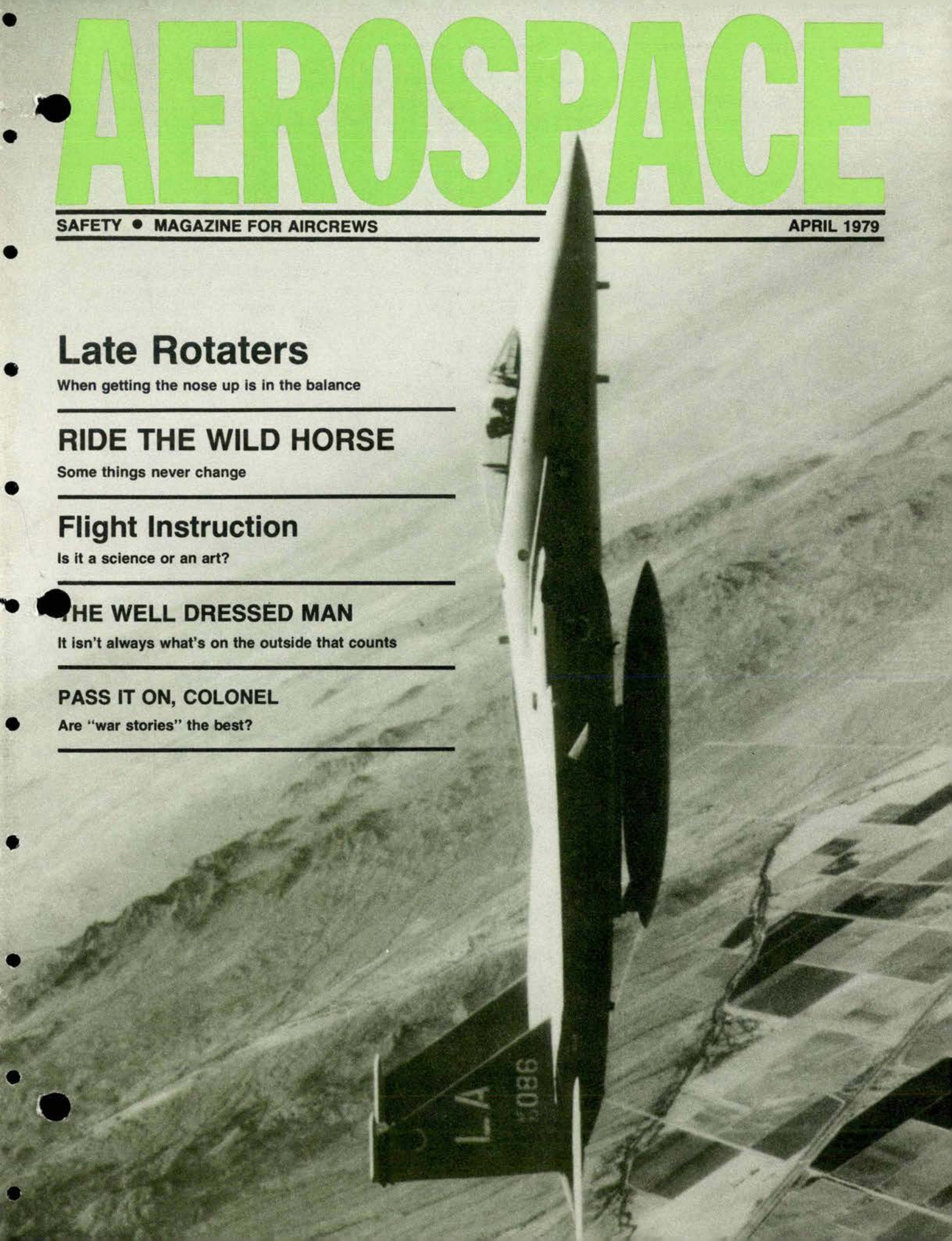
AEROSPACE

SAFETY • MAGAZINE FOR AIRCREWS

APRIL 1979



Late Rotaters

When getting the nose up is in the balance

RIDE THE WILD HORSE

Some things never change

Flight Instruction

Is it a science or an art?

THE WELL DRESSED MAN

It isn't always what's on the outside that counts

PASS IT ON, COLONEL

Are "war stories" the best?

LOW ALTITUDE Single-Ship Mishaps

Captain Eugene Larcom
Directorate of Aerospace Safety

Do you ever fly as pilot or crew member of an aircraft operating alone at low altitude? If you do, this article should provide you with some interesting information.

In 1978 there were 11 aircraft destroyed in the low altitude single-ship environment: three 0-2s, three RF-4s, two OV-10s, two helicopters, and an F-4D. The Inspector General directed a study of these mishaps to determine if there were any common threads. Depending upon your point of view, the results of that study may be quite surprising.

MISSION The 11 mishaps involved aircraft and units that normally fly low and alone.

WEATHER Weather was a factor in three of the mishaps; in the other eight, the weather was great.

PILOT EXPERIENCE Ten of the pilots were captains, one was a first lieutenant. Four of the pilots had less than 1000 hours total, four had more than 1400 hours total. Two had less than 10 hours in the past 30 days, seven had more than 21 hours. Three had less than 120 hours in type (five had 120-500; two had 500-1000; one had 1387).

