flying
SAFETY
OCTOBER 1982

Hazards of Winter Flying

see page 4

THERE I WAS

■ . . . a copilot with 1,000+ hours in the right seat of a C-135. In the left seat was an IP with 2,700 hours (he was also the squadron safety officer). In the jumpseat, another copilot with 1,000 hours. The navigator had over 3,500 hours and, to round out the crew, another IP with 2,900 hours.

We were making approaches at a civilian field. We had just completed a simulated single engine failure takeoff and were reconfiguring for a VFR approach to a touch-and-go. The weather was beautiful — day VFR with light winds.

On downwind, there was a lot of discussion between the IPs on intended seat swaps, route home, etc. I was so concerned with lining up for the approach using visual references and primarily "looking outside," I didn't call for "gear down." I turned base and called for flaps 40°. I was carrying power and staying high for noise abatement. Then, finally, I got the flaps to 50°.

I overshot final and carried power to continue a 30° bank turn báck to course during the descent. Thus, there was no horn or light in the gear handle.

I was looking outside almost exclusively because I was not familiar with the airdrome, and I was not making a very good approach. I actually considered going around at that point because I didn't feel "in control." I had omitted my normal prior-to-final safety check (gear flaps 0° speed brakes). The checklist had not been called complete nor had a gear check been given. Although at the time I remember only thinking about the omitted safety check, the other two omissions (checklist, gear down call) probably contributed to my "not-in-control" feeling. I should have gone around.

Inside ½ mile on final Tower called us to ask "Is this a low approach or a touch-and-go?" The IP said "Touch and go," and Tower replied "Well, your gear is not down."

At this time we were over the threshold, lower than I care to think about. As the words sank in, I shoved all four throttles forward simultaneously, glancing at the gear handle which was very obviously in the up detent. The missed approach was as normal as it could be under the circumstances. If we had not been fairly heavy and so carrying power into the flare, there would probably not have been sufficient power response to save the aircraft. If this had occurred at night it almost certainly would have been a Class A mishap with two IPs, two experienced CPs, and an experienced nav on board.

Step one in a gear-up landing is saying "It can't happen to me." The rest of the steps are recorded above. I am now a believer. It *can* happen to me and it will if I don't pay attention to all details. ■

Attention heavy operators! Read this one and make sure it doesn't happen to you. Fighter types can learn something, too.

Thanks to the author for sharing. The story just might save someone else a lot of embarrassment and all of us a Class A mishap.

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SPECIAL FEATURES

REGULAR FEATURES

DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, USAF

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USAF

The Buck Stops Here

LT COL RONALD E. KEYS
HQ USAF

■ "The buck stops here" — every time you hear it, it's like a breath of fresh air. But there's a catch, particularly in fighters and particularly today: "Here" means *you* and "stops" means *now*. If you want to train realistically, now's the time. If you want to make decisions, the climate's right — but be ready: Events have almost overtaken us. We're younger, less experienced, and training harder and better than ever before — but something's missing. Maybe it's you.

When you pinned on your wings, you pinned on a lot more than an aero rating. You pinned on a certain loyalty, dedication, and responsibility. Now it's time to deliver: The buck stops here, remember? And if you're going to stop it, you've got to be prepared; you've got to be responsible. That's what those wings represent; that's what you're paid for — being ready. No one can do that for you. Only you know if you're prepared. Only you know what's missing. Don't bluff it. If you're not ready — don't go. If you go and find yourself in over your head — stop. If you see someone else there — stop him. Being the meanest mother in the valley is great when you're back at the bar, but it's not worth a damn when you're out in the valley.

What *is* worth something out in the valley are the brains, sophistication, and self-control that make you lethal and keep you alive; that preparation, discipline, and certain awareness that give you the judgment and maturity to balance aggressiveness with the real and potential risks and payoffs.

The stakes are high — it could be, "you bet your life." So then, the buck has to stop here, right at the wings: Know your job, know your machine, know your limits. You owe yourself that much. If you are the "World's Greatest Fighter Pilot," then "I didn't know" or "I didn't think" make sorry epitaphs. It's really a matter of being professional. Like the refrain goes, "Between the amateur and the professional is a difference not only in degree, but in kind." You signed on as the latter — we can't afford the former. We can't afford the price of amateurs that masquerade as fighter pilots and don't know the tools of our trade, and can't or won't learn them. We can't even begin to afford the price of those other amateurs who don't know the rules or won't follow them. We can't afford the price because that "buck" eventually is extracted from all of us: More restrictions, less training, less readiness.

We've come a long way. We train twice as hard as we ever did, but we still may only be half as good as we need to be. We can't afford another Dark Age because of amateurs. And that "buck" stops with each one of us. Pros owe each other something; pros demand something of each other. Some cold gray dawn my life may be forfeit to your discipline and performance — or yours to mine.

We're not playing at kid's games, amateur's games. When you see your first squadron-mate disintegrate into a fireball, hear that first panicked call cut short with "Oh, my God," or listen to that futile plaint of "beeper, beeper, come up voice," you'll understand it's no place for amateurs uncertain of their skill. But then it's too late; the buck's already been passed. So we've got to stop it now. We've got to prepare ourselves and test each other. We can't let each other slide by. We've got to take responsibility for the bottom line, for doing it right, for speaking the unspeakable in the debrief, for calling the shots or calling it off. It's nothing personal; mistakes aren't crimes — unless you let them flourish. So, no hard feelings. It's strictly business, performance does count. Getting blown away in the Fulda might be a great learning experience, but it'll be terminally unsatisfying — guaranteed.

So that's why the buck has to stop, right now, right here, right above the left breast. Don't be an amateur, be ready. Don't let someone else be an amateur. If he can't make it as a pro, get him a bus ticket to Amarillo and the bush leagues. We can afford the ticket, we can't afford the amateur. That's it — every time you climb up and strap in, that responsibility is there.

That certain loyalty, discipline, and dedication that says: "I'm prepared, I'm ready, I'm responsibile — the buck stops here." You owe that. You owe it to the system, to your flightmates, and to yourself. ■

the hazards of WINTER FLYING

MAJOR KURT P. SMITH
Directorate of Aerospace Safety

■ Last January, the aviation community was painfully reminded of the hazards of winter flying. The crash of an Air Florida Boeing 737 on takeoff from Washington National Airport highlighted a number of winter operating hazards. The accident also provided a number of valuable winter flying lessons applicable, not only to our T-43A operations, but to all USAF pilots in general.

History of Flight 90

Air Florida Flight 90, service to Tampa, Florida, crashed shortly after takeoff from Washington National's 6,689 foot Runway 36. The accident occurred in a heavy snowstorm at 1601 EDT on 13 January 1982. The aircraft, a Boeing 737-222, became airborne but failed to achieve a sufficient rate of climb and struck the 14th Street bridge about 4,500 feet from the departure end of the runway. After hitting the bridge, the aircraft crashed into the Potomac River killing 74 of the 79 people on board. An additional four people on the bridge were killed when the aircraft struck their vehicles. The accident ended a period of 26 months without a fatal accident on US major airlines.

The flight crew of ill-fated Flight 90 had to deal with a number of weather conditions on that snowy, winter day. Weather at the time of the accident was ⅜ mile visibility in moderate to heavy snow, temperature and dew point 24°F, and winds from 020° at 13 knots. The Runway Visual Range (RVR) was 2,000-3,500 feet with the rate of snowfall approximately 1 to 2 inches per hour.

Sequence of Events

The NTSB's investigation into the crash determined the following

sequence of events for the crash.

- The aircraft was not properly deiced/anti-iced. Procedures used to deice/anti-ice the aircraft were deficient. Different deicing techniques were used on each wing. Only the right wing was provided a separate anti-icing overspray. The percentage of deicing/anti-icing fluid (ethylene glycol) was less than expected. Engine inlet and pitot static covers were not installed during deicing.
- There was no information available on how long anti-icing would be effective when precipitation was present.
- Ground maintenance personnel and the captain failed to verify that all snow and ice were removed from the aircraft.
- Contrary to the flight manual, the flight crew used reverse thrust to move the aircraft from the ramp. Blowing snow could have stuck to the aircraft.
- The aircraft was delayed approximately 49 minutes after deicing/anti-icing awaiting clearance.
- The flight crew did not use engine anti-ice during ground operation and during takeoff.
- The engine inlet pressure probes (PT_2) became blocked with ice during ground operation because engine anti-ice was not used.
- The flight crew observed and commented on ice build-up on the wings while waiting for take off.
- Contrary to the flight manual, the crew tried to use the exhaust from aircraft in front of them to deice their aircraft while waiting to take off. This could have caused ice to stick to the wings' leading edges and block the PT_2 probes.
- The flight crew set take off thrust using the Engine Pressure Ratio (EPR) gauges, but the EPR gauges were incorrect due to icing on the PT_2 probes.
- Actual thrust set was approximately 3,750 pounds less on each engine than desired.
- The first officer expressed concern that something was "not right" four times to the captain. The captain made no effort to reject take off.
- The aircraft accelerated slower than normal due to the reduced thrust.
- Ice and/or snow build-up on the leading edges resulted in a pitch-up at lift-off, and an abnormal forward pressure was required to counter it.
- Although the aircraft started a climb, it did not accelerate after lift-off.
- Immediately after lift-off, the aircraft's stall warning stick shaker was activated, and it continued to impact.
- A stall buffet was encountered, and the aircraft descended, impacting at a high angle of attack.

The NTSB felt that the take off should have been possible if the correct forward pressure and maximum available thrust had been used immediately after the stall warning. The crew applied the correct forward pressure, but did not add thrust in time to prevent the crash.

The Probable Cause

The NTSB's investigation concluded that the most probable cause of the crash of Air Florida Flight 90 was "the flight crew's failure to use engine anti-ice during ground operations and take off, their decision to take off with snow/ice on the airfoil surfaces of the aircraft, and the captain's failure to reject the take off during the early stages when his attention was called to anomalous engine instrument reading." Contributing factors included prolonged ground delays, known inherent pitch-up characteristics of the Boeing 737 when the leading edge is contaminated with even small amounts of snow and ice, and the limited experience of the flight crew in jet transport winter operations.

Winter Weather Decision Making

The crash of Air Florida Flight 90 focused a lot of attention on safe winter flying and provided pilots with a number of valuable winter flying lessons. For example, Boeing 737/T-43A pilots learned about the pitch-up tendency of the Boeing 737 with ice on the wing leading edges and the effect that engine anti-ice has on EPR indications.

