FAA

general aviation NEWS

JANUARY — FEBRUARY 1987

A DOT / FAA FLIGHT STANDARDS SAFETY PUBLICATION

Winter Is... 3
Sensory Illusions 4
Decision Making 6
West Out Of Cheyenne 8
Improvising For Survival 10
Fear Of Not Flying 12
Famous Flyers: Beryl Markham 13

U.S. Department of Transportation

Federal Aviation Administration

FAA GENERAL AVIATION NEWS

JANUARY/FEBRUARY 1987
Volume 26, Number 1

Elizabeth Hanford Dole, *Secretary of Transportation*
Donald D. Engen, *Administrator, FAA*
Anthony J. Broderick, *Assoc. Admin., Aviation Standards*
John S. Kern, *Director, Flight Standards*
Carol S. Rayburn, *Manager, General Aviation and Commercial Division*
Gary D. Koch, Sr., *Manager,* Accident Prevention Program Branch
David Gelfan, *Editor*
P.A. Duncan, Louise Oertly, *Associate Editors*

FAA GENERAL AVIATION NEWS is published by Flight Standards' Accident Prevention Program Branch, AFS-810, Federal Aviation Administration, Department of Transportation, Washington, D.C. 20591, in the interest of flight safety. The magazine is designed to promote safety in the air by calling the attention of general aviation airmen to current technical, regulatory and procedural matters affecting the safe operation of aircraft. Use of funds for printing FAA GENERAL AVIATION NEWS was approved by the Office of Management and Budget through June 30, 1987. All printed materials contained herein are advisory or informational in nature and should not be construed as having regulatory effect. The FAA does not officially endorse any goods, services, materials or products of manufacturers that may be mentioned. **Certain details of accidents described herein are altered to protect the privacy of those involved.**

SUBSCRIPTION SERVICES

FAA GENERAL AVIATION NEWS is sold on subscription by the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Use the self-mailer form in the centerfold of this magazine to subscribe. Prices are subject to change without prior notice.

Please anticipate one or two months for processing orders. Subscriptions are for one year only, and only one renewal notice is sent. Act promptly to avoid lapse of subscription.

Subscription problems. Contact the Service Section, SSOS, GPO, Washington, D.C. 20402.

Change of subscriber's address. Send old label and new address to MAIL LIST SECTION, GPO, Washington, D.C. 20402.

BRIEFS

LOWERING THE LEAD. Chevron, a major supplier of Avgas, plans to cease production of 80 and 100 conventionally leaded octane Avgas for it's 500 dealers in the western United States. Use of 100LL is becoming the general rule in piston aircraft, but aircraft owners and pilots should be cautious about flying on alternate fuels without direct approval of their engine manufacturers. Some changes in equipment and/or maintenance procedures may be required.

SILENT VOICES. Emergency Locator Transponders should be checked out before embarking on long flights over sparsely settled terrain in winter. Have a mechanic check on the battery's life limit and the functional ability of the equipment. Some ELT's have been found unresponsive in the "armed" mode even though they responded fine on the manual switch. Batteries may be drained prematurely as a result of poorly soldered connections or prolonged exposure to damp air. Older equipment may still be powered with lithium batteries, which have been declared unsafe and are no longer approved.

SKIWARE! Pilots flying up to South Lake Tahoe, CA airport for skiing are cautioned to be be alert at all times for sporadic turbulence in the basin, including rotor activity (up and down drafts) near the runways. All of the terrain south of the airport is higher than the airport elevation (6,200 feet) and low lying clouds are frequent in winter. Care should also be exercised to avoid over-enriching fuel mixtures on final at this altitude. Engine failure and/or sparkplug fouling could be the consequences.

HELICOPTER REGULATIONS CHANGE. FAR Part 135 - Air Taxi Operations and Commercial Operators - will now regulate helicopter operations previously conducted under Part 127, which has been suspended. Applicants preparing for the Airline Transport Pilot Helicopter written test may disregard study questions based upon Part 127.

HOT FEET. Wiring located beneath the cockpit floor in the area of the right seat rudder pedals overheated and caught fire - fortunately during the light twin's ground roll. The takeoff was aborted and the fire extinguished after burning only a section of carpet, but it could have been big trouble had it occurred in flight. The culprit was a 15 amp fuse, installed in the cabin heater where a five amp fuse was required. A few uncalled for amps in the wrong place can be deadly.

When you start discussing winter flying you could talk forever on a single subject—carburetor icing, for example—at the expense of other equally important winter subjects. If you try to cover all the subjects and problems of wintertime, much of what you say is not going to be remembered. *So what to do?*

Some time ago, I started listing all the winter related problems that I, a pilot, mechanic, and inspector, had personally experienced when flying in the winter, along with experiences other pilots have shared with me. As the list grew, I put it in order and called it, "Winter is."

I have since winnowed the list down to 32 winter flying truisms. I picked 32 because 32° is the freezing temperature of water, and I had to pick some limiting number or the list would run off the wall. If the items I have included strike home, feel free to tack up my list on the bulletin board in your flight school, hangar wall, or even the airport restroom. Perhaps in some small way it will help reduce the winter accident rate.

If you have some favorite truism of your own you wish to share with others, you are invited to send them to us. Perhaps next year we will publish an even longer list going down to 32° below zero. Mail your offer to: Editor, FAA GENERAL AVIATION NEWS; AFS-810; 800 Independence Avenue, SW; Washington, DC 20591. *Happy Flying!* ***Bill O'Brien***

WINTER IS...

A PILOT'S WINTER LAUNDRY LIST

1. Winter is: A cold wind blowing up one's trouser leg and out the other as you wait for the fuel truck.
2. Winter is: Tie down ropes with the knots frozen so stiff that a whole troop of Eagle Scouts with Bunsen burners couldn't untie them.
3. Winter is: Running back to your warm car so you can remove your bare stuck fingers from the cold metal fuel cap.
4. Winter is: A dead battery, because you haven't serviced it since last winter, when it also died.
5. Winter is: Hand propping a stubborn engine while standing on ice believing you can get out of the way in time (good luck!).
6. Winter is: Giving your dead aircraft battery a 30 minute 35 amp quick charge at the local gas station, so you can watch the battery cell plates arc-weld themselves together.
7. Winter is: Fuel tank drains that won't drain, because there's a ball of ice in the fuel tank that's waiting to thaw and shut down your engine.
8. Winter is: Ice crystals in the fuel sampler glass, because you didn't top the tanks after the last time you flew.
9. Winter is: Wing tips on a high wing aircraft that touch the ground because of your failure to remove the heavy snow load.
10. Winter is: Blowing snow that fills and freezes in every nook and cranny in your airplane after you failed to close the storm window.
11. Winter is: Fast preflights with predictably short air time.
12. Winter is: Preheating the airplane with your automobile exhaust gases in January and replacing a lot of corroded, expensive parts in June.
13. Winter is: Preheating your engine and not the cabin, so that your instruments and avionics work slower and wear out faster.
14. Winter is: An engine fire caused by too much prime and too little patience.
15. Winter is: Watching your $50,000 airplane burn, because you thought a 10 dollar fire extinguisher was too expensive.
16. Winter is: Destroying the engine bearings by running a cold engine at high rpm to heat it up quickly.
17. Winter is: An imbalanced propeller due to ice in the spinner, because you did not position the propeller so the rain water could drain out.
18. Winter is: Brake lining frozen to the brake disks, because you left the parking brake on overnight.
19. Winter is: No oil pressure or temperature reading, because you did not have the winterization kit installed on the airplane.
20. Winter is: Remembering to change over to the recommended winter-weight oil when you can't move the prop.
21. Winter is: Taxiing out for takeoff when you notice your pitot tube is on fire. You forgot to take the pitot tube cover off, but remembered to turn the pitot heat on.
22. Winter is: That long, sinking feeling right after takeoff, because you didn't remove all the frost off the wing.
23. Winter is: Nervously flight-checking your defrosters, cabin and carburetor heat and ELT as you need them instead of *before* you need them.
24. Winter is: Lost in a snow storm and realizing you left the winter survival gear on the department store shelf.
25. Winter is: Not exercising your engine and flight controls during a long, cold flight, so they freeze in the last position you set them.
26. Winter is: A silent ride down to snow-covered ground, because you used carburetor heat after you got ice instead of preventing it beforehand.
27. Winter is: Making a premature landing, because oil from a blown front engine nose seal is covering your windshield. This departure from your flight plan could have been avoided if you had made sure the engine oil breather pipe was clear of snow and ice.
28. Winter is: Learning "open cockpit" techniques, because you forgot to scan for late winter migratory birds.
29. Winter is: Not believing that fixed gear wheel parts can carry more ice and snow weight than you can counter with elevator control, until you make a nose down landing.
30. Winter is: Experiencing an exhaust valve failure while on a flying vacation to sunny Florida, because you forgot to remove winterization and oil cooler plates. The super heated engine oil turned the valve into a crispy critter.
31. Winter is: Making the expensive discovery that your airplane won't stop in the same distance on a snow covered runway as it will when the runway is dry.
32. Winter is: Not attending a local FAA Accident Prevention meeting, because you've heard it all before. ■