AIRCREW DISCIPLINE Direct violation of aircrew discipline was a factor in four mishaps—in each case, fatal to the crew members. Three of these mishaps were in relatively uncomplicated airplanes (0-2, OV-10) with low pilot experience in type. The fourth was the only lieutenant in the group. In each case, these pilots intentionally violated the instructions they were given—some even planning in detail their violations.

LOSS OF CONTROL Five of these mishaps occurred when the pilot asked the airplane to do more than it could; the resulting departures from controlled flight were at such low altitudes that there was no room, nor time, for recovery.

PRESSING Using the definition of pressing established in the CHANGE PACE study—

". . . a pilot who continues a maneuver or task to the point that known parameters are exceeded is considered to be pressing. The decision is normally spontaneous and made in the interest of mission accomplishment."

We concluded that pressing was involved in 10 of these mishaps. This factor is elusive, but it is one of the keys to reducing the overall mishap rate, and the largest single factor in low altitude single-ship mishaps. Highly motivated, goal oriented pilots are the commodity we need most in time of war—losing them during training because they were pressing is a waste of such a precious commodity.

The common character of these mishaps is that they are all tragedies. They involve people who were trained and qualified for the missions. The missions were not out of the ordinary. The pilots were average guys and made the same sort of mistakes that other mishap pilots made in 1978.

We have said it before—mishaps don't happen to just the other guy. They happen to pilots with the same sort of background, motivation, experience as you, who fly the same airplanes you do. You are not IMMUNE. You may, in fact, be the other guy. Know your aircraft. Know thyself! ★

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SPECIAL FEATURES

REGULAR FEATURES

DEPARTMENT OF THE AIR FORCE • THE INSPECTOR GENERAL, USAF

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FLIGHT INSTRUCTION
Science and Art

John Trobaugh

This discussion of flight instruction will not be limited to any one aircraft model. Rather it will take a broad view of the successful concepts of the Instructor Pilot's science and art.

We may have made the perfect formation takeoff, bomb run, dart pass, barrel-roll attack, crosswind landing. But do we all understand HOW and WHY the proper technique resulted in a perfect maneuver? More importantly, can we all analyze and explain the technique to another pilot so that he can perform it, consistently and close to perfection. There are many Great Fighter Pilots; there are few Great Fighter Instructor Pilots.

Some of the more important qualities observed in all truly professional IPs are:

- *Air discipline.*
- A thorough *knowledge* of aircraft systems and performance, tactical phase manuals, weapons characteristics and loading, and local procedures.
- An *ability* to *analyze and communicate* the HOW and WHY.
- *Honesty, unselfishness,* and *patience.*
- A reasonable amount of *flying skill.*

You will note that pure pilot skill does not rank at the top of the list. Many Instructor Pilots, through the lack of "good hands," may never win a gunnery meet, but their students will. The apparent contradiction arises from the fact that those IPs compensate with an abundance of the other qualities. They discipline themselves and instill this attitude in others; their knowledge is complete through continuous study and effort; they analyze maneuvers for cues other than simple pitch-bank-and-power; they carefully consider several alternative ways of communicating these cues to the student in words that the student under-

stands; they are as honest in admitting their own mistakes as they are in critiquing those of their students; they are unselfish in sharing every bit of their knowledge with the student; they take pride in the student's accomplishments.

QUALITIES

It is difficult to rank the attributes of an outstanding IP. I am convinced, however, that the single most desirable trait is a dedication to air discipline.

"Discipline," by definition, is "training of the mind, body, and moral faculties; adherence to authority; self-control; improving behavior by judicious methods." It is a healthy attitude, a willingness to accept sensible restrictions on the operation of a powerful machine, an awareness of the serious nature of what is basically a very exhilarating profession. It begins with the basics that a student must master such as routine transition/formation before progressing to the more enjoyable combat employment phase. Without the basic airmanship skills, there can be no future consistency.

Each of you knows when you exercise air discipline, and each knows when you don't. Violations may vary from the minor to the flagrant, but the consequences of repeated violation are all *bad,* none *good*. The dangers of developing a habit of negligence should be evident and require no further discussion.

PREPARATION

Effective teaching and learning cannot occur until you establish a professional relationship with the student and determine his present level of capability. This includes his understanding of fundamental aerodynamics, airmanship, and aircraft systems and performance. Get him to "talk flying" – the relationship between bank and lift, single-engine operation, the effects of center-of-gravity position and external stores configuration, the causes of inverted pitch hangup, and on and on.

Formal publications – Tech Orders, phase manuals, regulations, course syllabuses – are the authoritative basis of all flying and training. Anything you do as a pilot/instructor must conform to the framework provided by these documents. Adherence to this framework is necessary for the orderly progression of a student through a flying program. Naturally then, you must be intimately familiar with, and adherent to, these guidelines.