Winter weather conditions encountered by the crew of the Air Florida Boeing 737 are no different than the ones most pilots can expect to see this winter. If known or anticipated, these conditions can be handled safely. Any doubt can lead to confusion and complicate your decision making process. To prepare yourself this winter, start your annual review of cold-weather

procedures early. As a minimum, review this guidance:

Aircraft Flight Manual — Cold Weather Procedures

AFM 51-12, Weather for Aircrews

T.O. 42C-1-2, Anti-icing, Deicing, and Defrosting of Parked Aircraft

Local directives for deicing/ anti-icing, snow removal, and ATC procedures during cold weather.

After your review, be sure you understand these points:

- Know deicing/anti-icing procedures for your aircraft. Air Force procedures are contained in T.O. 42C-1-2 and local directives.
- Avoid the use of reverse thrust during ground operations to limit blowing snow and ice from adhering to the aircraft and decrease aerodynamic efficiency.
- Understand the limitation of aircraft anti-icing. The effectiveness of anti-icing is limited by time and the amount of precipitation falling (snow, sleet, etc.). The deicing fluid is diluted by the precipitation and icing protection is degraded.
- Don't use the exhaust from other aircraft to deice your aircraft. It can result in ice adhering to the aircraft, reduced aerodynamic efficiency, uneven ice accumulation affecting aircraft control, and ice binding flight controls.
- Crosscheck engine EPR against other engine indicators to insure proper thrust for take off.
- In conditions conducive to aircraft icing, conduct a visual inspection just prior to take off.
- Know your aircraft's cold-weather procedures described in the flight manual.
- Know the effects of snow and slush on takeoff acceleration for your aircraft.
- Know how to compute stopping distances using Runway Condition Readings (RCR) and Braking Action Reports.

Once you have completed your review and are faced with a winter weather problem, be wary. Part of the problem faced by the Air Florida crew was a sense of urgency in making the take off time. While it is true that Air Force aircrews do not operate under the same conditions, anyone who has flown knows the pressure that can build when trying to decide whether or not to delay for maintenance (including deicing).

This is an area where there are few hard and fast rules. Aircrew judgment is the key. However, the one constant guideline should be that any doubt on the part of the aircrew regarding the mission capability whether due to aircraft malfunction, weather, or aircrew condition will be resolved *before* the aircraft takes the active runway.

You can be prepared for this winter. Know your aircraft and how to handle cold weather problems. Be cautious of mission pressures, and take the time necessary to be sure you do accomplish the mission. ■

STAY OUT OF *Volcanic* CLOUDS

MAJOR ARTHUR P. MEIKEL
Directorate of Aerospace Safety

■ The "dust has not yet settled" on the latest instance of machine vs volcano, but so far the volcano is winning. Mt. Galungung is the latest of three recent eruptions which have played havoc with the aviation industry.

The mountain, located in Indonesia on the island of Java, has been percolating intermittently since April 5, 1982. The erupting volcano has "smoked" two aircraft so far. On the night of June 24, a British Airways 747 lost power on all four engines after flying into an ash cloud. The aircraft descended from 37,000 to 12,500 feet before the four engines could be restarted. Subsequently, one had to be shut down due to continued compressor stalls. The pilot stated that the engines all failed within a minute or two. He glided for 13 minutes, and once clear of the cloud the engines restarted.

Preliminary investigation of the engines showed signs of over-richness which would support a theory of noncombustible gases in the ash cloud. On the night of July 14, a Singapore Airways 747 lost power on three of its engines and descended from 39,000 to 21,000 feet before they were restarted. A foul smelling volcanic dust was also ingested through the air conditioning system into the cabin. Both aircraft made emergency landings.

In one aircraft the crew noted a 50-knot difference in airspeed between the pilot's and copilot's indicators due to ash in the pitot systems. Both aircraft required engine changes. Three Rolls Royce RB 211 engines were replaced due to ash deposits on one, and all four Pratt and Whitney JT 9D-7A engines on the other. The aircraft also suffered leading edge surface and windshield damage. Although we don't have the exact location of the aircraft involved, it appears that both were within 80 miles of the volcano.

Indonesia issued NOTAMS and Australia a SIGMET on the drifting clouds. Air routes were closed and aircraft were diverted to avoid the ash clouds. NOTAMs and SIGMETs such as these are automatically picked up in our NOTAM system (within the limitations of communications systems in the area). The progress of the cloud was monitored by an RCA NOAA-7 satellite. As the cloud passed over Australia, drifting at 60 knots, it measured 600-700 kilometers wide (approximately 400 miles) at an altitude of 25,000 to 40,000 feet.

The two previous eruptions which produced similar ash clouds were El Chicon in Mexico in April 1982, and Mt. St. Helens in May 1980. El Chicon caused some clean-up problems in the south central portion of the US while the more famous Mt. St. Helens caused massive clean-up problems as well as aircraft damage. An F-111 suffered a severely pitted windscreen from the cloud but landed safely despite greatly reduced forward visibility. Other civil aircraft at altitudes up to 35,000 feet suffered similar damage as well as damage to paint and leading edge surfaces.

Volcanoes have different compositions. An FAA Airworthiness Alert described the Mt. St. Helens eruption as producing a very high ratio of gas to lava. Gases can be highly acidic (hydrochloric acid or sulphuric acid) or can become acidic as they mix with the atmosphere (sulphur dioxide or sulphur compounds). The ash portion of the eruption is highly abrasive and particles vary in size. At temperatures characteristic of operating jet engines, the particles can melt and form a glossy coating over exposed metal parts.

From the operators' point of view, the instructions to avoid ash clouds in ALSAFECOM 82/004 remain the best advice available. How long does the cloud remain potent? When is the cloud dissipated enough to fly through? There is no firm answer at this point, and no ongoing studies to find the answer. If you consider the varied makeup of different volcanic ash clouds there will probably never be a universal answer to "when is a volcanic cloud no longer a hazard?"

The best tracking system we have is by satellite and PIREPs. Experience has shown that airborne weather radar will *not* detect ash clouds. During recent volcanic activity affecting the CONUS, Air Weather Service tracked the position of clouds and made forecasts on their movement providing bulletins for aircrews.

Thus far, the aviation community has suffered no aircraft losses to volcanic clouds. One wonders, however, how smart we really are. After two years of volcanic experience, aircraft are still flying into ash clouds. Cumulogranite clouds are hazardous whether in solid or granular form; so, as early pilots knew so well . . . *stay out of the clouds.* ■

AN ACCIDENT THAT DIDN'T HAPPEN

We've all read flying safety articles and mishap investigation reports which describe a chain of events leading up to an accident. Almost invariably, several people in the chain missed an opportunity to interrupt the sequence and, at some point, the accident became unavoidable.

We rarely hear of the times when a series of heads-up actions and decisions prevented an accident. In this incident, maintenance people, a squadron commander, a DO, several pilots, a SOF and numerous contractor people teamed up to prevent the loss of an F-15.

■ The mission was a two-ship of Eagles with an IP as Number One and an initial qualification training pilot on his first solo in the F-15 as Number Two.

The series of smart decisions started before the flight even briefed. The squadron commander suggested to the IP that he switch aircraft with Number Two, since Two's scheduled aircraft had not flown since coming off "Hangar Queen" status.

Departure to the working area, airwork, and RTB were uneventful with the IP chasing the initial solo pilot through six instrument and VFR approaches. On the seventh pattern, however, things started to go wrong. An alert NCO who was on the end of runway (EOR) check crew that day saw two Eagles shoot a low approach and thought that the trailing (chase) aircraft had a cocked landing gear. (The RSU controller was properly devoting most of his attention to the initial solo aircraft.) The alert NCO immediately called the maintenance coordination center (MACC) on the radio and provided the tail number of the aircraft. MACC quickly passed the information to the command post, and they, in turn, passed it to the SOF.

As the two Eagles were executing the next planned low approach, the SOF called the IP and told him of the suspected landing gear problem. It took approximately two minutes from the time the EOR crew saw the problem until the pilot knew about it.

The IP left the gear down, flew by the Tower so the SOF could take a look, and took the lead for a gear check by the Number Two aircraft. The SOF and the wingman both confirmed that the left main gear was down but cocked 90 degrees.

The SOF immediately notified the DO, rescue personnel, and ATC agencies. The DO initiated a conference call with contractor engineers, and they quickly assembled a team of experts. They advised that, although an F-15 had never landed with a cocked main gear before, they were confident that the gear would not collapse. After a brief discussion, they advised that the wheel and tire would probably not straighten out on touchdown. This item of information was important since the pilot and the SOF were considering the wisdom of trying to straighten out the wheel by shooting a touch-and-go.

As the discussion continued, the IP directed the Number Two pilot to recover since the weather was deteriorating. The SOF contacted approach control and had them vector an airborne F-16 for join-up with the emergency aircraft.