SENSORY ILLUSIONS

You had been flying up the valley at about 2,000 feet AGL, following the highway without any difficulty and staying at least 1,000 feet below the overcast. You were able to keep landmarks in sight all the way, except during the occasional appearance of cumulous clouds; which you dodged around without any trouble. But the valley is narrowing and you've noticed some clouds ahead that seem to lie below your altitude, so you have decided it's time to turn back. You roll the aircraft into a medium bank left turn, plenty of turning room still, but as you pass through 90° you suddenly discover that you are turning into a large cloud that must have been behind the aircraft. No sweat—you're not yet instrument rated but you've flown enough with a hood on to know you can handle the aircraft. Not quite legal, but the 180 should take you back into the clear.

But suddenly it seems as though your airspeed has accelerated in a frightening manner—or is it the movement of the cloud that makes it seem so? At any rate you should be out of the cloud any moment now.

What's wrong? There seems to be no end to the cloud. Are you still in a turn? The aircraft doesn't feel like it's turning. If you could only catch a glimpse of the ground, or a piece of sky . . . Must be turning, the needle in the turn-and-bank indicator is still well over to the left.

But look, that ball isn't in the center now—aircraft must be slipping . . . or is it skidding? Must try to stay calm. Now let's see which way is that ball indicating—left or right rudder? Hey—look at the airspeed! Must have let the nose drop a bit. Ease back on the wheel . . . that's better. Or is it? Pressing against the seat—why is the "G" force increasing like that? And what's happening to the turn needle now . . . it's hard over against the stop! That turn must be tightening. Quick, push the wheel forward before the aircraft stalls. No, not that much, now it's diving again.

My God, the engine's screaming, altimeter's unwinding like mad. Don't panic now, don't panic, do something . . .

Normal sensation of gravity while at rest or in straight and level flight at constant speed.

During acceleration inertial force acting at right angles to gravitational force produces resultant force.

Pilot misinterprets resultant force as that of gravity, obtaining sensation of pitch-up.

If we had a composite transcript of the thoughts racing through the minds of pilots who become trapped in weather beyond their capacity, it would read something like the preceding lines. One common thread that runs through the many accidents with this type of history is the pilot's assumption that since they have never had any difficulty using instruments in VMC weather or under a hood, there should be no problem doing so during a temporary passage through a cloud. After all, we are talking about instruments that all pilots use every time they fly—altimeter, vertical speed indicator, airspeed, turn and bank, etc. What is the problem with a brief loss of visual reference, as a result of clouds, darkness or whatever, as long as your basic manipulative ability is sound and you have confidence in yourself?

The problem is that no one who has never flown without any visual reference support at all has any idea how strongly one can be affected by the sensory illusions produced in these circumstances. The "Barony Chair" or the "Vertigon" is used in the FAA's Accident Prevention Program to give pilots a foretaste of how easily disorientation can set in when bodily impressions oppose intelligence, but even that experience is sometimes disassociated from what happens when you fly your own or a familiar airplane.

Sensory illusions occur because flight is an unnatural environment for man. Our senses are simply not capable of enabling us to interpret correctly certain kinds of bodily movements and positions in three dimensions without visual reference. In addition to eyesight, we have various organs which help us physically orient ourselves to the plane of the earth and to movement, but vision is the predominant and coordinating sense we rely on.

Oldtime pilots spoke of flying "by the seat of their pants," which refers to the sense of being pushed down in the seat during a climbing maneuver when a force greater than one "G" is exerted, or being pressed against the side of the cockpit during an uncoordinated (slipping or skidding) turn. These bodily sensations provide accurate clues as to what is going on in some circumstances but not in others. It is possible, for example, to enter gradually into a climb or descent without a noticeable change in pressure against the seat. In fact, theoretically it is possible in some airplanes to execute a loop without pulling negative "G"s, so that without visual reference there would be a constant sense of "down" being toward the floorboards, even though you may be upside down. Similarly, anyone sitting in an airplane that is making a fully coordinated turn, no matter how steep, will have no sensation of being "tilted" in the air—unless the horizon is visible.

"Sensory illusions occur because flight is an unnatural environment for man."

The notion that we human beings have some kind of sixth sense that can always tell us which way is up or down, regardless of visibility, is an error that may lead to fatal consequences. We have a generalized sensitivity to gravity throughout our body and a specialized orientation mechanism located within the inner ear (the vestibular apparatus), but these sense organs are undependable once we leave the earth.

The vestibular apparatus is made up of two kinds of organs: the three semi-circular canals, which sense direction and movement; and a small sac, for maintaining balance. The sac contains a membrane which senses the direction of gravitation force, and thereby enables us to stand erect (even in the dark). The canals contain a fluid and small sensory hairs connected to the nervous system. The fluid reacts to movements of the head, or angular acceleration, stimulating the hairs so that a nerve impulse conveying an appropriate impression of movement is transmitted to the brain.

The vestibular sac is sensitive to the pull of gravity, or linear acceleration, enough so that when we are standing still on the ground we can sense whether the ground is level or sloping in any direction. In the air, in a coordinated turn centrifugal force displaces the gravitational pull laterally and therefore the sac gives us no clue as to how much we may be tilted in reference to the ground. Similarly, a gradual change in any direction of movement may not be strong enough to activate the fluid in the semicircular canals, so that we may not realize that acceleration or banking is taking place.

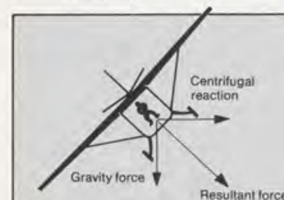
To be sure, we have attitude instruments which report the orientation of the aircraft at all times, but non-instrument rated pilots have trouble accepting instrument information which is not reinforced by sensual clues—lack of currency may lead to the same problem with instrument rated pilots. They suspect an instrument malfunction—and instead of crosschecking instruments they waste time searching for visual clues outside of the cockpit. By the time they realize what is actually going on, the aircraft may be close to the ground in a "graveyard spiral" or exceeding the structural limitations of the aircraft.

Instrument training consists, in large part, of overcoming our dependence on sensory impressions and teaching us to rely on the flight instruments even when these are contradicted by our feelings. A relatively long training period is required for the instrument rating because it is not simply a question of understanding how to react—we must change habitual, lifelong patterns of behavior under given circumstances. Pilots who believe they are flying "on instruments" in VMC conditions are doing little more than supplementing their visual references with the instrument interpretations.

..."a sudden loss of visibility is similar to a sudden loss of eyesight."

For the unqualified pilot a sudden loss of visibility is similar to a sudden loss of eyesight. The familiar world we are comfortably related to by means of our vision disappears, and is replaced by vague and unrelated forms. Emotional pressures surge, and unless we are properly disciplined we may clutch at shadows instead of directing our attention to the instruments. Intelligence is not a factor here. Documented studies, such as those undertaken by the University of Illinois in 1959, have all shown that non-instrument rated pilots are unable to control an aircraft when deprived of visual reference. Some of the most frequent victims of weather-related disorientation are doctors, lawyers, and other professionals with distinguished intellectual accomplishments.

There is no such thing as "knowing how to fly on instruments." You are either formally trained and current, or you are unqualified. ■



During a turn centrifugal reaction, acting at right angles to that of gravity, produces resultant force.

Because resultant force acts in same direction as gravity in straight and level flight, pilot feels aircraft is still in this attitude.

THE ABC's OF DECISION MAKING

A Superior pilot is one who stays out of trouble by using Superior judgement to avoid situations which might require the use of Superior skill.