Following procedure, however, still allows you to exercise initiative and creative innovation in your teaching. A procedure is a mandatory action specified to be performed in a certain sequence or at a defined point. That's the science of instruction. The art of instruction is going beyond pure procedure to diagnose the technique itself – the HOW and WHY – and then to be able to explain and demonstrate the technique. What are your outside references? How rapid is the throttle movement? What G force is involved? Is stick movement fast or slow? What stick pressure do you feel? The examples are numerous. It is your responsibility to dissect every task for its obscure details, determine your technique for success, and impart this expertise to your student.

BRIEFINGS

There are three distinct types of formal briefings:

First, the *phase briefing* – This is designed to give all procedural information for a particular phase of training. It should cover objectives, aircraft systems, flying and emergency procedures. It normally follows an intensive period of academic ground school on the same subject.

Second, the individual *flight briefing* – The briefing guide list is a logical sequence of mandatory items to be covered. This is necessary for the orderly conduct of the flight. Too many instructors, however, tend to repeat the litany of briefing items instead of using the majority of the allocated time for discussion and questions about the techniques. For example, after students have been exposed to several range missions, you can complete the routine items in a few minutes, and use the rest of the time for in-depth examination of the mission – how do you achieve proper dive angles, airspeeds, pickle altitudes? Why is this a good Aim Off Point? Let the students brief specific events, describing procedures and techniques. Probe, question, and lead the discussion toward the desired result – namely, an understanding of the HOW and WHY, as opposed to rote memorization.

Third, the *debriefing* – This can be the most valuable of all since it takes place immediately following a flight and addresses events that are fresh in the flight members' minds. Can students identify their own mistakes? Do they know WHY errors were made? Do they know HOW to make corrections on the next flight?

In any briefing, keep your comments professional and calm, never personal. Don't forget the most important of all – point out something good in each student's performance. Leave each person with a feeling of anticipation for the next flight.

AIRBORNE

The fighter pilot doesn't function in a three-dimensional world. The traditional parameters of height, width, and depth bear little relationship to ground gunnery, ACM, dart attacks, or other routine aspects of fighter pilotage. There are infinite combinations of altitude, airspeed, acceleration, G force, turn rate and radius, bank angle, dive or climb angle that enter into the performance of routine maneuvers. You have the responsibility to assist the student in finding some meaning in this strange world where customary standards don't apply.

Limit the possible variables. If a hard altitude, airspeed, power setting, or dive angle is required, insist that it be attained. Reducing variables to an absolute minimum allows the student to practice from the known

to the unknown. Holding all but one variable constant helps the student appreciate the effect of manipulating each variable.

Be prepared for frequent TELL, SHOW, and PRACTICE. As the student develops complicated motor skills, you must tell him what is required, show him how to accomplish it, and then allow him to practice what he's learned. Naturally, it takes time and repetition to refine those skills, but the TSP sequence will remain valid.

What is the final objective? *Consistency!* Don't be lulled into complacency, if the student performs a maneuver flawlessly *once*. That could be luck. When he demonstrates proficiency several times on several flights, you can begin to suspect that he understands the immediate problem and how to consistently solve it.

"TALKERS" AND "STICK RIDERS"

There are, unfortunately, IPs who cover rote procedures in briefings and try to cover everything else while airborne. Sure, you have to give some instruction on the intercom and radio, but keep it down to essentials and primarily during demonstration. Let the student perform as much as possible without the distraction of constant chatter. You will find his concentration improves during periods of relative silence.

Don't ride the controls when flying dual! Nothing can be more frustrating to a student than feeling the IPs constant inputs to stick, rudder, and throttles. The student is trying very hard to get the feel of the machine throughout the flight regime. Of course, he can't possibly be consistent, if the IP is "on there with him." The only time you need to take the controls is for demonstration or to prevent disaster.

Supervisors and flight examiners who have identified a known "talker" or "stick rider" in the IP corps may want to apply a dose of his own medicine during his next dual Standardization Evaluation Check. That has been known to cure the problem!

GUARDING THE CONTROLS

You can easily recognize the professional IP returning from the dual flight. He can hardly unzip his G-suit because his hands are frozen into misshapen claws from guarding the throttles and stick. He gets in this condition from following through on the controls, but he never, never lets the student feel his presence until deliberately taking control of the aircraft.

Failing to guard the controls can be embarrassing at best, and hazardous to your health at worst. Consider the following true experience.

During ACM, a student in the front cockpit of an F-5B had cleverly trapped his adversary at his 7 o'clock. While the IP twisted around to locate the other aircraft, he neglected his primary job of monitoring the student and guarding the controls. When the student snapped on 8.5 G's, the IP was not prepared to prevent it. Results: They lost the engagement, the aircraft required an over-G inspection, and the IP ended up with a sore neck and a red face.

A WORD TO STUDENTS

The responsibility for flight instruction does not rest totally with your IP. You owe it to both of you to prepare yourself to receive instruction. Study intensively the Dash One procedures and required directives, weapons characteristics and loading manuals. If the instructor has to spend all his time and effort on subjects that are appropriate for self-study, he will have less time for the HOW and WHY. It will be an agonizing period for you and a frustrating one for him. Conversely, a reasonable preparation effort on your part will result in a rewarding experience for both of you.

