NAFEC, Atlantic City, NJ, due to the more favorable runway/wind direction. The approach was flown to 160 KCAS and was otherwise uneventful. Subsequent investigation by Warner Robins Air Logistics Center revealed that the jam was caused by a stainless steel bolt which lodged at the pivot point for the aileron tab drive push/pull rod. The quick thinking, rapid reaction, and outstanding crew coordination of Captain Haile and crew was instrumental in averting a serious aircraft accident. WELL DONE! ■





UNITED STATES AIR FORCE

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a hazardous situation  
and for a  
significant contribution  
to the  
United States Air Force  
Accident Prevention  
Program.*



FIRST LIEUTENANT

## **Michael V. Ely**

**96th Flying Training Squadron  
Williams Air Force Base, Arizona**

■ On 24 March 1980 Lieutenant Ely was administering a final contact check to a foreign student in a T-37. While maneuvering in the area, a violent explosion racked the aircraft, the cockpit filled with a dense, suffocating smoke, and the left engine fire warning light illuminated. Lieutenant Ely assumed aircraft control, completed procedures for smoke and fume elimination, and performed bold face steps for emergency engine shutdown. Lieutenant Ely guided his student through the Before Ejection checklist as he simultaneously began an emergency descent to the auxiliary field directly below them. During the spiraling descent, Lieutenant Ely coordinated with air traffic control and the auxiliary field for cleared airspace and crash response. While maneuvering for a single engine overhead pattern, he reviewed specific actions he and his student would accomplish during approach, landing and ground egress. Throughout the recovery, smoke continued to enter the cockpit, significantly reducing forward visibility. Upon touchdown, Lieutenant Ely applied maximum braking techniques, stopped straight ahead and egressed on the runway. As they exited the cockpit, flames erupted from behind the student's seat. The fire was extinguished before significant damage occurred due to very rapid crash equipment response. The elapsed time from the explosion to the fire being extinguished was approximately three minutes because of Lieutenant Ely's quick action, close proximity to the auxiliary field, and the rapid crash response. Maintenance investigation revealed a sequence of multiple system failures which probably produced the emergency. It is considered highly probable that an existing bleed air leak ignited wiring insulation, which, in turn, ignited an existing but minor hydraulic leak, resulting in the explosion. The force of the explosion probably caused major oil loss with subsequent oil fire and smoke in the cockpit. There was less than a pint of oil remaining in the system. Lieutenant Ely's superior airmanship and thorough knowledge of aircraft systems probably prevented the loss of a valuable aircraft and crew. WELL DONE! ■



The venerable B-52 is, after twenty-five years of service, still carrying a large burden of our strategic defense posture. This durable yet versatile workhorse has a distinguished record whose end is not yet in sight.