Aviation Safety Programs
Transport Canada

From the moment we awaken in the morning we start exercising our judgement by making decisions. We continue to do so for the remainder of the day, whether we spend the time quietly at home, busily at work, or in some active manner like flying.

Our decisions are usually in full accordance with our training, experience and requirements or desires—in other words, we normally make good decisions. But occasionally we all make decisions which in hindsight seem totally inappropriate or uncharacteristic—a really poor decision. In flying this could involve deciding to fly in conditions of poor health, poor weather, faulty equipment, etc.—any of which could have very serious consequences. If we have an accident and survive we may wonder how or why we were willing to take unnecessary risks with human lives at stake, including our own.

Why do we make such poor decisions—specifically as regards flying?

Since the basic principles and aerodynamics of flight were worked out long ago, the safest maneuvers developed and a standard for weather minimums well established, it would seem that poor flight decisions should become a thing of the past—but this is not so. The files of the National Transportation Safety Board continue to record numerous cases of what appear to be the result of bad decisions. *Why on earth would any reasonable pilot expose himself to unnecessary risks in the air?* The question has been debated for decades.

Enter Dr. Freud and the psychology of the unconscious. Recent psychological studies of pilot judgement and decision making, including some funded by FAA, have led to the conclusion that even the most rational of pilots have certain underlying irrational attitudes which, when triggered by an event, a thought, a gesture—you name it—result in a predictably risky decision. Consider the following situation:

You arrive at the airport late for some scheduled air work in a rental aircraft and you notice, as you complete the preflight check, that the windshield is pretty dirty. You decide not to lose time by stopping to clean it, and you do not have any problems during the flight, but on landing against the setting sun you have trouble lining up with the runway and you bounce the airplane in a little hard. Assume the local accident prevention counselor comes along and sits down with you for a cup of coffee later to discuss the incident. He suggests a variety of thoughts that might occur to a pilot who notices a dirty windscreen during preflight:

(A) A lineman or someone employed by the fixed base operator should have cleaned the windshield beforehand.

(B) Your flight instructor never let you take off without first cleaning the windshield, dirty or not.

(C) You wanted to get going—now.

(D) You feel that your vision is unusually sharp, so that you could see through any obscuration.

(E) You have flown with a dirty windshield dozen of times without any serious problems.

Supposing then the counselor asked you which of these explanations would come closest to the thoughts running through your mind when you made your decision. (There is no right or wrong selection, but if you answer honestly you may get some insight into an underlying tendency you have to react somewhat irrationally to certain situations.)

If you select answer (A), chances are you tend to overreact when people around you do not do their job as expected, or fail to provide you with the service you anticipate. This can be irritating all right, but it does not change the fact that flying with obscured windows can be dangerous. If an accident occurs, the FBO may come in for some of the blame, but the primary responsibility goes to the pilot who elected to take off despite knowing about the unsafe condition. The underlying attitude that can get you into trouble here may be called **"Resignation"**—a tendency to accept hazardous conditions initiated by others, rather than to rectify the problem yourself.

Response (B) indicates an **"Anti-authority"** attitude. Some instructors, with the best of intentions, unknowingly awaken hostilities in certain students which may go back to feelings sensitized by overly dominating parents or teachers. They tend to react negatively to orders, rules, prohibitions, etc., even when the consequences are clearly not in their best interests.

"FORTUNATELY, I HAVE EYES LIKE AN EAGLE"

Response (C)—**"Impulsiveness"**. You did not want to bother with the windshield because you wanted to get going—now. *Tempus fugit* (time flies), right? Decisions made on impulse are apt to be risky, because you elect to bypass the entire thought process. This type of behavior is fine in certain kinds of activity, notably in the field of art, sports, entertainment, or even human relations, but it is dangerous in the cockpit. Flying is not a natural activity for people, but a learned one, depending upon the use of special skills and knowledge. Some pilots like to go flying in order to get away from frustrating, thought-requiring problems on earth, and that is okay too, but it is not the same thing as sprouting wings and tailfeathers: you still have to fly like a human being, to survive.

Response (D)—the **"Macho"** attitude. "Sure, a dirty windshield might bother some pilots but not me, with my eagle eyes." Some people like to bolster their self esteem by assuming they are extraordinarily gifted, sensually and intellectually. That may even be true to some extent but it will not apply to everything you do; you are not a bionic man, or woman, except in your imagination. A compulsive need to feel superior to ordinary people usually masks all kinds of inferiority feelings.

Response (E)—the attitude of personal **"Invulnerability"**. "Accidents happen to other people—I'm special." You have had a whole bunch of close calls in your flying career and never bent metal, and never expect to, right?

People with an invulnerability attitude seem to believe they have some kind of supernatural protection, like a guardian angel who will always ward off evil. *Bad things just do not happen to me—they always happen to the other guy.* Pilots who believe this are unwilling, for one reason or another, to rely on clear thinking, experience, and ability—even though they may not be lacking in any of these capacities. They may undervalue their own competence.

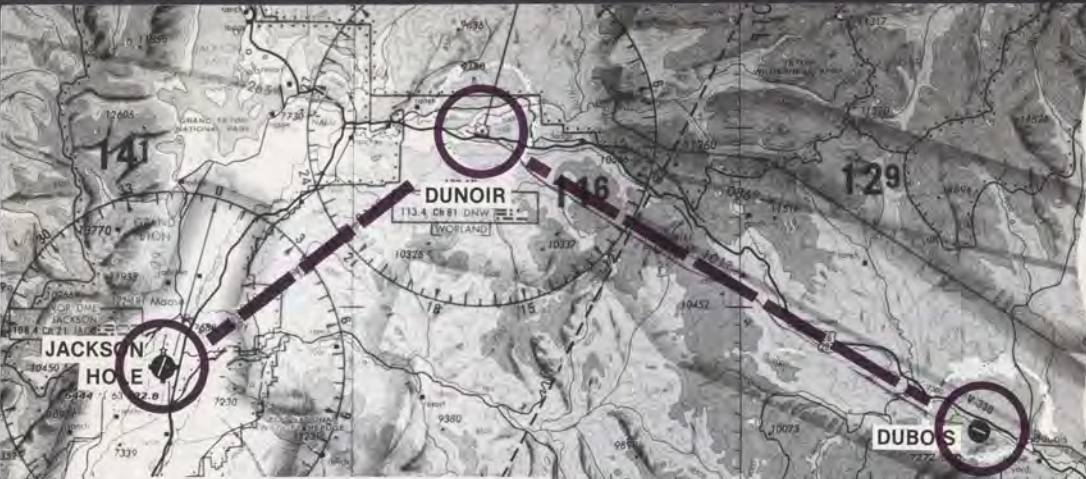
Probably most pilots have a tinge, at least, of one or more of these unconscious attitudes with regard to flying. And that is not all bad—in fact, to some degree these attitudes are essential to good flying. Resignation can be bad if it leads to flying an aircraft with faulty radios, for example just because that is the condition in which it was turned over to you; but resigning yourself to postpone a flight or accept a delay, when there is no real urgency involved, can be very healthy. An innate dislike for authority could be harmful, but occasionally you as the pilot in the cockpit may be in a better position to decide on the correct action than the individual designated to give you advice or instruction. It is important that you be willing to accept that responsibility—and to justify it subsequently. Habitual "knee-jerk" reactions are clearly out of place, but in an emergency, when immediate action must be taken to avoid a collision with another aircraft or the ground, you must be able to react instantaneously. A constant macho overconfidence can lead to trouble, but no one can fly an aircraft well or enjoyably without a certain confidence in his skill and abilities. We do not have to believe that we are invulnerable aloft, but we must be able to believe in the protective value of established flight standards.

What it all seems to come down to is whether the inner attitude is flexible enough to adjust appropriately, or whether it is set in concrete. It is hard to know this about our own inner attitudes unless we can bring them up to the level of consciousness. One way we can sometimes do this is by verbalizing the thoughts that run through our minds, time permitting, so that we become aware of how irrational they are. Like, "Those lazy so and so's didn't even bother to clean my windshield . . . probably didn't think I was important enough . . . could do it myself. Well, I'll show them . . ." *Show them what? How little you value your own life . . . taking off with dirt-smeared windows?*

Or, "What do they mean I can't fly the airplane 'cause it's a week out of annual? Do they know more about my own airplane than I do? Don't I know the rpm does not turn up as much as it should, the engine runs a little rough in slow cruise, the rudder trim binds occasionally . . . why would I want to fly a plane in that condition?"