ABOUT THE AUTHOR

An authority on military flight instruction, John Trobaugh has spent much of his life teaching others to fly. He began a flying career with the USAF in 1950 and served in the Korean and Vietnam conflicts as a combat pilot. His experience in aviation training spans over 20 years and includes a wide variety of aircraft. He has held positions as Instructor Pilot, Check Pilot, Squadron Commander, Wing Flying Safety Officer, Wing Operations Officer, Wing Director of Operations, and finally Chief of Air Training Command's Standardization Evaluation at Randolph Air Force Base, Texas. Since 1972, as a Northrop F-5 Operations Officer and Training Engineer, he has been responsible for planning, scheduling, and supervising F-5 tactical flying training programs for foreign forces.–Courtesy F-5 Technical Digest, *Aircraft Division, Northrop Corp.* ★

THE PROFESSIONAL APPROACH

Air Force Communications Service
Scott AFB, IL

The following question arose from a recently submitted Hazardous Air Traffic Report when an air traffic controller was providing an additional service called, "Merging Target Procedures."

Question: What is a merging target procedure and when is a controller required to provide this service?

Answer: You need to consult FAAH 7110.65a, Air Traffic Control, paragraphs 526 and 510.

Paragraph 526 provides the following information:

a. As an additional service, air traffic controllers apply merging target procedures to all radar identified:

(1) Aircraft at 10,000 feet and above.
(2) Turbo jet aircraft regardless of altitude.
(3) Presidential aircraft regardless of altitude.

The merging target procedures were expanded in July 1978 to include the above aircraft rather than the previous requirement for only Presidential aircraft and scheduled air carriers. Merging target procedures are not provided or applied to aircraft which are established in a holding pattern.

b. Under merging target procedures, controllers issue traffic information to all aircraft whose targets appear likely to merge unless the aircraft are known to be separated by the appropriate vertical separation minima (for IFR aircraft it is 1000 feet below FL 290 and 2000 feet at or above FL 290).

c. If the pilot requests, the controller will vector the aircraft to avoid the merger of the aircraft and the unidentified target that was previously issued as traffic.

d. If the controller is unable to provide vector services, he or she is required to inform the pilot.

Paragraph 510 in the FAAH 7110.65a provides the following information under application of additional services:

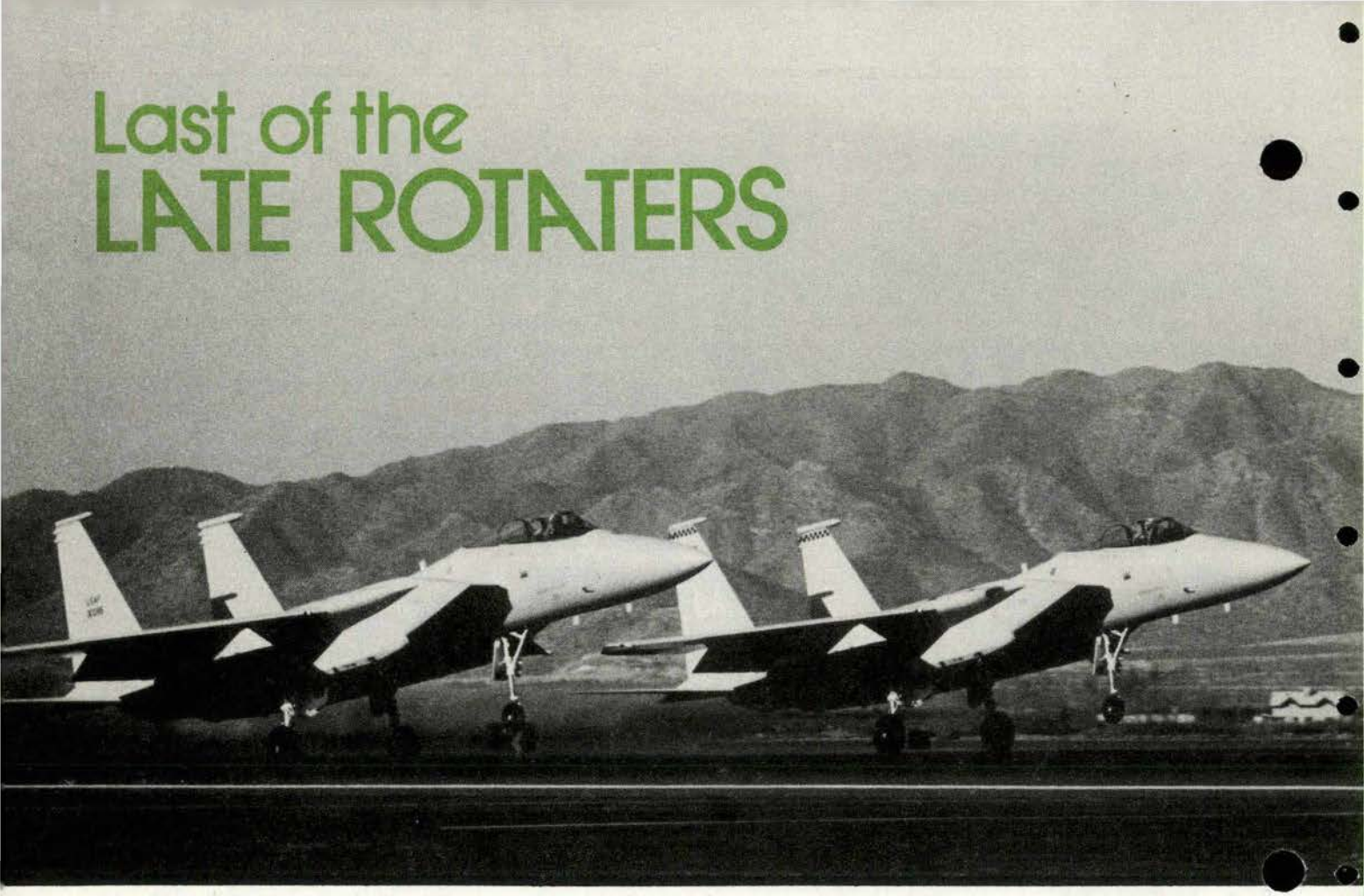
a. The primary purpose of the Air Traffic Control System (ATC) is to prevent a collision between aircraft operating in the system and to organize and expedite a safe flow of traffic. In addition to the primary function, the ATC system has the capability to provide (with certain limitations) additional services. The ability to provide additional services is limited by many factors, such as the volume of traffic, frequency congestion, quality of radar presentation, controller workload, higher priority duties and the pure physical inability to scan and detect those situations which fall in this category. The provision of additional services, consistent with the aforementioned conditions, is not optional on the part of the controller, but is required when the work situation permits.