MAJOR ROBERT T. OSTERTHALER
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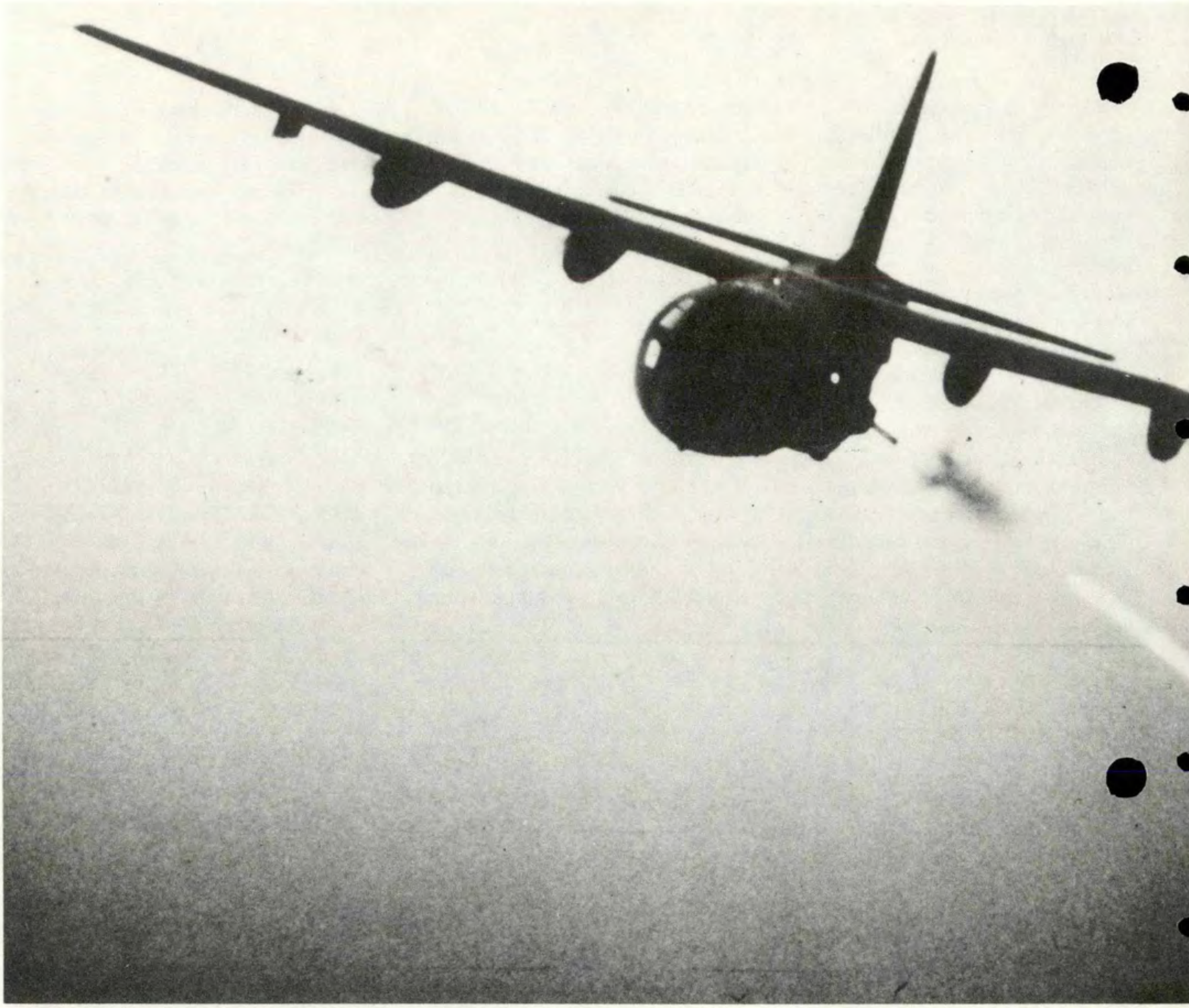
The IP and the SOF reviewed recovery options and agreed that an approach end arrestment with the anti-skid off was the best course of action. The SOF read the applicable checklists to the pilot. The chase F-16 confirmed that the hook was down.

The pilot executed the landing and approach end arrestment by the book, touching down 800 feet short of the barrier. The Eagle engaged the barrier on centerline and stopped less than 50 feet left of centerline. Damage was limited to the left wheel and tire assembly.

Many people contributed to this success story:

- The squadron commander who noticed an inexperienced pilot scheduled to fly an aircraft with a history of maintenance problems. He exercised the kind of judgment that prevents accidents.
- The NCO who took action when he noticed a problem, even though it wasn't his job.
- MACC and command post controllers who dropped everything to make sure critical information was passed quickly and accurately to people who needed to know.
- The SOF who coordinated the entire recovery effort. He used his experience, his vantage point in the Tower, and his communications equipment to maximum advantage.
- The DO who did not hesitate to ask for help from the contractor. He overcame the temptation to become the SOF and, instead, contacted the engineers and asked the right questions.
- The F-16 pilot who did not hesitate to provide assistance when requested.
- The pilot of the emergency aircraft who did what he had to do to safely recover the aircraft.

Had any link in the chain broken, the outcome would have been different. All the professionals who contributed to the successful outcome of this incident deserve a share of the credit for this save. ■



RESTRICTED AREA INTRUSION

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■ Military pilots are generally aware that restricted airspace is created for specific reasons, and that violations can place life and limb in danger. Those who accidentally stray into a restricted area and survive the experience, can look forward to a series of uncomfortable sessions with various folks who do not look kindly upon violators.

Unfortunately, too often non-military pilots are unaware of the hazards inherent in unauthorized restricted area flight. In fact, if they are aware of the hazards, they may be unaware of the boundaries of the restricted areas about which they fly. During the 1976 to 1981 time frame, 17 hazardous air traffic reports (HATRs) were filed in the airspace surrounding this base. Thirteen of these HATRs (76 percent) involved a general aviation aircraft that violated the restricted airspace. Clearly, no pilot or anyone else of sound mind would wilfully place themselves in danger of having a midair collision. Therefore, one must assume that the problem is primarily one of education, or the lack of it.

Since pilot education seems to be a primary key to solving a serious problem, it seems that pilots who are aware of restricted areas and the hazards therein, would be primary candidates to serve as educators. This does not mean that you, as a pilot, must go out and conduct mass briefings wherein you might preach about restricted area violations to every pilot within a 500 mile radius. What I propose is something much simpler, and within the capabilities of all military pilots.

The concept is neither new nor revolutionary, only the application is different. As a military crewmember, how many civilian pilots do you know? (If you said "Zero," you still need to listen, because you will meet one in the near future.) How often when you meet a civilian pilot does the conversation drift to flying? (Probably in the neighborhood of "always.") If you're a pilot in our unit, you could easily have said during one of those tale-swapping sessions something like "Did you hear about the Piper Cherokee that we almost shot down last month with one of our gunships?" I'll bet that would get their attention.

What an opportunity you would now have to tell about how that Piper Cherokee flew right through your gunsight, seemingly totally unaware of either the restricted area, the range, or the activity in progress. As a result, your friend would probably either ask you about the restricted area, or check on it at his first opportunity. In either case, your friend probably won't be able to resist telling the story to some other pilot that you've probably never met. Now how about that! You only told one person and now two know about it.

You hear about local civilian versus military air traffic problems fairly often. You either hear it in the flying safety meetings you attend or from fellow pilots. Either way, chances are that you have a story you can tell. I'd like to tell you one of mine.

One night we flight planned as usual, were briefed by the supervisor of flying, and again later by the aircraft commander. During both briefings, we were all reminded that any crewmember with access to a window should be clearing for traffic whenever their duties permitted. Weather and visibility were clear and a million, which made it a good night to see-and-avoid. Since this would be a live fire mission, see-and-avoid would be especially important. Over 1,200 rounds of 20mm and 40mm ammunition were loaded onto the aircraft for the night mission. Once all the munitions were securely stowed, the ramp and door were closed, and all the crewmembers made ready for take off.

The take off was routine. We flew to another field where we aligned our sensors. During alignment, the gunners began loading the guns. After we received clearance, we proceeded into the restricted area and took up an orbit over the range.

continued

RESTRICTED AREA INTRUSION

continued

As usual, we requested traffic advisory service to back up our see-and-avoid efforts.

Once over the range, we began our clearing procedures. The meticulous clearing of any range we use is necessary because there is no second chance in the event of an error. After clearing, we fired a few rounds to check the accuracy of the guns, and made some minor adjustments to the fire control system. Finally, we were ready.

From an altitude of less than 10,000 feet we began "working a truck convoy." After a couple of minutes we were firing for maximum effect. There are few man-made systems that are as spectacular to view as an AC-130 gunship delivering its concentrated firepower. From the air it's like looking down at the grand finale of a fireworks display, except that somehow the sincerity of the gunship negates the festive atmosphere that would accompany the fireworks.

After a couple of minutes of firing, we heard over the roar of the guns an urgent call from Mission Control. An uncontrolled VFR aircraft had entered the restricted area at an unknown altitude and was headed our way. We immediately ceased firing and almost instantly after the guns became silent, the intruding aircraft became visible in our gunsight. It was a small, general aviation aircraft flying at a very low altitude across the range. That aircraft could not have flown more perfectly through our gunsight if we had been aiming at it.

After safing the guns, we requested that Air Traffic Control track the intruding aircraft and attempt to identify the pilot. The small aircraft never varied from its easterly course while on our sensors and, as far as we know, the pilot was never identified.

Particularly frustrating is the idea that the pilot of that small aircraft may never have found out how close he came to becoming the first peacetime fatality associated with the airborne operations of our Group. The intrusion into the restricted area nearly cost him his life.

As a result of this and similar incidents, education programs were implemented by Eglin Air Traffic Control, the Eglin Area Midair Collision Avoidance Council, and military flying safety officers to take civilian and military aircrews more aware of the problem in the Eglin area. Our efforts have been rewarded with a reduction in the number of restricted area violations reported each month to Eglin Air Traffic Control. The problem, however, has not been eliminated. Every pilot's participation is needed to help spread the word.

The problem of restricted area intrusion is a serious one. Eglin Air Force Base has over 1,500 square miles of warning and restricted airspace. The primary violators of Eglin's restricted airspace are transient, uncontrolled VFR general aviation aircraft. They pose a threat both to themselves and to others by presenting an increased midair collision potential where none should exist.

To date, the primary techniques of see-and-avoid combined with traffic advisory service have served us well in Eglin Air Force Base restricted areas. See-and-avoid procedures and traffic advisory services, when combined, are very effective midair collision avoidance procedures when flying in VFR conditions, at fixed altitudes, with an IFR flight plan. However, even when combined, these techniques become a less-and-less perfect system in military restricted areas where aircrews must deliver ordnance, communicate with other mission aircraft, coordinate with ground personnel, communicate with Air Traffic Control facilities, and fly their aircraft, in addition to watching for unexpected aircraft.

Restricted areas are a necessary part of the military flying training program. When these areas are respected, they serve to enhance aircrew training and proficiency, as well as to enhance flying safety. Learn your local restricted area procedures, take the time to study restricted areas along your intended route of flight, double check NOTAMs, and talk it up. ■

GET-THERE-ITIS

Excerpted from *Aviation Safety* Magazine, Copyright 1981 Belvoir Publications, Riverside, Conn.

Each year, a disturbing number of general aviation pilots lose their lives in crashes in marginal weather. This total all too often includes Air Force members. The following story about a highly experienced aviator who let get-there-itis overcome his common sense is a lesson for all of us who fly, no matter what type of aircraft.

■ When the light aircraft hit the mountaintop there was a simple answer for the probable cause report: the pilot had tried to continue VFR flight in adverse weather. He was looking for a way through the hills under a low ceiling, and 2,300 feet wasn't enough altitude to clear a 2,330-foot ridge clothed in fog.

But the "why" of the fatal accident, and the circumstances which led up to it, were by no means so easy to fathom, nor was the pilot the kind of person who might be expected to make such an error in judgment.

Described as easy-going and amiable by friends and acquaintances, the pilot was said to be "utterly unflappable" in the air. He had started flying in 1931 and had more than 6,000 hours, holding a commercial license with multi-engine and instrument ratings.

As a general aviation insurance broker for more than two decades, he no doubt reviewed thousands of light plane accidents, and surely must have seen the constant pattern of "get-home-itis" crashes where the urge to be in a particular place at a particular time leads pilots to take unreasonable risks. Yet this was the kind of accident which killed this pilot.

Interrupted Trip

The odyssey which ended in his death began when he loaded his aircraft with belongings he intended to transport from his winter home in Florida to his summer home in Wichita, Kansas. But there was a special stop he intended to make.