Hazardous attitudes, when examined in depth, usually turn out to be pretty ridiculous. If you find yourself smiling at your own arguments, you are not likely to do anything silly. ■

WEST OUT OF CHEYENNE



"Continued flight into adverse weather conditions" is still one of the all too frequent "probable causes" of aircraft accidents, especially in winter. The victims are usually non-instrument rated pilots in small airplanes—but not always. Accidents of this kind may involve thoroughly experienced airmen as well as beginners, instrument rated pilots as well as students. Even airline pilots are not totally immune to the universal tendency to complete a flight as scheduled, in spite of dangerous weather conditions.

We call this kind of behavior "Get-home-itis," but the name doesn't really tell us much about the disease, or how we can ward it off. Is there any way we can learn to balance, objectively, the advantages to be gained by carrying out a flight under adverse meteorological conditions against the potential risks of ending up as another accident statistic?

In the view of some psychologists, the heart of the problem is that the decision to press on, in the face of unwarranted risks, is made subconsciously, not consciously. The ability to carry out a flight plan, once it has been worked out in detail, can become identified with an individual's sense of competence—so that he or she cannot abandon it, or even seriously modify it, without experiencing a sense of personal loss. That could explain why perfectly intelligent, experienced pilots may, on occasion, ignore ominous weather updates, PIREP's, or visibly threatening storm clouds. They are on a kind of personal autopilot which is responding only to the original flight plan inputs.

This kind of injurious single-mindedness may be avoided if, in the course of flight planning, the pilot takes the trouble to identify a series of checkpoints along the flight path, where a re-evaluation of the weather situation is to be made and consideration given to the alternatives available at that point.

All instrument-rated pilots are aware of the requirement to identify an alternate destination airport on their IFR flight plan, when poor visibility and ceilings are present or forecast. For many VFR flights, when the weather is marginal or the terrain rugged and isolated, the same principle can help you avoid continuing on needlessly in the face of unsafe weather. You can program yourself against the sense of being locked in by taking the time, when preparing any flight plan, to establish several evaluation points en route where you will look closely at the weather ahead, get a radio update, and possibly consider one of the options currently available to you. There are at least four potentially good options:

- Turning back
- Holding briefly in the area
- Continuing along an alternate course
- Landing at the nearest airport

Several of these options should be open if your checkpoint was carefully chosen, as regards terrain and access to radio contacts (VOR sites usually have FSS-remoted transceivers, which overcome terrain obstacles). If you wait until you actually run into trouble before you start thinking about a way out, you may find yourself with no options left. Weather options are best worked out on the ground.

Supposing, for example, you decided to make a flight from Cheyenne in southeastern Wyoming to Jackson, in the northwestern corner of the state, for a post-New Year's skiing holiday. The aircraft will be a four place Beech *Musketeer*, with all seats occupied by members of your family. The shortest route, using the airways via Laramie, Rawlins, Rock Springs and Big Piney, is about 435 statute miles, which should take about six hours including a refueling/lunch stop at Rock Springs. With a scheduled 8:00 a.m. departure the flight should be completed in daylight—and in VFR weather all the way, according to the weather forecast of the night before. A cold, dry polar air mass is dominating the area, with no precipitation in view.

Nevertheless this is not a trip that should be undertaken without careful planning. The flight path will take you over the continental divide formed by the northern Rockies, in the vicinity of peaks ranging from 10,000 to 14,000 feet; and high mountains are known to create their own local weather systems. Given the limitations of your certificate (private pilot, VFR only) and your airplane's service ceiling, the heavy snow mantel on the ground and the subfreezing temperatures, the last thing you want is to be trapped en route by unexpected weather problems.

So you take the time, in advance, to set up a series of checkpoints where you will be able to get a weather update in flight and where, if necessary, you will have several options available if it seems apparent you cannot continue the flight as planned safely.

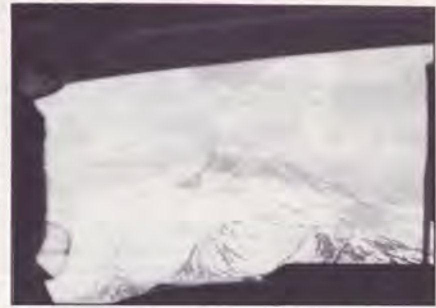
For the flight to Jackson you might establish Laramie as your first en route checkpoint. Laramie is less than an hour's flight from Cheyenne, but it lies at the threshold of the formidable Medicine Bow Mountains, where the airway would have to be flown at an altitude of at least 12,500 feet—higher if there were any early morning low clouds over the mountains—and that might give you a problem. So it would be reassuring to get the latest local weather observations and PIREPS if available.

If a cloud ceiling is reported at or below the level you intended to fly, one of your options would be to navigate visually over the dual lane interstate highway to Rawlins. This would add about 20 to 30 miles to the flight, but, as you had learned from your preflight study, it would allow you to fly well below 10,000 feet.

From Rawlins on to Rock Springs you would have a similar option, with the highway or the railroad available for pilotage by visual reference. Rock Springs would be another likely checkpoint before entering the high country of western Wyoming. Big Piney Airport, about 75 miles southeast of Jackson, might be your final checkpoint for picking up information relayed by pilots flying out of the Jackson basin.

If, when you made your first en route weather check at Laramie, the chances of maintaining VFR conditions along your original flight path had appeared slim, you could have opted for the northern route to Jackson, via Medicine Bow or Casper, and on westward to the Dunoir VOR, which lies just northeast of Jackson Hole. Again, this is a somewhat longer route, which lies in the vicinity of even higher mountains (the Wind River range has peaks over 14,000 feet, with extremely rugged, primitive terrain.) The highway to Dunoir roughly parallels the airway but it rises to an elevation of 9,662 feet at Tagwotee Pass, and if the mountain tops are obscure with cloud cover or low ceilings, VFR flight will be impossible. Strategically located weather checkpoints would give you a definite safety edge. For example, Dubois, adjacent to the highway, is the only airport for nearly 100 miles within the final segment of this route, and hence a good last checkpoint before committing yourself to reaching Jackson via Dunoir. If the weather looks at all doubtful, you might want to take the time to land at Dubois and talk with local pilots about the route ahead. If it is getting late in the day, you might consider remaining overnight, and starting out fresh in the morning.

There are a lot of "if's" in these scenarios, admittedly, and at least nine out of ten times the flight could probably be completed as originally planned with no sweat. But what about the tenth time, or the one hundred and tenth time, whenever that day comes that you run out of luck, as well as sky and visibility . . . ? Working out the data for weather checkpoints in advance, and making good decisions at each, might add an extra half hour to flight planning time, but it could add years to your life. ■



Over elevated terrain, keep a wary eye on the horizon.

IMPROVISING ·FOR SURVIVAL·

The importance of carrying cold weather survival gear on board the aircraft in winter is well known, and many concerned pilots have taken survival courses in order to learn how to use the equipment effectively. But the one piece of equipment many of us have very little practice in using is not to be found in a kit or gear bag; it is located inside our head and it is called a *capacity for improvisation.*

Many anthropologists believe the ability to improvise, which is linked to human imagination, is what has enabled human beings to survive, thrive and multiply in spite of the hundreds of natural calamities the earth has been subjected to over the course of history. In modern times, when convenience goods and convenience stores are the order of the day, that innate ability may have grown rusty in some of us, accustomed as we are to living in a world of mechanical gadgetry.

It may be a good idea to exercise this skill occasionally in order to be reminded that it is still in good working order. You never can tell when you may need it. Winter survival problems, for example, are not limited to airmen on extended cross-country flights over sparsely settled areas. Downed pilots have been stranded in snowy woods only a few miles from a highway or town; have become disoriented, frostbitten and even died because they were unable to adapt to the situation successfully. The secret to surviving, once you have gone down, is never to think about the items you should have brought along, but to consider, confidently, what can be done with what is at hand.