b. The controller has complete discretion for determining if he or she is able to provide or continue to provide a service in a particular case.

c. The controller's reason not to provide or continue to provide a service in a particular case is not subject to question by the pilot and need not be made known to the pilot.

Thus the provision of merging target procedures and subsequent vectors requested by the pilot is a mandatory requirement on the part of the controller if, due to work situation, the controller is able to provide it. The key to these situations is the timely communication of traffic advisories by the controller and the early request by the pilot for avoidance vectors. These two things will provide an extra margin of safety to avoid a hazardous situation. ★

Last of the LATE ROTATERS



During the past year, there have been many questions concerning a phenomenon that came to be known as F-15 "late rotation," i.e., nose wheel liftoff speeds some 10-15 knots higher than normal. Using a service-supplied aircraft that exhibited these peculiar characteristics, MCAIR investigated the problem, discovered the cause, and recommended the corrective action. This article is presented to report on that problem and also to provide both Eagle and Phantom pilots with a good general refresher course on "getting the airplane off the ground."

Pete Pilcher/Experimental Test Pilot

Q—*What does it take to get the Phantom or Eagle nose wheel off the runway on takeoff?*

A—The aircraft must rotate about the main landing gear. To do this the moment created by the stabilator must overcome the moment that is the result of the weight of the aircraft acting through the center of gravity, which is ahead of the main landing gear. The stabilator will create a down force to provide this moment when it is deflected (aft stick) and the speed of the machine is sufficient.

WAIT A MINUTE!

If you have a hunch that all sounds too simple, your hunch is correct. Actually quite a few variables affect the nose wheel liftoff speed. Some of these are:

- Aircraft gross weight
- Aircraft CG location
- Stabilator position
- Flap position
- Aircraft speed at aft stick initiation
- Plus one other very interesting item that we'll call to your attention a little later!

Since the effects of these variables may not be that obvious to all of us, let's expound a bit.

WEIGHT AND CG

As gross weight increases, th tail-down force required to move this load must also increase. You

engineers in the crowd can sum the moments about the main gear to prove this fact.

This same sum of moments about the big tires also shows that if the CG moves forward, the tail load required to rotate will increase and vice versa. If the CG were above the wheels, the airplane would rotate at any speed, even in the chocks. That wouldn't be good because it would require a wheel or strut at the back of the airplane, but we sure wouldn't have a nose wheel liftoff problem.

Seriously, center of gravity is one of the most important variables. It is also constantly changing as internal fuel is used. The CG typically moves forward about 1% MAC (mean aerodynamic chord) for every thousand pounds of JP consumed in the F-4 (the F-15 CG moves ¼% *aft* in the same situation). If the F-4's motors run on the ground for much more than 30 minutes, the CG can move forward enough to cause a five knot increase in the nose wheel liftoff speed. Unusually long ground run time before commencing takeoff has caused several takeoff aborts in the Phantom. I also suspect that the CG at engine start is not known accurately enough to predict a nose wheel liftoff speed within a few knots anyway.

FLIGHT CONTROLS

Air flow over the tail causes the tail to lift downward, provided the angle of attack of the horizontal tail is correct, i.e., leading edge down (aft stick). This makes it easy for us pilots since the same natural action and response occurs in flight; i.e., pull the stick back to make the nose come up and cars and houses get smaller. This applies to both the F-4 and F-15.