He liked to keep his bird looking new, and the paint job had developed some chips at the leading edges of the wings. It needed a touch-up, and the FBO where he always had his aircraft painted was right along the route to Wichita — at Mena, Arkansas. It was a Friday, and if he could get the work done promptly, he would have it in top condition for a flight he intended to make the following Monday, when he and some business associates were scheduled to fly from Wichita to Chicago for an important meeting.

Unfortunately, the weather did not cooperate. A strong front was crossing the southeast United States, and he found his way blocked by thunderstorms. Though he was no stranger to rough weather, according to long-time acquaintances, a taste of this front was enough to convince him to put in at Meridian, Mississippi for the night.

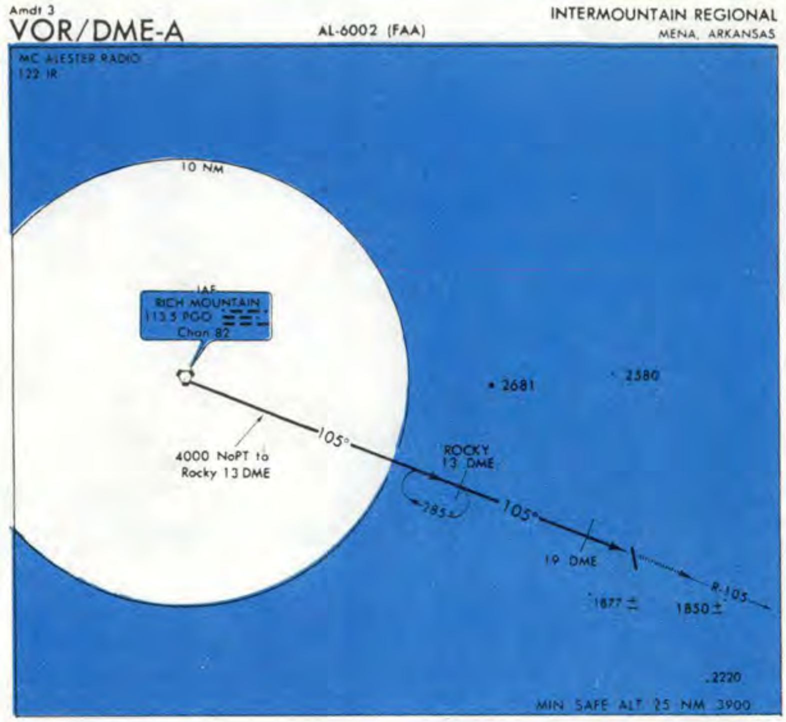
The following morning, there were still clouds covering much of the Mississippi Valley, although he was able to wend his way from Meridian to Hot Springs, Arkansas, arriving there about 11 a.m.

Though no one can now say what his motive was in landing at Hot Springs, circumstances suggest that the low ceilings and the knowledge of terrain at the destination may have played a part. Crossing the flatland underneath the weather doubtless was easy enough, but the western half of Arkansas rises sharply in 2,500- and 3,000-foot mountains, and Mena is tucked up

continued

GET-THERE-ITIS

continued



in a valley there. Hot Springs was a likely place to stop and get an idea whether Mena was reachable.

It is known that he called the Little Rock FSS for a report on Mena. Since there is no observation station there, the briefer gave him an area forecast, as well as current Hot Springs and Little Rock weather. Hot Springs was reporting 1,100 feet overcast, visibility seven miles, with light spots in the overcast which the briefer interpreted as patches of blue sky. There were some signs that weather was improving, according to the briefing. But it is worthy of note here that Hot Springs is at an elevation of 535 feet in flatland, while Mena is at 1,069 feet, in the mountains 65 to 70 miles to the northwest.

He also called the paint shop at Mena, and was told that if he brought the aircraft in, he could have the paint touched up immediately and be on his way.

Illegal IFR Approach

He took off and headed for Mena, and was later to tell authorities that he followed a major road up through the hills, got within about four miles of the field, couldn't remain VFR and climbed in the clouds.

However, this does not jibe with the story told by the Mena Unicom operator. He told investigators that the pilot shot the VOR approach to Mena, then executed a missed approach.

According to the Unicom operator, the ceiling was 400 to 500 feet overcast at Mena (which not only made the airport IFR, but below minimums), and he told the pilot that when he started the approach.

The VOR-DME approach to Mena calls for an initial approach fix at Rich Mountain VOR, which lies northwest of the field. To get to the VOR from Hot Springs, the pilot would have had to go past the airport and turn around. The Unicom operator recalls him reporting the VOR inbound. The approach starts at 4,000 feet and the MDA is 2,240 feet. The missed approach calls for a climb to 4,000 feet to the hold point.

At 11:45 a.m., he called Hot Springs Approach Control and told them he was at 4,000 feet in the clouds in the vicinity of Mena and needed assistance. This was the first known contact with ATC since he had departed Hot Springs. . . .

The controllers at Hot Springs were concerned because the aircraft was actually just outside the periphery of their jurisdiction, in Fort Worth Center airspace, and being without radar, they could not tell whether he might be in conflict with other IFR aircraft. But the tower supervisor on duty quickly arranged for coordination to allow the flight to be handled, and instructed the pilot to squawk the emergency code (7700) on his transponder. He was brought back to Hot Springs on an ILS approach, which he executed without incident and landed.

About an hour later, he showed up in the tower cab. He and the supervisor had a calm conversation, not only about the incident, but a lot more. "I showed him the sectional chart and I pointed out to him the mountainous terrain in the vicinity of Mena," the supervisor later told investigators. "I asked him if he was familiar with the instrument approach procedures at Mena. He said he knew about the instrument approach procedures at Mena, but that the minimums were too high for the weather at the time.

"I pointed out to the pilot that the field elevation at Mena was 1,069 feet. I told him that if the cloud layer over Hot Springs at the time extended to the Mena area, then the ceiling at Mena would be very low," the supervisor said.

"The pilot and I discussed the fact that there had been quite a few aircraft accidents in the Mena area because of the steeply rising terrain especially when associated with low ceilings and visibilities. I pointed out to him the warning notes in the vicinity of Mena that were on the sectional chart. I told him that some aviation charts were even marked in red in that area because of the danger. He acknowledged that fact."

The supervisor said the pilot even pointed out that the name of the VOR in the area had been changed from Page to Rich Mountain to call a pilot's attention to the mountainous terrain.

"He and I talked about the problems involved in trying to make low-altitude turns in mountainous terrain in low-ceiling, low-visibility situations. I mentioned to him the problem of flying into a box canyon situation," the supervisor also recalled.

The conversation was conducted in matter-of-fact tones, . . . and when the pilot left the cab, the supervisor was satisfied that he understood the seriousness of the previous incident.

The pilot had his aircraft serviced with fuel and oil, and he made another call to the paint shop at Mena. He was again told that the weather was "very lousy," although it might get better later in the day.

Second Attempt

He then did something which in retrospect may seem unbelievable. He started up, taxied out and left to make another try at Mena.

The tower supervisor had a hard time believing it. When he heard the pilot getting takeoff clearance, he got on the radio: "You're going VFR, is that correct?" he asked the pilot. "That's affirmative, VFR," he replied. The aircraft took off and the pilot requested a right turn out of the pattern — towards Mena — under a 1,300-foot ceiling.

Not long thereafter, the Unicom operator at Mena again heard from this pilot, this time apparently some distance away.

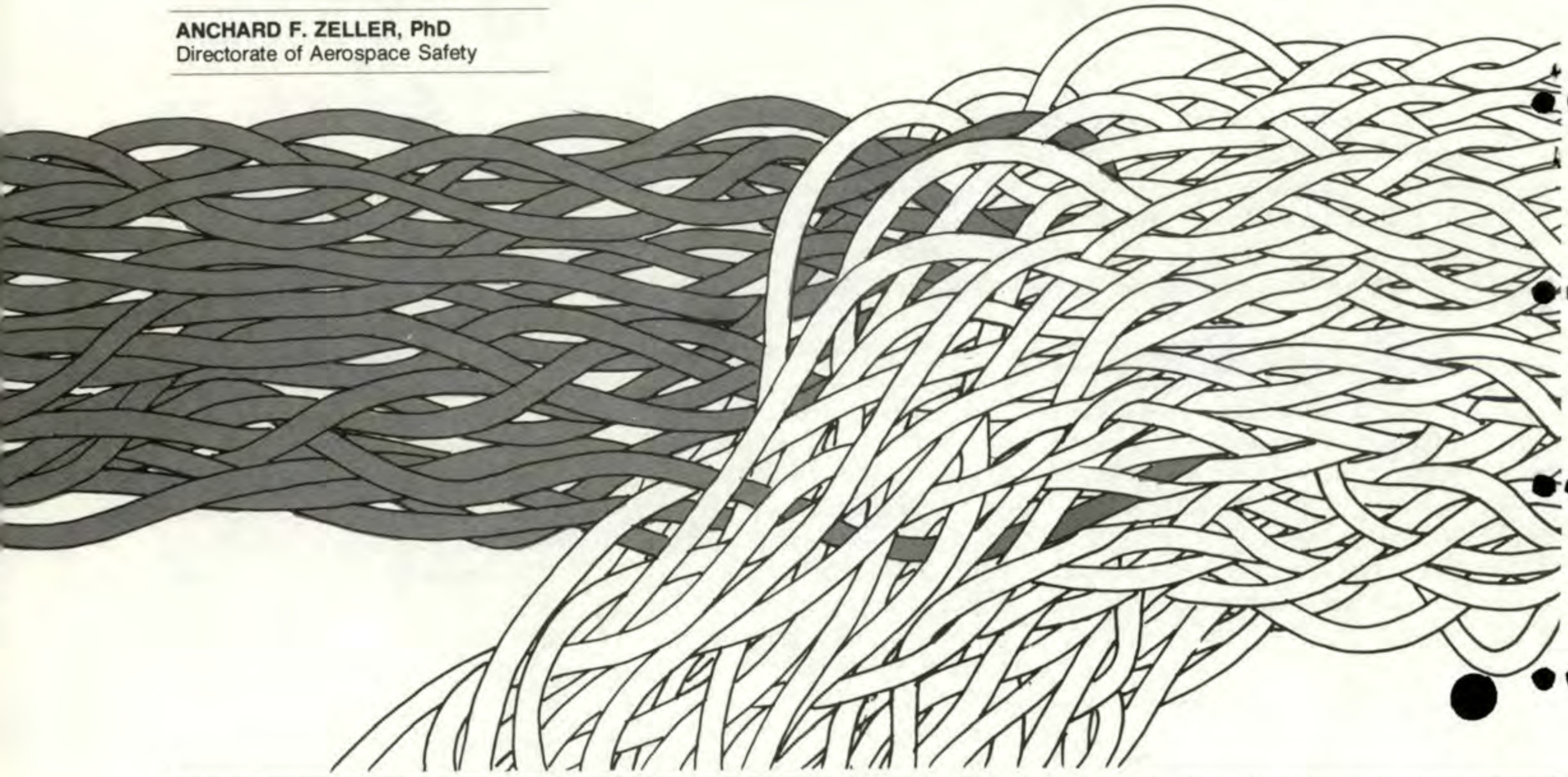
A hunter was in the valley about 20 miles southeast of Mena when the plane came into sight flying westbound, just beneath the low clouds. The hunter told authorities it went west a short distance, turned and flew north to the other side of the valley. Then it turned and headed south over the hunter's position. "The base of the clouds apparently sloped downward right at the mountain . . . the upper half of the mountain was in the clouds," the hunter told NTSB.