For example, one instrument for survival which is commonly overlooked by persons who flounder around in circles trying to find a nearby road or town is the universal wristwatch. A watch can act as a pretty good substitute compass, as long as you have some indication of where the sun is. If the sky is overcast you can still determine where the sun is as long as you can see some semblance of your shadow on the ground, or snow. If you point the hour hand at the position of the sun, a line halfway between that hour hand and the twelve o'clock indicator will point approximately north/south. How do you determine which is which? In the morning, if the sun is on your right side as you sight along this line, you will be facing north; the converse is true, of course, in the afternoon.

Can't be done with a digital watch? Of course it can. Just draw a clockface on the ground or snow, with the hour hand's position indicated by your digital readout and pointing toward the sun. Works even better than a watch face, if you make a large drawing.

Your watch crystal, incidentally, will serve surprisingly well as a reflecting device for signalling to aircraft, even on partially overcast days.

Supposing you are not close to a settlement and you elect to stay by the aircraft rather than travel. Night is fast approaching, the temperature is plunging toward zero and your matches are wet or non-existent: what can you use to make a quick fire? Would you believe, a flashlight? There is usually one in the glove compartment. Look also around the cabin for stray pieces of steel wool or other fine wire, which you will need to short-circuit the batteries. Unscrew and remove the reflector assembly, twist the steel wool into a U-shaped strand, and place the two ends of the U against the two metal tabs in the flashlight tube. Turn on the switch and in a few seconds you should have a glowing tiny ember between the tabs. Nurture it with some dry supportive tinder, such as cigarette tobacco, blow on it gently and you have taken the first step toward a crackling fire.

As a matter of fact, if your aircraft battery has survived the forced landing and you have a cigarette lighter on the panel in working order, you need look no farther for a source of ignition. If your panel does not have a lighter you can jump a spark across the battery terminals through a clump of steel wool and turn it into a glowing mass.

If the battery is dead, or you want to save it for signalling with lights or the radio, look and see if either of the magnetos is in good shape and accessible. They are usually bolted to the rear of the engine, and you have to remove the two hexnuts that hold each of them in place. Then you need two insulated wires (spark plug cables will do fine); you plug one bare end into one of the sparkplug wires receptacles in the magneto and ground the other wire to the mag casing. You can then jump a spark between the two exposed wire ends by whirling the magneto gear manually, once again using steel wool or something close to it for initial tinder.

These methods are not as artistic as the time-honored string and bow, or flint and steel methods, but they are quick and handy. Most airplanes carry a flashlight, and there is usually a scrap of steel wool to be found on the cockpit floor. To be on the safe side you might want to jam a piece of steel wool inside the base of your flashlight, and stow the light in your flight jacket.

Suitable fuel to feed a fire is not always available at a crash site, but you should not limit your search to familiar sources like wood. Plastic cutlery, such as the forks or spoons provided in a packed lunch, when stuck in the ground and ignited, will serve as makeshift candles. They may burn for as long as ten minutes each. They are more useful for illumination than heat, however, as with all petroleum products they give off toxic fumes in a non-ventilated shelter. Another kind of candle may be made from a tube of wax-based lip balm. You can poke some string into the contents of the tube and create a remarkably longlasting light.

NOTE: None of the above suggestions should be understood to mean that standard winter survival gear is not really necessary. Winter survival equipment should be inspected at the start of each winter and stowed on board the aircraft or where it can be found easily before a flight. Improvisation is the art of surviving a *seemingly desperate situation*—which you will never get into if you exercise appropriate foresight. ■

(Based in part on an article in the July 1986 issue of Approach magazine, written by Lt. Michael E. Filippel.)

SURVIVAL KIT

This can be a commercially prepared item, or something you put together yourself. It need not weigh more than a few pounds altogether, and you may never use it in a hundred years—but some "bare" essential components of a winter survival kit are:

- ☐ **Shelter.** A high-visibility plastic tube tent, with emergency space blankets (these fold into a space no bigger than a deck of cards).
- ☐ **First Aid.** A complete first aid kit.
- ☐ **Food.** High-energy dehydrated food, enough to last at least three days per person.
- ☐ **Warmth.** An all weather fire starter kit. (Matches too, of course, but these alone are not good enough).
- ☐ **Signaling.** Heliographic mirror, aluminum foil, aerial flares.
- ☐ **Outdoor living.** A strong knife, a good compass, cable saw, tin pot (to melt snow in for drinking water), candles.

Equipment of this kind that is designed for minimal weight can be bought at outdoor or camping stores. Get the best you can afford.

If you make up your own survival package, take some hints from that required for flight into Canada and Alaska.

For all flights within designated sparsely settled areas in Canada (about 90% of the country), required items are: sleeping bag, flashlight, pocket compass, axe, matches in waterproof container, insect lotion, rifle and ammunition (no small arms), five pounds of concentrated food per person, cooking utensils, hunting knife, mosquito nets, fishing tackle, snare wire, a stove and supply of fuel, tents or engine and wing covers, two pairs of snow shoes, a signalling mirror, at least three flares, a survival manual, and a flexible saw blade.

Alaskan requirements are similar except that food for two weeks per person is required plus a first aid kit, a fishing net, and two signalling devices in sealed containers.

SURVIVAL USES FOR AIRCRAFT PARTS

- ☐ **AIR FILTER**—fire starter (usually made of paper impregnated with oil, highly flammable)
- ☐ **ALUMINUM SKIN**—reflector for warmth around fire, signalling device, splint, snow shovel, saw blade
- ☐ **BATTERY**—signalling with lights, fire starting (as with flashlight—see text)
- ☐ **BATTERY BOX**—stove or cooking container
- ☐ **CHARTS/MAPS**—stuff inside clothing for insulation
- ☐ **COMPASS**—establishing direction
- ☐ **CONTROL CABLES**—binding for shelter, splints
- ☐ **DOORS**—shelter, windbreak
- ☐ **ENGINE COWL**—shelter, water collection, windbreak, fire platform
- ☐ **ENGINE MAGNETOS**—spark producers for starting fires. Remove from rear of engine by unfastening two large nuts. Spin mags by hand with spark wires in contact (see text).
- ☐ **ENGINE OIL AND GAS**—fire starter and fuel for fire, black smoke for signalling
- ☐ **FABRIC SKIN**—fire starting material, water collection
- ☐ **FUEL CELLS**—melt snow on black surface, burn for black smoke, lay out on ground for signal
- ☐ **FUSELAGE**—shelter
- ☐ **HOSES**—siphoning fuel from tank
- ☐ **INNER TUBES**—canteen, elastic binding material when cut in strips, black smoke when burned
- ☐ **INSIDE FABRIC**—water strainer or filter, clothing; bandages
- ☐ **LANDING LIGHTS, STROBES, ETC.**—signals when used with battery, lights at night
- ☐ **NOSE SPINNER CONE**—bucket; stove with container for sand, oil, and fuel; scooping tool in snow; pot for cooking, funnel
- ☐ **OIL FILTER**—burn for black smoke
- ☐ **ROTATING BEACON LENS**—DRINKING CUP
- ☐ **RUGS**—ground pad, insulation, clothing
- ☐ **SEATS**—sleeping cushions, back brace for spinal injury, insulation, ground pad, sponge rubber for neck support
- ☐ **SEATBELTS**—binding material, slings, bandages
- ☐ **TIRES**—black smoke
- ☐ **VERTICAL STABILIZER**—shelter support, platform
- ☐ **WHEEL OR OTHER FAIRINGS**—formerly recommended for black smoke when burned. However, combustion found to release plastic fibers known to cause lung cancer. DO NOT USE.
- ☐ **WINDOWS**—snow block cutting
- ☐ **WINGS**—windbreakers, shelter supports, overhead shade, platform for fire, water collector, signalling device
- ☐ **WING TIPS**—drip collection and water carriers
- ☐ **WIRING**—binding and rope
- ☐ **WOODEN WING STRUTS, BRACES, AND PROPS**—fire and starter and fuel

(Modified from a list suggested by La Valla and Stoffel)

No room to stretch in a space blanket, but body heat is retained.

FEAR OF NOT FLYING

BACK-TO-BASICS PROGRAM 1987-1988 SCHEDULE

Calendar Year 1987:

1st quarter	Decision Making
2nd quarter	Aeromedical Factors
3rd quarter	Emergency Procedures
4th quarter	Weather Briefing

Calendar Year 1988:

1st quarter	Preflight
2nd quarter	Maintenance
3rd quarter	Stall/Spin Avoidance
4th quarter	Communications

Pete Campbell

Renewed support for FAA's Accident Prevention Program was affirmed by Administrator Donald D. Engen at a national conference on flight safety held in Washington, DC, in November. It was attended by Accident Prevention Specialists and Coordinators from all 50 states, as well as industry representatives.