Flap position affects the speed at which the nose rotates. Flaps down in flight causes a nose-down pitching moment that is generally trimmed out with little thought or effort in the F-4. It was this moment that necessitated the slotted stabilator on some models of the Phantom (not enough horizontal tail to trim the aircraft at extreme forward CG conditions during full flap landings in ground effect). The pitching moment with flaps in the F-15 goes essentially unnoticed by the pilot. The flap contribution to nose wheel liftoff is significant in both fighters. Flaps down tends to reduce stabilator effectiveness, which actually causes an eight knot increase in nose wheel liftoff speed in the Eagle and a 12 to 14 knot increase in the Phantom. Also, flaps up during takeoff in the Phantom makes the nose rotation rate snappy—one of the reasons the handbook says to use flaps.

STICK BACK!

Another variable that can cause a change in nose wheel liftoff is the aircraft speed at aft stick initiation. A couple of profound statements can be made regarding this matter. An F-4 in normal take off configuration would probably never rotate and fly off the runway without pilot-supplied aft stick. The F-15, on the other hand, flies off the runway at about 165 knots without any pilot action other than selecting takeoff trim before takeoff roll. The nose wheel liftoff speed will be increased as much as 12 knots by pulling the stick aft at 130 KCAS vs 100 KCAS in an F-15 at Mil power equipped with a full centerline tank. This basically means that we are probably delaying nose wheel liftoff by 5 or 6 KCAS by waiting until the handbook number of 120 shows up on the airspeed indicator.

WOULD YOU BELIEVE?

Now for the little item that we thought might interest (and surprise) you—another of the variables that can affect nose wheel liftoff speed is—believe it or not—the nose strut servicing. Nose strut servicing can have a significant impact on nose wheel liftoff in the F-15 and may have a similar effect in the F-4. If the nose landing gear strut is properly serviced, the nose strut continues to push the nose of the aircraft up during strut stroke to maximum extension. This aids in the nose up rotation of the aircraft. If the nose strut is loaded with too much oil, and therefore not enough air, it does not provide this reactive force throughout the strut extension and is less of an aid to the rotation of the aircraft. The degree of strut mis-service is another variable, of course.

Mr. Clarence Mongold, of our F-15 aerodynamics group, claims that a mis-serviced strut can cause a rotation speed increase of 10 to 15 knots. He supports his claim with the results of both simulation modeling and flight tests of a "late rotater" F-15 that we borrowed from Luke AFB this summer.

During the late rotater tests, we conducted routine checks of the gross weight, center of gravity, airspeed system, and flight control system, and found everything in order. The airplane was first flown as-received and gave a very rough ride on the ground. It felt as though the front spring was very stiff. On takeoff the nose wheel came off the runway approximately 10 knots late. Upon inspection, the nose strut was discovered to be considerably over-serviced with oil. Doesn't sound important, and the aircraft had the proper attitude on the ground, but a load-stroke test on the nose strut showed that the strut gave up most of its energy in the first half-inch of travel and did not help lift the nose after that point. The F-15 nose must come up about a foot before the nose wheel clears the runway, so the

Last of the late rotaters

continued

strut was not much help in rotating the airplane after the first half-inch of travel.

It appears from the load-stroke curves of the F-4 that the same phenomenon applies; the strut aids in rotation throughout the two foot stroke of the nose strut.

THOUGHTS ABOUT NOSE WHEEL LIFTOFF SPEEDS

Nose wheel liftoff speeds have been a sporadic problem in the F-4 and F-15. About once per year per aircraft, one of these machines is aborted at high speed and high gross weight because the nose did not come up at the precomputed airspeed. In nearly every case, the brakes, wheels, and tires are consumed in the stopping effort. When a nose wheel liftoff problem is reported, the standard variables of CG, flight control system, and airspeed system are checked. Rarely is a discrepancy found with any of these variables. The airplane is then flight checked and found to be flight-worthy.

Since stopping a heavier than normal fighter from a higher than normal speed on the ground is not my idea of a fun time, I believe in and follow the following guidelines:

- Check the stabilator before takeoff in either the F-4 or F-15 for freedom from restrictions, for correctness of direction (stick aft = leading edge down), and for full travel in both directions. If the stabilators pass this test and the motors work, the airplane *will* rotate and fly. Maybe not at the nominal published speed, but it will in fact rotate unless the laws of aerodynamics are repealed or the stabilators suddenly fall off, neither of which is likely.
- Take the nose wheel liftoff curves with a grain of salt, knowing that there are many variables involved; variables that can change between the briefing room and the runway and can account for as much as 20 KCAS.
- Bring the stick back early in the takeoff roll, except as a section leader on a formation go. The F-15 Dash One recommends 120 knots for aft stick movement for all takeoffs. As we indicated earlier, this may cost 5 to 6 knots in nose wheel liftoff speed in a clean machine. The F-4 Dash One allows more pilot judgment in this area. For most F-4 takeoffs, the pilot is merely reminded to pull aft stick well below the nose wheel liftoff speed.
- Make sure the nose gear strut is OK, OK? Looks can be deceiving. If the ride's not right, write it up. Courtesy *Product Support Digest,* Vol 25, No 5, 1978. ★

what do you know about wake turbulence?