The hunter watched as the aircraft flew into the clouds and struck the mountain; he heard the sound of impact. Prior to the crash, he had observed the plane in level flight, with the engine running normally.

In all likelihood, the pilot had been looking for a way through the valleys under the clouds, and made the final error by attempting flight into a cloud that contained a mountain. He was 30 feet below the top of the mountain, and it was the highest mountain in that vicinity. ■

Transitioning

ANCHARD F. ZELLER, PhD
Directorate of Aerospace Safety



■ Transitioning might be defined as the process of learning the skills and procedures for becoming proficient in a new task. If one is to transition to a new activity, the implication is that proficiency has already been attained in some related activity — that learning has taken place. In the case of aircraft, the individual is already a pilot, and the process of transitioning is not that unfamiliar to pilots. Such changes take place at every stage of a pilot's career.

First is a shift from one trainer to another followed by progress into a mission aircraft. All of this takes place in the context of original learning. This learning has involved in addition to the aircraft, a designed curriculum, a cadre of trained instructors, and the systematic use of aids such as simulators to assure that safe and effective learning occurs.

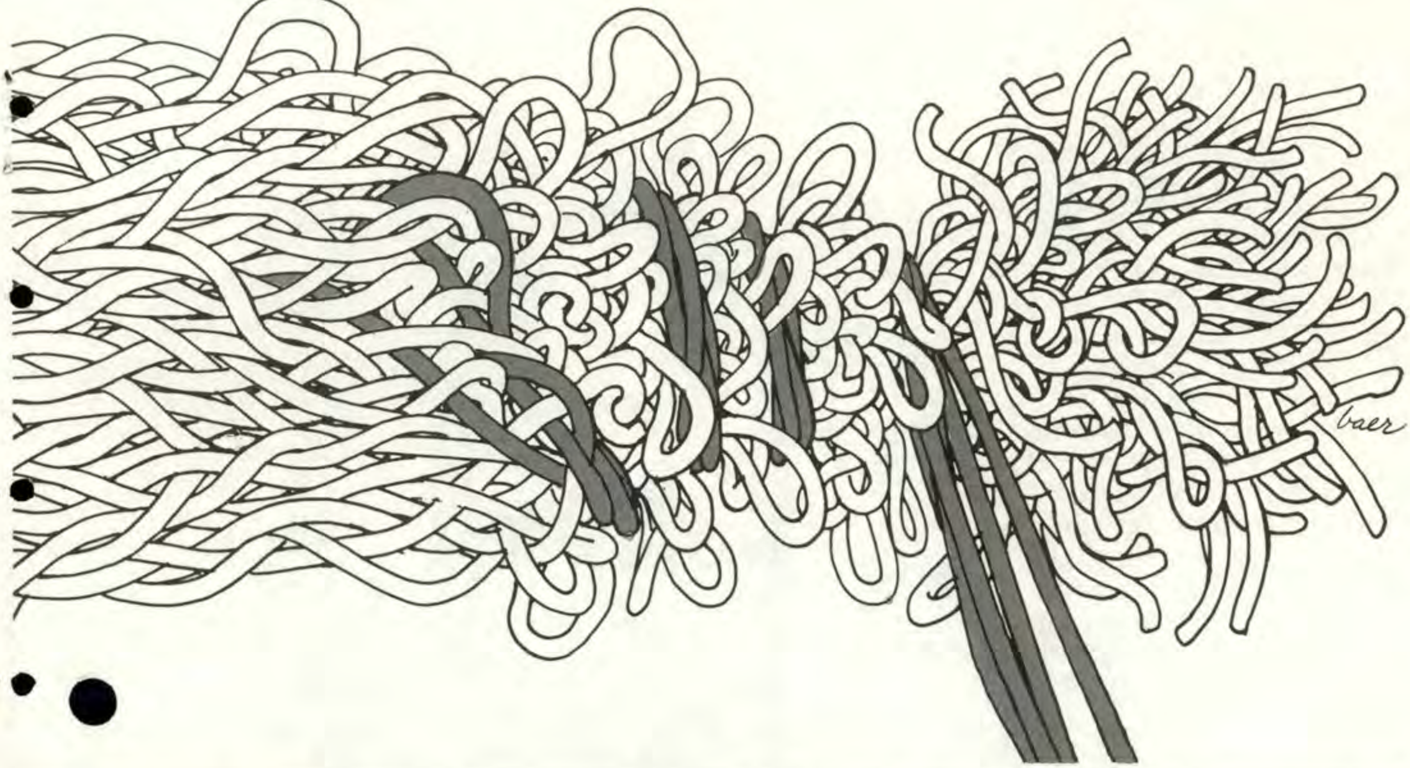
Parenthetically, the entire process also involves some selection of varying degrees of complexity. This is to insure that individuals not suited to the skills to be learned are not exposed to the program — both for their own safety and for the good of the system. It also aids in assuring that the training, whether original or transitioning, results in the skill to accomplish the task under consideration successfully and efficiently.

Even with the best of selection and training, however, the learning process is fraught with hazards. These are so standard, regardless of the activity being engaged, that a curve of errors plotted against time follows a standard pattern called a "learning curve." This has an initial high point followed by a steeply declining curve. The slope of the curve then declines still more and the curve levels off parallel to a baseline ordinarily somewhat short of perfection.

For a variety of reasons, this high level of proficiency and low incidence of errors achieved may change. The reasons vary from lack of current practice, changes in the requirements, or changes in the person himself. For example, those associated with the aging process.

Age is sometimes a very distasteful subject to approach. This is particularly true when one realizes that age in this context may not be in the seventies or the sixties or even the fifties, but may well be in the twenties or thirties. Age indeed, is a consideration which must always be kept in mind. But some pilots say this really isn't a factor for us; we know pilots who fly until they are sixty or eighty years old. While that may be true, there are pilots in various categories, and

The mind of man resembles an extremely sophisticated computer. It can process and store an amazing variety of data. However, unlike a computer, the mind has difficulty erasing unnecessary inputs. Old data can sometimes surface and supplant the newer, correct input.



for those in high performance aircraft, age is a far greater factor than it is for those flying less demanding aircraft.

Some studies published a number of years ago considering the relation of age to accident rate in Air Force pilots routinely found an upsweep in the accident rate in the late thirties and early forties. While the exact cause of this could not be determined, at least two factors were involved. One was a lack of proficiency, associated perhaps with desk jobs, and the second may well have been the aging process itself.

In actual fact, the human psychomotor reflex system function is probably best in the late teens and early twenties and slips from that point on. It is interesting to note in this context that success in undergraduate pilot training is also associated with age. Those pilots who are in the 26-to-27 year category do not succeed as frequently as those in their early twenties. The implication of these findings for pilot screening is obvious.

So, the transition pilot starts over. He does know how to fly; that in itself, however, may present some problems. What changes in the nervous system when something is learned is not known. There are some electrical, chemical, or other changes, however, which do take place, and proficiency does increase. Associated with any learning is the antagonistic phenomenon of forgetting. It has been estimated that half of all material learned in a single day is forgotten by the next day. From that point, forgetting takes place until it appears that it is complete.

For learning to continue, there must be a constant repetition and effort to retain material learned. The catch is, however, that although learning may have stopped and forgetting apparently completely taken place, this is not really so. There is residual of some sort in the nervous system that can be reactivated at the most unlikely moments.

This reactivation of an old habit pattern may supplant a new pattern which, at this point, is now the correct one. For example, an airline pilot reservist inadvertently cut himself free from his automatic ejection equipment. He did this by doing what he had long ago learned was the correct procedure. He pulled the handles on his seat, that is, he pulled the only handles that he could find. These, however, no longer served to activate the ejection mechanism, they detached