Citing the remarkable turnaround in general aviation accidents over the past 15 years—overall accidents down by over 50 percent since 1971, fatalities lowered by 25 percent— Administrator Engen credited the Accident Prevention Program, which went nationwide that year, with the bulk of the improvement in the safety record. He envisioned a continuing reduction in accidents in the years ahead, as a result of greater emphasis on pilot education and counseling.

The program originated on a trial basis in 1968 as "Project 85" in FAA's Southwest and Central Regions, modeled largely after the flight instructor refresher program known as "Campbell's Caravan." James W. "Pete" Campbell, a lead instructor from the FAA Academy in Oklahoma City, had developed a traveling instructor refresher clinic which traversed the nation in an effort to standardize flight instruction and educate certificated flight instructors on FAA's rules and approved procedures governing their profession.

In talking to hundreds of individual instructors Campbell soon realized that fear of being penalized by FAA inspectors and having their certificates revoked—which in some cases meant losing their only source of livelihood—was a greater concern among these pilots than the possibility of accidents and personal injury. Often they elected to cover up their mistakes or hide their ignorance, rather than seek help from inspectors, because income-wise it seemed the safest thing to do.

Pete found that once he could convince the instructors that he was much more interested in helping them do their job right than in penalizing them for mistakes, there was an immediate and ongoing improvement in performance.

This idea became the keystone of the Accident Prevention Program, which achieved a better than 20 percent reduction in accidents during the two year trial period, paving the way for a national program in 1971 that designated an Accident Prevention Specialist in each of the 85 general aviation district offices, plus regional coordinators, and one national coordinator.

The specialist, who was either a fully qualified FAA operations or maintenance inspector, was chosen not merely because he was an expert pilot or mechanic but also because of his ability to communicate informally with pilots as a discussion leader and in one-to-one personal contacts. Like Campbell, the APS became a traveling salesman for safety, operating out of an agency station wagon or rental aircraft and covering virtually all of the airports and pilot centers in his or her district periodically. Audio visual and graphic materials were brought along to enhance the meetings, and the help of local fixed base operators or other aviation-oriented industries was enlisted. Wherever possible local non-agency (but well qualified) individuals were appointed as accident prevention *counselors*, who supported the Accident Prevention Program on a voluntary basis.

Enthusiasm among pilots for opportunities to learn about flying from FAA specialists and top officials has grown steadily, with attendance at some "super seminars" exceeding 2,500 persons. Nationwide the year 1986, when the Back-to-Basics Program was launched, saw close to 10,000 seminars conducted in the field, attended by approximately 500,000 pilots.

The year ahead is expected to see an even broader approach to the "gentle persuasion" or educational approach to accident prevention, with many new graphic publications, films and slide show presentations provided for pilot meetings. Modern technology will increase the availability of three-dimensional video tapes, available on loan from the APS for private showings on video cassette recorder/players, and eventually compact discs will play a role in pilot education.

So be alert for the small yellow flyer that comes at intervals to every certificated pilot in the mail, announcing a local aviation safety seminar. FAA's traveling safety salesmen do not travel in a sleigh or carry a sack of toys, but they do have something very important to offer: the gift of knowledge.

(The company's good fun too.) ■

U. S. GENERAL AVIATION HISTORY—POPULATION, ACCIDENTS

Year	No. of Aircraft	No. of Pilots	Total Accidents
1964	88,742	431,041	5,069
1965	95,442	479,770	5,196
1966	104,706	548,757	5,712
1967	114,186	617,931	6,115
1968	124,237	691,695	4,968
1969	130,806	720,028	4,767
1970	131,743	732,729	4,712
1971	131,148	741,009	4,648
1972	145,010	750,869	4,256
1973	153,540	714,607	4,255
1974	161,502	733,728	4,425
1975	168,475	728,187	3,995
1976	178,304	744,246	4,018
1977	184,294	783,932	4,079
1978	189,431	798,833	4,216
1979	210,339	814,667	3,818
1980	211,045	827,071	3,590
1981	213,226	764,182	3,500
1982	209,779	733,255	3,231
1983	213,293	722,376	3,060
1984	220,943	718,004	3,011
1985	*	709,540	2,742

* Data not yet available

It started out as a humorous remark thrown across the table during a London dinner party. However, the answer came back as a challenge, that this young English woman—the only professional woman pilot in Africa in the 1930's—accomplish the first solo Atlantic flight from England to the American mainland. It was not an offer she could refuse.

Beryl Markham had led a rather colorful life. In 1906 at the age of four she had come to live in British East Africa (now Kenya) with her father, a Sandhurst graduate from Leicestershire, England. Her father saw Africa as a new world where you could shape your future. He cleared a vast landholding near Nairobi and built successful grist and saw mills on his property, and kept a stable of thoroughbred horses.

While her father was taming the bush country, Beryl had been busy becoming acquainted with her new surroundings and the people in it—a world no properly bred Edwardian female would have even dreamed existed. With native children, who were her only playmates, she ran barefoot through the jungle. As a teenager, she hunted wild boar with the Murani warriers—a feat no native female would have even dared to try. She had many close brushes with death, having been mauled by a "tame" lion, attacked by a sword-wielding playmate (she had beat him in a wrestling match), and kicked and thrown by spirited racehorses.

This carefree existence led to her being apprenticed under her father for a license to train and breed thoroughbred horses. But in 1919 a year long drought bankrupted her father, who decided to move to Peru—another land of promise for horsebreeding. However, 17 year old Beryl, now a tall, attractive blonde, decided to stay in Africa. With the farm gone she went to Molo to work as a horse trainer. The horse fanciers who scoffed at the idea of a "girl trainer" were startled to see her place six winners in the Kenya Derby within a decade.

In 1930 Tom Black, a local charter pilot who she had once met casually, offered to teach her how to fly in his ***Gypsy Moth.*** Eighteen months later she had logged nearly 1000 hours of flight time and received her B license (comparable to the U.S. commercial certificate). She was now able to fly for hire. She gave up her first love, horses, to devote full time to her new love, flying.

Based near Nairobi, Beryl became a free lance pilot acting as employer, pilot and as often as not ground engineer of her company. It was not easy to get a plane in East Africa, and almost impossible to get around quickly without one, so her open-cockpit, handpropped, ***Avro Avian*** was in great demand. Mail, passengers, and supplies were carried to remote outposts wherever a customer wanted them to go, be it in Sudan, Kenya, Tanganyika, or Rhodesia. Despite her intense love for the land and its wildlife, Beryl pioneered the use of aircraft for wild game safaris—including the spotting of elephants for wealthy hunting parties.

In March of 1936 Beryl became restless and decided on a change of scene. England, some 6,500 air miles away, would do. For an airplane she would use her de Havilland ***Leopard Moth*** and for a male consort (women were not permitted to fly alone over Sudan) she invited the famous hunting guide and bon vivant, Baron von Blixen. The early stages of the flight meant flying over thousands of square miles of largely uninhabited jungle, desert, and swampland, but Beryl had studied her charts carefully and arrived at Cairo without incident. Then on to Benghazi, Tripoli and Tunis before crossing the Mediterranean Sea and landing in France.

In London Beryl was a much sought after guest at high society dinner parties, but the table chatter bored her until one evening her host, Lord Carberry, asked her whether she would attempt the first solo flight from England to America if he provided the airplane and the backing Beryl said matter-of-factly, Yes.

Later, alone, she had many misgivings and wondered why she had jumped into such a risky endeavor. Bush flying in Africa was no picnic, but it was a land she had grown up in and understood; by contrast the Atlantic was an enormous void. Still, flying was what she did, what she was trained for, what made her feel alive. As her instructor, Tom Black, had said long ago, "When you fly...you feel that everything you see belongs to you—all the pieces are put together, and the whole is yours...It makes you feel bigger than you are—closer to being something you've sensed you might be capable of, but never had the courage to seriously imagine."

For the next three months Beryl watched the ***Vega Gull*** she would fly come to life. The low-wing streamlined sport model built for her had a 660 mile range normally, but it was redesigned to be a flying gas tank with a special undercarriage built to carry the weight of the extra oil and gas. Tanks were placed in the wings, center section, and formed a wall around the pilot's seat.