Listed below are ten multiple-choice questions which reflect the latest findings by the Federal Aviation Administration (FAA), and the National Aeronautics and Space Administration (NASA), concerning wake turbulence. Check your answers against those at the end of the test. Credit yourself with 15 points per correct answer and if you have a score of 150, you have a high wake turbulence IQ. If your score is less than 135, a little research may be in order.

1. When departing behind a large cargo aircraft, which of the following types of wind would result in the most persistent runway turbulence?
   a. Calm winds
   b. Direct headwinds
   c. 5-knot crosswind component
   d. 10-knot crosswind component

2. During a calm-winds condition, a jet aircraft departs on Runway 36L. When should an aviator expect the turbulence to reach 36R if the distance between the two runways is 1,000 feet?
   a. ½ minute
   b. 1 minute
   c. 1½ minutes
   d. 2 minutes

3. When does a departing aircraft start producing wing tip vortices?
   a. At the start of the takeoff roll
   b. At an approx. speed of 60 knots
   c. At liftoff
   d. When the nose is first rotated

4. What conditions of airspeed, weight, and configuration would generate the greatest amount of wake turbulence?

	Airspeed	Weight	Configuration
a.	Slow	Heavy	Flaps down
b.	Slow	Heavy	Clean
c.	Fast	Heavy	Flaps down
d.	Fast	Heavy	Clean

5. At what rate, and to what altitude will the vortices generated by an aircraft descend?
   a. 500 fpm for 900 feet
   b. 500 fpm for 500 feet
   c. 1,000 fpm for 2,000 feet
   d. 1,000 fpm to ground level

6. The major danger associated with the high exhaust velocities of large jet aircraft would be present during which type of operation?
   a. Landing
   b. Takeoff
   c. All flight operations
   d. Ground operations

7. When taking off behind a departing jet aircraft, a good technique would be to:
   a. Lift off prior to the point of rotation of the jet and stay above or away from its flight path.
   b. Delay liftoff as long as possible to create excessive airspeed for penetration of the vortices.
   c. Climb to 500 feet, level off and turn so as to cross the vortex path at a 90-degree angle.
   d. Adjust the flight path so as to penetrate the vortex core 500 feet below the generating aircraft.

8. Generated vortex cores range in diameter from 25 to 50 feet. How are the two vortices of an aircraft affected by time?
   a. The cores rapidly expand until they overlap and dissipate.
   b. They stay very close together with little expansion until dissipation.
   c. They gradually reduce in size until dissipation.
   d. Depending on the atmospheric conditions. they sometimes increase or decrease in size.

9. Which of the following tangential velocities would approximate those created by the C-5A or Boeing 747?
   a. 500 fpm
   b. 5,000 fpm
   c. 9,000 fpm
   d. 15,000 fpm

10. Which of the following encounters with wake turbulence would probably result in the greatest loss of control of the penetrating aircraft?
   a. Crossing the wake at a 90-degree angle.
   b. Climbing through the wake at a 90-degree angle.
   c. Climbing through the wake on the same heading as the generating aircraft.
   d. Flights 1,000 feet below the generating aircraft.

ANSWERS TO THE ABOVE QUESTIONS

1.c, 2.d, 3.c, 4.b, 5.a, 6.d, 7.a, 8.b, 9.c, 10.c

the domino effe

This story is about dominoes. As it unfolds we can see each of those spotted rectangles fall as a minor problem escalates into a serious mishap.

All went well for two young pilots in a T-38 until they lowered the gear for landing and the left main green light in the rear cockpit did not illuminate. Up front all was normal. The IP, in back, pressed to test the left gear light and it worked but went out when released. The warning test circuit produced the same results. Finally, using the rear cockpit mirrors, the IP confirmed the gear down and they continued the approach without notifying the tower of their problem. After landing safely, they taxied to parking and shut down, despite directions in the Dash One and the wing manual to stop straight ahead and have the gear pinned before taxiing with a system malfunction.

First domino down.

Since neither pilot knew whether the front and rear indicators were separate or interdependent systems, they asked TA to troubleshoot the gear warning system. TA couldn't, so they called home base and got a maintenance NCO who passed them to the NCOIC who discussed the problem with the assistant detachment commander. They decided the gear was safe, but the assistant commander advised that only straight-in, full stop landings should be made. The crew took this as an okay to continue their mission.