continued

Transitioning

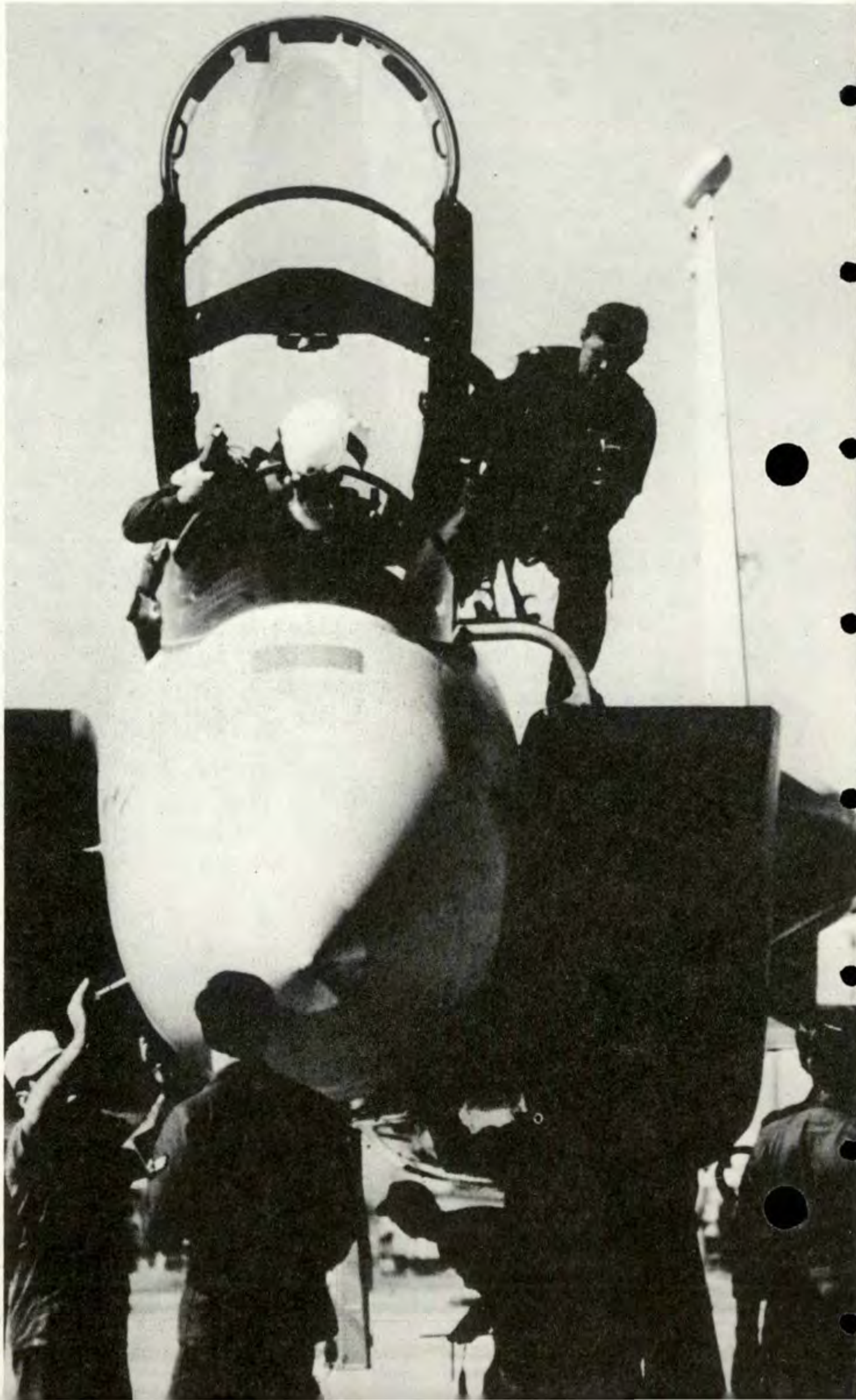
continued

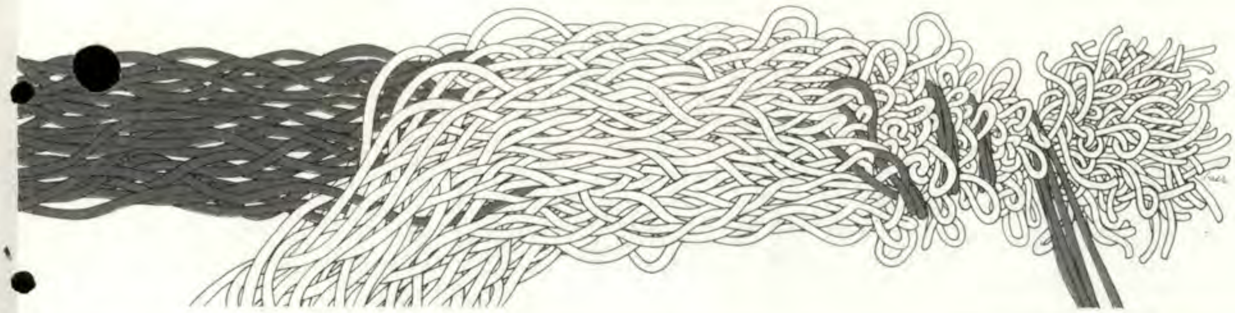
him from the automatic features of his ejection system. He should have reached for the D-ring between his legs or his face curtain. The result was that when he was ejected from the cockpit the automatic equipment did not function.

Most resurgence of old memory is not that critical. Such experiences are, however, not uncommon. This process, it should be emphasized, is not the mere forgetting of the correct procedure. It is a basic limitation of the human learning system, and is a constant hazard when one habit is replaced by another.

Such inappropriate behavior can be facilitated by a number of things. One of these is the emotional state of the individual. Either an intensely strong or a very minimum emotional condition will promote this reinstatement of an old habit pattern. In excitement bordering on panic, very frequently individuals, including pilots, return to old habit patterns. Or, at the other extreme, if an individual is bored or inattentive, the same problem may present itself. Regardless, where flying is concerned, the result is all to frequently a destroyed aircraft and a dead pilot.

Another consideration in the reactivation of old habit patterns is how much the newer, correct one is like the old. If there is no similarity between them, there is little likelihood that confusion will arise. If, however, they are almost the same, the probability of confusion does arise. In sequences where say, three steps are the same and the





fourth is different, it is very easy to revert to the old habit on the last step. Another example is the series of steps where one intermediate step is different, the chances of reactivation of the wrong habit pattern is high.

This is closely related to the interference of habit patterns which sometimes causes critical omissions if steps are omitted. Gear up landings, while not common, are frequent enough to receive a great deal of attention. Although often not fatal, they do cause damage, not the least of which is to the pilot's pride. A standard scenario for such events is a go-around, sometimes two or three. So the pilot has gone through the pre-landing procedure several times. If there is a distraction at the point the gear is to be lowered for the real touchdown, this step may well be omitted. He "remembers" having lowered the gear, but unfortunately for the wrong approach. Habits are useful but must always be accompanied by awareness and attention.

Still another form of habit interference relates to timing changes even though the sequence of events may be relatively the same. The constriction of time associated with very different missions can cause problems. Aging, which is one of the most insidious enemies of all, aggravates the difficulties. The transport pilot transitioning to a high performance fighter will find these pressures particularly acute.

Air-to-ground weapons delivery and air-to-air combat requires a much more rapid perception and interpretation of the situation as well as more expeditious responses than the pilot has previously been accustomed to. While the transition may be effectively accomplished from the standpoint of both safety and operational efficiency and effectiveness, the individual in the forties will find the process much more difficult than it would have been in the early twenties.

As would be expected, the general subject of transitioning has been addressed before. Some of the results of these previous evaluations are pertinent and sobering. One such study concluded:

- Pilots transitioning to jet fighter aircraft had an exceptionally high accident rate regardless of the type or amount of previous experience when compared with non-transitioning pilots.
- Inexperienced pilots transitioning to jet fighter aircraft have higher accident rates when compared with more experienced pilots.
- Pilots transitioning into a new model but who continued to fly non-transitional models had a higher accident rate than pilots who flew only the transition fighter model.

There were other observations in this same study. One of these noted that in the transition process, considered in 10-hour increments, the first 10-hour increment error rate was lower than the succeeding ones. Decreases then followed a standard learning curve of decreasing errors in relation to time. Another observation was that standardization of aircraft and of procedures greatly facilitated the transitioning process.

In conjunction with this study, there were a variety of recommendations. Among them was that multiple currencies were not to be encouraged, that two-place models were preferable for transitioning, if these were available, and that a well-designed and well-supervised program was really the key to success in the transitioning experience.

Let's look into the real world of transitioning. First, the people. For the most part, they are older and their currency may or may not be optimal. Guardsmen, for example, are not full-time military pilots, which means that their flying has to be concentrated pretty much on weekends. Many of these people have civilian jobs as airline pilots. This solves the problem of currency but means that while their civilian and guard flying may be quite similar, if, for example, they were flying C-130s, for them to transition to high performance fighters imposes a real task. Active duty flyers face similar difficulties.

That leads to a look at the equipment. It is presumably newer, and is almost certainly different. The difference may be minor, which can be a problem in itself, or it may be very different with all the problems associated with new

continued

Transitioning continued

displays and new procedures.

In conjunction with the latter, the performance of the aircraft may be vastly different. Very recently we experienced an accident in which the pilot, an old fighter pilot with 4,000 hours of time, was having difficulty in a newer aircraft into which he had just transitioned. It had been recommended that he only be given easy missions and that he be thoroughly supervised until he had mastered the newer techniques. On a relatively undemanding mission, he got behind the airplane with the result that both the pilot and the aircraft were lost.

The missions may be different if, for example, transitioning from straight and level flying to air-to-ground or air-to-air combat procedures, the world of flying may be extremely different from that which the individual has previously been accustomed (cargo to fighter).

Now what does all this add up to? It adds up to the fact that transitioning is an extremely hazardous process. Twice as high an accident potential as experienced during other operations. What can be done?

The first thing is to realize that this is a high-hazard period of flying and recognize that there is a higher risk and a higher potential for accidents than exists in the normal operational missions.

There should be a well-developed program. This program should have a sequenced curriculum, it should have well-trained instructors, and it should be well supervised.

The transitioning individual should not yield to the temptation to attempt to become current in both the old and new aircraft at the same time. This is at best a hazardous procedure, and in the transitioning process is one which is very apt to lead to mistakes, which may at the minimum be embarrassing and at the maximum could be critical.

. . . transitioning is an extremely hazardous process — twice as high accident potential as experienced during other operations.

Make use of all the training aids available including simulators. Pilots frequently aren't particularly fond of simulators, but they are extremely useful training tools which can serve a purpose, particularly in learning new procedures. Use a two-seat version of a single-seat aircraft if this is possible. There is really no better simulator than the aircraft itself.

Be particularly alert to the problems of habit interference and the potential areas in which these can occur. If possible, have a survey of the new equipment made in conjunction with a comparison of the old, so that potential areas of hazard can be isolated and avoided.

Get all the practice possible and, last of all, make sure the program is supervised, that the progress of each individual is watched as an individual, and there is recognition of the fact that not all people are essentially equally talented or have equal past experience. Some may take longer, some may require less demanding missions longer than others.

In conclusion, although transitioning is demanding, it has been done successfully, and from the standpoint of the Air Force as well as that of each person involved, it must be done successfully both for survival and for the accomplishment of the mission for which training is being conducted. ■

SOME SMART GUY

got off scot-free . . . and George took the rap

■ George looked pretty upset when he stormed into the pilot's lounge. I had a feeling he was looking for someone to sound off to. Once he started talking, I was sure of it.

"Well Happy Birthday — or something — you guys! What a swell day!

"I wasn't rushing things, it was normal-normal all the way. I had planned to go into town after flying and do some shopping for my wife's birthday. Now I've spent the whole stinking day out here."

His tone stopped all other conversation in the room. But as he went on, it became difficult to make out just what his problem was.

"But that's not what I'm really upset about." He drifted to the coffee pot and bent over to fit his cup under the spigot, leaving the rest of us staring at the back of his head.

When he turned back toward the room, stirring the two lumps with almost fierce determination, he sensed the impression he'd made on the rest of us. We were waiting for more.

"Look, George," I decided to explain to him. "We just came in for night flying. And it's apparent you're talking about something we know nothing about. What's happened around here today — and what in the world are you so upset about?"

"Oh, didn't you know?" As he looked around the room he saw that we sure didn't.

"I just about lost one on takeoff this morning. Damn near ran off the right side of the runway." He started to speak faster. "Everything looked fine on the runway, I'd had no trouble taxiing, and the first part of the roll was fine. But when I got up to about 140 knots it started pulling to the right. I mean really!