The de Havilland ***Gypsy*** engine would be fed fuel by means of a petcock on each tank. To avoid an airlock when switching tanks, Beryl would have to let each tank run out of gas before the next petcock was opened—and hope the engine would restart. To save weight, no radios were installed. Even the life jacket Beryl had received as a present for her trip was left behind, replaced by a bulky parka; forced to choose between warmth or safety, Beryl chose warmth.

(Continued on back page)

THE SHAPE OF THINGS TO COME. It all started with the propeller, as a faster, more economical means of propulsion than the oar, or paddle wheel. This led to the propjet, the turbojet, the turbofan, and now the propfan. With strangely shaped blades (they are longer, thinner, wider, and less numerous than in a turbofan, swept sharply back and somewhat twisted), the propfan is mounted behind the engine, arranged in a pusher configuration. Expected to revolutionize commercial aviation in the 1990's, engineers are predicting a 40 to 70% fuel savings over conventional turbine engines, at altitudes up to 40,000 feet and with airspeeds of 85% of Mach I.

The photo above is of a General Electric propfan engine, being successfully tested on a Boeing 727-100. This is the first of the propfans to be tested in actual flight.

SPECIAL RULES PROPOSED FOR GRAND CANYON FLIGHT

FAA is studying comments on a proposed temporary Special Federal Aviation Regulation concerning flight in the vicinity of Grand Canyon National Park. The SFAR, which may be issued this spring, would be followed by a final rule incorporating many of the provisions of the temporary rule with an effective date of June 15, 1987.

On peakdays in the summer months more than 350 aircraft a day operate in the same general airspace over the Grand Canyon, under flight rules that apply to sparsely populated areas and low traffic volume airspace.

On June 18, 1986, 21 persons died following a midair collision in the canyon involving two sightseeing aircraft. Since 1975 there have been 51 accidents in the vicinity of the Park, of which 11 were actually within the canyon.

The proposed SFAR would (1) establish a Special Flight Rules Area from the surface to 9,000 feet MSL in the area of Grand Canyon; (2) prohibit flights in this area unless specifically authorized by the local Flight Standards District Office; and (3) establish certain terrain avoidance and communications requirements.

Under (3) no person would be allowed to operate an aircraft within 500 feet of any terrain or structure located between the rims of Grand Canyon, except in an emergency, or when necessary for takeoff or landing. Additionally, unless on an official search and rescue mission, pilots would be required to transmit position reports at designated reporting points and to monitor the appropriate frequency continuously while in the airspace.

The proposed final rule would retain provisions of the SFAR with certain additions, to permit transient general aviation aircraft in the Special Flight Rules Area. For example, a preflight briefing could be required from the Flight Standards district office on approved procedures, routes and altitudes. Also the rule might identify, on the basis of comments received, certain noise sensitive sites within the canyon which would be protected by voluntary or mandatory altitude limitations. These might include areas supporting endangered wildlife or plant species, archeological sites, and places having natural or historical importance.

Comments on the final rule will be accepted until March 1, 1987. Mail in duplicate to FAA, Office of the Chief Counsel, Rules Docket (AGC-204), Docket No. 25149, 800 Independence Ave. S.W. Washington, D.C. 20951.

Copies of the rule proposal (Notice 86-21) are available from the FAA Public Information Center, APA-430, same street address; or by calling 202-267-3471.

LORAN-C UPDATING RESOURCES AVAILABLE

Pilots who use LORAN-C for navigation are advised that current information on service interruptions may be obtained by asking flight service stations for "LRN" Notices to Airmen. LORAN-C is a low frequency, long-range navigation system designed by the U.S. Coast Guard for marine use in coastal areas. LORAN may also be approved for aviation use, under the provisions of FAA Advisory Circular 20-121.

Additionally, LORAN-C coverage updating for specific frequency rates and chains serving the U.S. airspace is available from the following Coast Guard offices via continuous recording:

RATE	CHAIN	TELEPHONE
5930	Canadian East Coast	709-454-3261
7980	Southeast U.S.	904-569-5241
8970	Great Lakes	607-869-5395
9960	Northeast U.S.	607-869-5395

Information can also be obtained directly from the Coordinator of Chain Operations for each chain.

RATE	CHAIN	TELEPHONE	LOCATION
4990	Central Pacific	808-247-5591	Kaneohe, HI
5930	Canadian East Coast	709-454-2392	St. Anthony, NFLD.
5990	Canadian West Coast	707-987-2911	Middletown, CA
7960	Gulf of Alaska	907-487-5583	Kodiak, AK
7980	Southeast U.S.	904-569-2223	Malone, FL
8970	Great Lakes	607-869-5393	Seneca, NY
9940	U.S. West Coast	707-987-2911	Middletown, CA.
9960	Northeast U.S.	607-869-5393	Seneca, NY
9970	Northwest Pacific	415-437-3224	San Francisco, CA
9990	North Pacific	907-487-5583	Kodiak, AK

PROPOSALS STUDIED AGAINST DRUG FLIGHTS

FAA is studying comments received on a recent notice of proposed rule making aimed at stopping drug smuggling by air. If approved, the rule would require a flight plan to be filed by any pilot operating an aircraft in coastal Air Defense Identification Zones (ADIZ). Additionally, the pilot would have to make periodic position reports to air traffic control. If the aircraft is transponder equipped, it must be on and replying to the appropriate code during these flights. At present aircraft operations at a true airspeed of 180 knots or less are excluded by FAA from the ADIZ flight plan and position reporting requirements, except those conducted off the coast of Florida.

Also under consideration are proposals that would require (1) aircraft flying into and out of the U.S. be required to display 12 inch standard registration numbers; and (2) aircraft in a coastal ADIZ to be equipped with an operating transponder.

If these proposals receive favorable response and are approved they will not only help spot suspected drug smugglers, but also might reduce accidents. Statistics show that 50% of the drug smuggling related accidents over the past 10 years were fatal.

FAA GENERAL AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA GENERAL AVIATION NEWS, AFS-810, Washington, D.C. 20591.

• Magnetic Appeal

A couple of questions about magnetic poles came up at a Christmas party which some of your experts might be able to resolve for us. One question has to do with the location of the north magnetic pole, which I understand is on longitude 103 west. If that is the case, it seems to me that you should be able to fly true north along 103 without any magnetic variation, but that doesn't seem to be right according to the charts.

The second question had to do with Santa Claus' residence: is it at the true north pole or the magnetic?

Name Withheld
Norfolk, VA

The magnetic north pole is presently located on Bathurst Island, one of the Parrys Islands above the Canadian mainland, at approximately 103 degrees west longitude. If you fly true north along that meridian in the United States you will observe a magnetic variation of as must as six degrees. That is because the compass needle does not point to the north magnetic pole but responds to the lines of magnetic force in effect locally. The magnetic field of the earth is similar to but not exactly like that of a bar magnet, notably in that the lines of force are neither regular nor constant.

The answer to the second question is classified Top Secret for anyone over the age of six. Sorry!

• Safety Pilot Qualifications

We would like a clarification of FAR 91.21 (b)(i) as regards the following situation. Assume the airplane is high performance, is being flown in VFR conditions with no flight plan, with the instrument conditions simulated by a hood, worn by the PIC, who is fully qualified and current in the airplane and has a current BFR and medical. Our question is, does the safety pilot also have to be fully qualified and current?

Michael J. Halliday
Westchester, NY

Under a Part 91 operation, if the pilot wearing the hood and flying the airplane is qualified and current as you describe, and is acting as pilot in command, the safety pilot must have a current medical certificate. Should the safety pilot elect to assume PIC, he must also be current in his BFR and qualified for the high performance airplane. If passengers are carried, the PIC must also meet the general experience requirements of FAR 61.57 (c) and (d).

• Pot Out, Pilots

A couple of years ago I went for my private license, flying a small, single engine airplane. Though I smoke pot I regard myself as a responsible person; I NEVER smoked on days when I flew or studied. I knew from experience that the effects wear off in four to five hours, so I was leaving a good safety margin.

I did well in the written. In the air I was easy under the hood, did visual and radio navigation well, had no trouble with stalls, etc. My weak point was landings. I tended to turn wide as I aligned with the runway, over-compensate, come in too steep and sometimes too fast. Not real bad (I got my ticket) but sloppy. Couldn't figure out why. Then I read a magazine article about residual effects of marijuana lasting up to 72 hours. I had no awareness of longlasting effects at all, thought I was fine the next day.