"It kept getting worse and worse you know, just a few seconds, but seemed longer — and I knew if I tried to abort, heavy weight and all, I'd be in worse trouble. Knew I couldn't keep it on the pavement and get it stopped. So I continued the takeoff.

"They said there weren't any tire marks off the side, but I would have sworn my right wheel was on the grass before I finally got the bird in the air.

"Well, anyway, it must have looked pretty spectacular from mobile. Jerry was out there and he didn't say anything until I was airborne. Then he asked me what had happened. But that's not the big part. The colonel was out in mobile too!

"He was showing a couple of visiting dignitaries around. And he was the first to meet me when I made the approach end barrier engagement.

"Oh yeah, you didn't know about that either?" We all must have registered surprise. He stopped when he saw our faces.

"Since I'd had so much trouble on takeoff, I decided to burn down fuel and take the cable. I didn't want to try rolling the length of that runway again. Jerry checked my gear on a couple of flybys and we talked it over and decided it was the best thing to do.

"And it worked perfectly. Just like the book. Nice, smooth deceleration — and stopped. Nothing to it.

"But then the Old Man was waiting for me as soon as I got unstrapped and out of the bird. He had a few words about a guy with my experience, and having flown off a lot worse runways overseas, and all that. Then just before he drove off in his car, he asked me if I'd gone to sleep after I lit the burners — or what!

"Well, that left me in just a great mood. All set to zap off into town and do some shopping.

"I didn't. Instead, I went back out to Maintenance — after I got finished explaining it all up in the Ops Office.

"By the time I got out there, they had the right wheel off the bird and a bunch of them were crowded around looking at the brake. It didn't take them long. Some of those guys have been around these things a long time. They could tell by just looking that the brake had been badly overheated at one time. The rotor disc had warped, and was obviously dragging during my takeoff.

"So now the wing commander thinks I habitually go to sleep on takeoff roll and some smart guy around here who went to sleep on final, landed long and had to stand up on the binders, has gotten off scot-free.

"Like I said, I don't know who it was, and I'm not going to check, but whoever it was — thanks a heap!"

Looking back on it, maybe he didn't just stumble in there by accident. Maybe he came in to tell us his story on purpose, knowing that we were night flying this week and that one of us probably flew that airplane last night.

None of us thought about it that way when he walked in on us. As a matter of fact, the more I think of it, George is pretty shrewd. — Reprinted from *Aerospace Safety*. ■

NEW!

AIR FORCE RECOGNITION RIBBON

■ Air Force Regulation 900-48, dated 25 March 1982, establishes a new award, the Air Force Recognition Ribbon, which is awarded to individual winners of Air Force-level functional awards determined by Air Force-wide competition. The award is effective 1 January 1981 and is not awarded retroactively.

Several safety awards listed in AFR 900-29 meet this criteria.

- Chief of Staff Individual Safety Award
- Koren Kolligian Jr Trophy
- Director of Aerospace Safety Special Achievement Award
- Air Force Well Done Award

Safety award winners for 1981 and 82 listed below will officially receive this award when the ribbons are released by AFMPC. AFISC will publish a letter announcing special trophies and awards recipients, and forward the letter through major command channels to the recipient's CBPO.

USAF SAFETY AWARDS FOR 1981

- **Chief of Staff Individual Safety Award, 1981**
  Lt Col Dwight A. Sweet — MAC
  Maj Henry Fiumara — TAC
  Maj Joseph A. Pappe — USAFE
  MSgt Robert J. Delaney — PACAF
- **Kolligian Trophy, 1981**
  Maj Ricardo W. Mestre — AFRES
- **Director of Aerospace Safety Special Achievement Award, 1981**
  Maj John H. Smith — NGB

AIR FORCE WELL DONE AWARD 1981-82

1st Lts Douglas P. Whitworth, Michael J. Baldwin — TAC
2d Lt James D. Halsell, Capt Steven F. Woodford — TAC
Maj John H. Smith — NGB
Capt Wright W. Matthews — TAC
Capt Ernest L. Harris, Jr., Capt Samuel K. Byera, 1Lt Roger L. Van Zee, MSgt Edward Acosta, SSgt William B. Spiece MAC
1st Lt Raymond D. Hatchell, Capt John C. Smith —TAC
Maj James E. Couture, Capt John E. Thordsen — USAFE
Maj Rowland H. Worrell, Capt John A. Osborn — TAC
2d Lt Albert R. Wallace — ATC
Capt Gary L. Kopren — TAC
Capts Kevin Krauter, Robert S. Stan, Larry A. James, John E. Hoffmaster — USAFE
1Lt Gary A. Frith, Capt Keith A. Lewis — TAC
Capts William Murphy, Clyde Ayer, Myron Williams, Sgt Jerry Williams — SAC
Capt James F. Burho — TAC
Airman James T. Gardner — SAC
Capt Thomas H. Colton, 1Lt William S. Harris — USAFE
Capts George E. Boyd, Stephen M. Johnson — MAC
Capts Louis W. Buckner, Thomas E. Stickford, Michael R. Witherspoon, Randolph P. Allen, 1Lt Timothy B. Vigil, SSgt Michael Stailey — SAC
Capts John D. Hauck, Jr, Stephen B. Frye, 1Lt Gregory D. Breland, MSgt William T. Nicholson, SSgts John W. Gordon, Gene N. Powell, Sgts Kenneth D. Millahn, Mark H. Crooker — MAC
Lt Col William M. Douglass, Maj James F. Boggan — TAC
Capt Edward W. Bular — NGB
Maj Phillip G. Anderson — TAC
Lt Col Ronald L. Butler, Capt Michael D. Mechsner — TAC
Lt Col Richard G. Hellier, SrA Michael D. Crews — TAC
Capts Kenneth E. Teague, Curtis V. Neal — USAFE
1Lt Luis A. Carrasquillo, TSgt Phillip R. Thomason, SSgt Robert L. Cox, Sgt Alan D. O'Brien, SrA David M. Brown, SrA Louis F. Nagy, Jr, A1C Michael A. Ricks — TAC
Col Richard C. Wheeler, Capt Emmet R. Beeker III — TAC
Lt Col Robert J. Vorgetts, Maj Walter Guthrie — TAC ■

OPS topics

Hot A-10

■ Prior to take off, an A-10 pilot was unable to control cockpit temperature or air flow in automatic mode. However, everything seemed OK in manual.

After level-off at FL 200, the pilot found the cabin altitude to be higher than normal and no air entering through the ECS vents. He found through experimentation that he could, to some degree, control cabin altitude and temperature by using cabin defog air.

Just prior to tanker hook-up, the pitot static system failed. The flight lead directed the pilot to refuel so he would have enough fuel if diversion became necessary. Shortly after disconnect, the pilot saw that the master caution and gun unsafe lights were on.

The flight immediately returned to base for a successful landing. The cabin air supply line was detached. This allowed bleed air in excess of 600° F to enter the compartment. The extremely hot air melted the pitot static lines and a wiring harness. The gun control unit, main air supply duct and water separator were all damaged beyond repair. The pilot was unaware of the seriousness of the problem when he discovered no air flow.

Winter Worries

Icing can be a problem as the following occurrences indicate.

■ Two A-10s were on a cross-country. The weather briefing forecast that the flight would be in and out of clouds at the planned cruise altitude of FL 190. The freezing level was briefed as 8,000 feet. No icing was forecast and pireps did not indicate any icing. During climbout the flight encountered trace rime ice between 10,000 and 16,000'. The flight leveled in the clear at FL 200 and the ice sublimed. However, the flight soon reentered clouds and again ice began to form. The flight requested a descent to VMC and continued uneventfully. After landing, engine damage from ice was discovered on both aircraft.

■ A CT-39 was descending for landing at a midwestern airport when the pilot's windshield began to ice over. Then at 6 miles on ILS final the crew heard a loud bang and felt the aircraft yaw left. The pilot initiated a missed approach, and after checking engine instruments, confirmed an overspeed on the right engine, so it was shut down. The loss of the Number 2 generator caused the copilot's airspeed indicator to go to zero. Because of deteriorating weather (1,200 overcast ¾ mile vis in blowing snow), the iced over windshield, and unreliable airspeed, the crew elected to divert to a nearby Air Force base where the weather was VMC.

Fuel Leak

Three A-10s were deploying accompanied by a KC-135. During each of the aerial refuelings, fuel spray was observed coming from the forward edge of the A-10 air refueling doors.

The pilots discussed the situation and, since the A-10s were taking on fuel and no fuel fumes could be detected, they elected to continue the mission.

During post flight inspection, all three aircraft were found to be saturated with fuel. Fuel was found in avionics bays and soaking electronics components.

The KC-135 boom nozzle was defective allowing the leakage which then entered the equipment bays through the ram air inlets.

Sharp Turn

An F-15 pilot was returning to a TAB VEE heavyweight. Since the aircraft had just been refueled, only the right engine was running. The TAB VEE parking spot was on a slight downhill slope.

As the pilot made a sharp, maximum effort turn to the parking stub the nose gear canted beyond normal limits. Apparently the combination of downhill slope, differential braking, high power on the right engine, and the heavy gross weight of the aircraft was such that the sharp left turn exceeded the design side loads of the nose strut, causing it to fail.

Runway Traffic

Shortly after the RC-135 pilot had completed his touchdown, he saw lights and an amber rotating beacon shining through the ice fog.

By applying maximum braking and reverse thrust, the pilot was able to stop short of a vehicle on the runway. The vehicle had been cleared onto the runway for snow removal operations. Then a tower shift change took place and Murphy got into the act.

The operator who cleared the vehicle on the runway forgot to log it or brief his replacement, so when the new shift gave the RC-135 landing clearance they were unaware of the vehicle on the runway. The situation was further complicated by visibilities of less than three-fourths of a mile in ice fog.

Wake Turbulence

An F-4E was on an IP upgrade mission. On the first rear cockpit touch and go the upgrading IP rolled out on final at about 1½ to 2 miles. During the final, the aircraft drifted left at about one-fourth mile from the overrun. The pilot made a correction to the right using both rudder and aileron. During this correction, the right wing dropped sharply pulling the aircraft in a steep bank.

The IP in the front cockpit immediately took control and started a go-around in AB.

During the recovery, the aircraft touched down hard in the overrun damaging the right wing tip, right stab, and right gear. The aircraft went from the overrun onto the runway and then off the right edge of the runway before getting airborne again. It was then recovered with an approach end arrestment.

The rapid wing drop was most probably the result of vortices from another aircraft which had landed less than a minute prior to the mishap aircraft.