I like flying, so I've changed my habits.

Name withheld.
Sacramento, CA

Marijuana has been shown, in controlled studies, to have a residual effect on flight performance for at least 72 hours after use. Runway alignment and proper angle of descent may be noticeably affected.

• Illegitimate Logbooks

In your article on "Buying a Safe Airplane (Sept/Oct issue) you said it was not uncommon to be shown an illegitimate set of logbooks, instead of those belonging to the aircraft. How can a prospective buyer verify the authenticity of the books and the signature of the mechanic?

Mark Rojas
Elko, NV

Compare the time shown for maintenance entries in the logbooks for the airframe, engine(s) and prop(s) with the aircraft recorded tach time. They need not correspond exactly, as many pilots log clock time—and the aircraft may have been flown some hours since the last maintenance entry—but the totals should be roughly comparable.

If not, match the make, model and serial numbers on the first pages of the logbooks with the data identification plates of the airframe, engine(s) and propeller(s). You may need a mechanic to help you find some dataplates, which are required only to be located where they are most likely to survive a crash (look under the horizontal stabilizer and around the door posts).

To find out if a mechanic's signature in the logbooks is valid, call or visit the nearest Flight Standards district office and ask an airworthiness inspector to check on the name and certificate number. If they are false, the inspector will investigate. If they are valid you may be given the mechanic's last known address. You can then call and find out if the certificate holder did in fact perform the maintenance.

Two FAA Advisory Circulars on this subject which are helpful are AC 20-5E, "Plane Sense," (contact the Superintendent of Documents, GPO, Washington, DC 20402, for current price); and AC 43-9B, "Maintenance Records" (free from DOT Distribution Requirements Section, M-494.1, Washington, DC 20590).

• Other Than Student Pilot

You have pointed out that FAR § 61.51(e)(1) requires an applicant for an instrument rating to have ". . . a total of 125 hours of pilot flight time, of which 50 hours are as pilot in command in cross-country flight with other than a student certificate. Does the phrase, "other than a student pilot," refer to the 50 hours of cross-country time only, or also to the 125 total hours of flight time?

Second question: your interpretation of 61.51 (c)(2)(i) allows a private or better pilot to log time under the hood, when he/she is sole manipulator of the controls, as pilot in command time. Does this apply as well when the safety pilot is an instructor, on board for purposes of giving flight instruction?

Mary Jane Norman
Indianapolis, IN

The phrase, "other than a student pilot" in the flight time requirements for an instrument rating applies only to the 50 hours of cross-country time. (Student pilots are not allowed to log PIC time for cross-country flight—only solo, or dual, as appropriate.) The 125 hour total may include some student pilot flight time.

The answer to your second question is yes, a qualified pilot practicing IFR under a hood in VFR conditions, no flight plan, with an instructor on board may log as PIC that time when he is sole manipulator of the controls of an aircraft for which he is rated.

• Unsuccessful BFR's?

I take issue with your answer to Mr. Fleishman's question on "Competency Check and BFR's" in the Sept./Oct. issue. The latter two sentences in the paragraph indicate that a certificated flight instructor will determine in writing whether your biennial flight review or instrument competency check is successful. I see no such provision in FAR 67.57. Since the rule accepts the instrument check for a BFR, then I submit it is not up to the instructor to decide, as you say.

Ernest Maxfield, CFI
Peoria, IL

You are correct in that neither the instrument competency check or the BFR may be recorded as unsuccessful, or unsatisfactory. The instructor is free, however, to decline to endorse the pilot's logbook if in his opinion the applicant needs instruction or further practice or for any reason does not carry out the requested maneuvers.

Our statement regarding the acceptability of a competency check for a BFR was incomplete. FAR 61.57 (b) provides that a BFR will require a review of certain rules, procedures, and maneuvers. If these items are covered during or after the competency check, the instructor may endorse the logbook for the BFR as well as the ICC. However, in that case, the endorsement must clearly encompass both.

• Clearance Problem

I would like your advice on a question that has divided the opinions of several of my fellow pilots. Suppose you are preparing to make an instrument approach in IFR weather, and you have been given a final vector for intercepting the localizer. But you have not been told you are "cleared for the approach." You try to contact approach control but you can not get through on the radio.

What do you do? Proceed inbound on the approach course after intercepting the localizer, or continue on your last assigned vector until further advised by ATC?

Mitchell Heisler
Tacoma, WA

The answer to this question depends on the exact phraseology used by the controller. If you were told, "Fly 270, intercept the localizer," that is what you should do. (Normally you would be given clearance for the approach at the same time.) On the other hand, if you were advised "Fly 270, for vectors to the localizer," you would be expected to remain on the 270° heading until further contact.

Note that pilots are expected to be responsible for their own flight safety at all times. You should have a good mental picture of all obstacles to flight in the approach area, and if you believe the controller has forgotten about you, or advised you wrongly, it may be necessary to declare an emergency. Be sure to advise approach control on 121.5 that you are altering course on your own judgement.

U.S. GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON, D.C. 20402

OFFICIAL BUSINESS

Postage and Fees Paid
U.S. Government Printing Office
377
THIRD-CLASS BULK RATE

FAN MCNIC084S ISSDUE006R 1
STEVEN P MCNICOLL
84 AMESBURY RD
MONTGOMERY IL 60538

(Continued from page 13)

Also to accompany her on her trip was a sprig of heather for luck from her mechanic, a Scot, and the loan of the watch Jim Mollison had worn on his solo Atlantic crossing from Ireland to Canada in 1932. It came with the warning, ". . . don't get it wet. Salt water would ruin it."

By the beginning of September everything was ready. The deciding factor would be weather. On the morning of September 4 she received a call from the Air Ministry saying that the forecast for the next two days' weather was the best she could expect this time of year. Her decision was made.

In the early morning light Beryl pulled her plane into the air, heading west from the RAF airfield in Abingdon, England. Her final destination was 3600 miles away, 2000 of that over the Atlantic Ocean. Most of the flight would be in darkness as she followed the night and the rain into the western sky. As she had no radio, Beryl would depend upon her altimeter, compass, and artificial horizon to stay on her course.

Nineteen hours later she saw the dawn and her first glimpse of land—the cliffs of Newfoundland if her calculations were correct. After quickly plotting a new course, Beryl now headed south. Her ultimate goal of New York was in reach.

Suddenly, the engine started to splutter on and off. Beryl hoped it would turn out to be airlock, but her desperate adjustments on the petcocks were to no avail. The engine continued to cut in and out until land was again in sight and the bad weather was past.

It was now 12 minutes to Sydney Airport on Cape Breton Island. If the engine would splutter back to life once more, enough altitude could be gained to glide to Sydney. But the *Gull* had decided it was time to quit and started heading earthward over boggy farmland. Beryl banked, turned, and sideslipped to miss boulders and finally touched the ground—only to have the wheels submerge into the mud and the plane come to rest nose down. Reminiscent of the Alcock and Brown landing in Ireland 16 years earlier.

Beryl stumbled from the plane into the bog. Blood was pouring from where she had struck her head on the windshield; the injury concerned her less than the problem of staunching the bleeding enough to be able to record the time of arrival. The flight had taken 21 hours and 25 minutes.

An hour later she was found by a local fisherman and led to an ancient telephone to announce her arrival. The next day she was flown into New York's Floyd Bennett Field where congratulations poured in from all sides. But in her heart she felt the flight was not a complete success, because she did not arrive in the *Gull* at her ultimate destination on U.S. soil.

Beryl went on tour in the United States and settled down briefly in Hollywood, where she began writing her autobiography, *West with the Night*. The book, published in 1942, expressed fully her love for Africa and flying, but made no mention of her three marriages or her son.

Her restlessness returned and eventually she went back to her horse farm in Africa, near Nairobi. Here she resumed her career as a racehorse trainer and breeder, which continued until the day of her death at age 83.

The irony of the manner in which her life was lost would have amused her. After years and years of emerging safely from risky adventures, one day she tripped and fell over her dog, breaking her hip, and died from complications following surgery.

To Beryl, life was what you made it and if you were bored it was time to try something new. That was why she loved flying so, as to her "flying is the uncertainty and the exhilaration of firstborn adventure." ■