Overlooked Checklist Item

After clearing the runway, an F-111 crew neglected to sweep the wings to the 54 degrees required by the checklist and local procedures.

While taxiing into the parking area, the left wing struck an aircraft decontamination unit parked by the taxiway. The unit was positioned so that an F-111 with a 54° wing sweep had taxi clearance but not if the wings are left at 16 degrees, as in this case.

Power Loss

A C-130 was enroute between midwestern bases. Mixed icing had been forecast for the entire route. While climbing through 13,000 feet, the aircraft encountered heavy rain, and clear ice began to build up on the wings.

The wing anti-ice quickly removed the ice from the wing surfaces but at about 13,500 feet the crew began to notice a decrease in rate of climb and torque. As the throttles were advanced, Numbers 1 and 2 overtemped and torque on all four engines dropped to 5,000 pounds or less.

The crew attempted to level off at 13,000 feet and switched the engine anti-ice from auto to manual without immediate effect. The aircraft could not maintain altitude and began to descend. Passing 9,000 feet, the engines began to respond, and the crew was able to level the aircraft off at 6,000 feet.

The problem developed within 1 to 1½ minutes of the onset of the icing and took 15 minutes to clear up fully. The C-130 Dash One states that the build-up of ice in engine inlet areas from freezing rain may result in power loss or flameout.

Too Many Gs

A pilot was on an upgrade sortie in an F-16B. During a BFM engagement he executed a rapid G onset defensive slice which then appeared to the IP to transition into a nose low extension. The IP felt that the dive recovery was late and queried the pilot in front. When he received a slow response he assumed control and recovered the aircraft.

The pilot stated he had blacked out during the maneuver. After the flight, the G suit hose was found disconnected. The hose had probably been misrouted and the pilot's body movement caused a disconnect.

Impromptu Airshow

A student pilot departed a midwestern air base on a solo cross-country in a Cessna 172. Witnesses saw the aircraft make several low passes over a private housing development about 9 miles from the intended landing site. At least two of the passes were at tree-top level. A relative of the pilot lived in the development.

The aircraft made a very steep descending turn around the relative's house and struck the ground at an angle of 45 degrees nose low, slightly left wing low.

A Real Headache

A flight of F-4s had engaged two Navy F-14s in DACT. One of the F-4s was tracking an F-14 and had just made a simulated missile shot when the aircraft flew through the F-14's wake.

The F-4 WSO had been visually following the second F-14 at 5 o'clock low when it slid left. He quickly turned his head and body to the left to pick up the F-14 at 7 o'clock. As he turned, the F-4 hit the wake turbulence and encountered a sudden onset of Gs from .5 to 4.5. The WSO's head snapped down and left causing the right upper part of the visor to strike the canopy breaker tool. The WSO experienced a sharp head pain and called "knock it off." It took several minutes before he was fully recovered.

After landing, the flight surgeon diagnosed a mild concussion. It is fortunate that the WSO had been flying with his helmet visor down. Had it been up, it is probable that the collision with the canopy breaker would have shattered the WSO's eyeglasses and injured his eyes.

continued

Canopy Interference

An IP was chase for an F-5 student air intercept mission. During a rejoin, the canopy departed the aircraft. Although rigging checks have not been completed, it appears possible that the anti G suit hose became lodged in the canopy linkage and interfered with the locking mechanism.

Electrical Fire

Two 0-2s were on a night weapons delivery mission. After about 30 minutes of flight, the inverter failed in the lead aircraft. The pilot reset the circuit breaker, and within a minute the inverter burst into flames. All electrical power was turned off, and the fire went out.

The pilot rejoined on the Number 2 aircraft and communicated his difficulties through HEFOE signals. Number 2 took the lead and initiated recovery. Radio communication was reestablished using a survival radio. The flight made a successful formation recovery and landing.

Near Miss

The Air Traffic Controller in the ARTC Center had just regained contact following radio failure with all aircraft in his sector.

A B-52 was in a departure turn outbound to a transition fix when the underside of a DC-10 appeared in the pilot's left window. The B-52 started an immediate descent and passed under the DC-10. The DC-10 pilot had seen the B-52 and had initiated a climb to avoid a collision. Both aircraft had been at FL 330 prior to the near miss. ■

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UNITED STATES AIR FORCE

Well Done Award

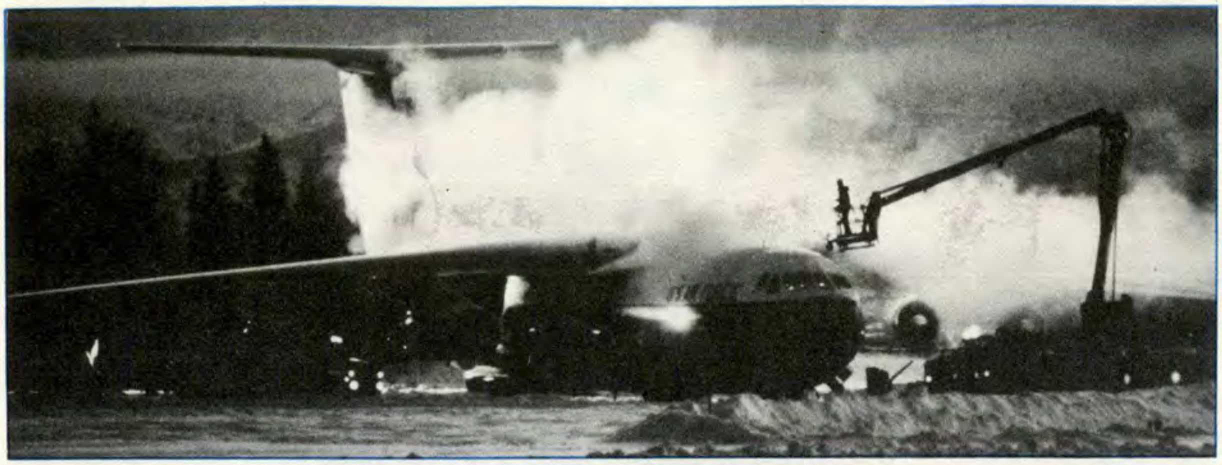
Presented for outstanding airmanship and professional performance during a hazardous situation and for a significant contribution to the United States Air Force Accident Prevention Program.

Pictured left to right

1Lt LUIS A. CARRASQUILLO, TSgt PHILLIP R. THOMASON, SSgt ROBERT L. COX, Sgt ALAN D. O'BRIEN,
(Not available for photograph),
SrA DAVID M. BROWN, SrA LOUIS F. NAGY, JR. A1C MICHAEL A. RICKS.

4th Tactical Fighter Wing
Seymour Johnson Air Force Base, North Carolina

■ On 10 November 1981, an F-4E aircraft was being prepared for a local training flight with the aircrew starting aircraft engines by means of aircraft starter cartridges. Upon ignition for right engine start the starter cartridge exploded, engulfing the aircraft in flames. The explosion, heard throughout the flight line, alerted Lieutenant Carrasquillo, Sergeants Thomason, Cox, and O'Brien and Airmen Brown, Nagy, and Ricks who responded to the emergency. Airmen Nagy and Ricks rushed to combat the flames using a CB fire extinguisher located on the right side of the aircraft. The right 370-gallon fuel tank was shrouded in flames and Nagy and Ricks emptied the contents of the fire bottle in their effort to keep the tank from exploding. At the same time Airman Brown located a fire bottle and fought the fire from the left side of the aircraft. Lieutenant Carrasquillo came from the opposite direction and combated the fire with yet another fire bottle. From farther down the flight line, Sergeant O'Brien arrived to assist with another fire extingusiher. As soon as the explosion occurred, Sergeant Cox rushed to a Coleman Tug, returned to the flight line and towed ground equipment, full of fuel, away from the fire. He then began towing nearby aircraft out of the hazard area. When fire department personnel and equipment arrived at the scene, Airman Brown assisted in setting up their equipment. Sergeant O'Brien dashed into the fire area and assisted a fire fighter who had fallen near the aircraft. The actions of these people reflect the highest standards of personal courage, dedication, and concern, and their efforts were instrumental in limiting aircraft damage. WELL DONE! ■



Guide to the Elimination of Ice, Snow or Frost From Parked Aircraft

TYPE DEPOSIT	TYPICAL WEATHER CONDITIONS	PREVENTION METHOD (other than hangaring)	REMOVAL PROCEDURES	PRECAUTIONS
DRY SNOW	1. Overcast skies 2. Temperature below 30° F	1. Protective covers 2. Frequent removal of snow prevents packing	1. Sweeping 2. Cloth strip 3. Ground run	1. Chemicals are wasteful in removing dry snow 2. Check all air intakes and openings for blown snow
WET SNOW	1. Overcast skies 2. Temperature 30-35° F	1. Waterproof protective covers 2. Frequent removal more important 3. Do not remove aircraft from hangar during snowfall	1. Sweeping 2. Mopping 3. Cloth strip	1. Check all openings and moving parts where snow may collect and freeze 2. Dry surface after removal of snow
FROZEN SNOW	1. Temperature drop after wet snowfall	1. Do not allow wet or dry snow to remain on surface and thaw 2. Do not remove aircraft from hangar during snowfall	1. Sweep to remove loose deposits 2. Apply chemicals by mop or spray 3. Use heat under cover as alternative method	1. Check surfaces for frozen snow after wet or dry snow has been removed
ICE	1. Uniformly overcast skies 2. Temperature 25-32° F	1. Frequent application of deicing fluid may prevent freezing 2. Remove water or slush that may freeze	1. Allow ice to melt off in hangar 2. Apply chemicals generously 3. Use heat under cover	1. Check all openings and movable parts 2. Check for runoff that has frozen between or on underside of surface 3. Avoid damage to surface when heating
FROST	1. Temperature near freezing 2. Clear skies — night 3. High relative humidity 4. Little or no wind	1. Protective covers 2. Application of deicing fluid (temporary protection only)	1. Chemicals, mop or spray 2. Cloth strip 3. Place aircraft in bright sun	1. Do not underestimate effect of frost. Remove from top and bottom of all flight surfaces and antennas
FROZEN MUD	Thawing conditions	1. Avoid taxiing through water or mud	1. Hot water, mop or spray 2. Use chemicals if temperature is below freezing	1. Check movable parts 2. Leave no water to freeze after cleaning 3. Check for frozen slush on underside of surfaces

NOTES: (1) Use deicing chemicals specified in the maintenance instruction manual or other applicable directions.
(2) Closely check the following items during and after removal operations.

- Top and bottom of all flight surfaces
- Air intakes and vents
- Static vents
- Control surface gaps
- Hinge points
- All movable parts

Ctsy. MECH