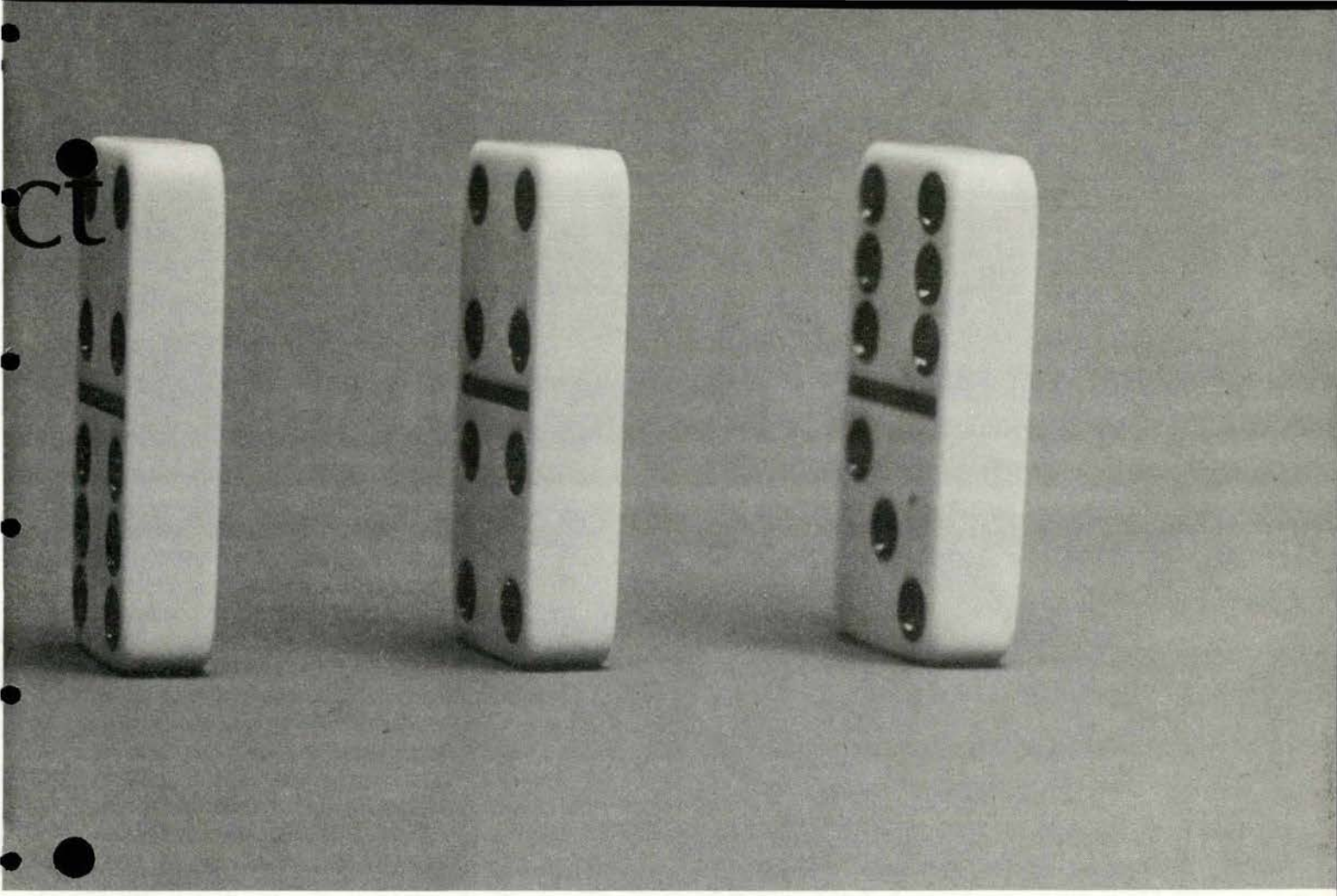
The NCOIC later said that if a writeup describing the indications in this case were made on a local flight, he would enter a red cross on the writeup. He felt also that a gear retraction test would be necessary to clear the red cross. And he knew the warning systems in the two cockpits were separate and the one in front should be valid.

The TA supervisor later said that, if he had known of the situation, he would have entered a red cross and had a specialist troubleshoot the system. There was no writeup, however, so there was no action.

Following the mishap, the assistant detachment commander said his instructions were advisory only, and continuance of the flight was left to crew discretion. **Another domino.**

The crew checked the gear micro switches and got a green left gear light when the battery was turned on during preflight. So they launched on their next leg, a night flight. **Down went another domino.**

Again, as they configured for landing, the left gear safe light failed to come on. This time the mirrors were of no use because of the darkness. The crew decided to try a full stop landing, but after



touchdown the aircraft settled to the left and they went around. **Domino four.**

At this point the crew realized they had a serious problem and decided to declare an emergency. They asked for foam and said they would make a pass by the tower. However, darkness prevented the tower crew from seeing the gear. With the pressure building, the crew shut down the left engine, depleted hydraulic pressure and tried another alternate release. No change in cockpit indications. Another tower fly-by and gear check by a helicopter brought a report of main down but nose gear not visible.

Another landing attempt was a repetition of the first, a settling to the left and a go-around. The IP then asked for foam for a gear up landing, but only 700 feet had been laid before their fuel state dictated an immediate landing. Then on final they were directed to go-around because the foam truck had stalled on the runway. Jaws were tightening as the aircraft made a tight 360 and landed over the stalled truck some 3,500 feet from the approach end. The aircraft slid 2,600 feet and halted. The crew egressed safely.

During the ensuing investigation, the cause of the unsafe gear indication turned out to be a loose ground wire. Actually the gear was safe all the time; however . . . **Domino number 5.** The left main gear strut was flat, which caused the aircraft to lean to the left on landing and led the pilot to think the gear was not down.

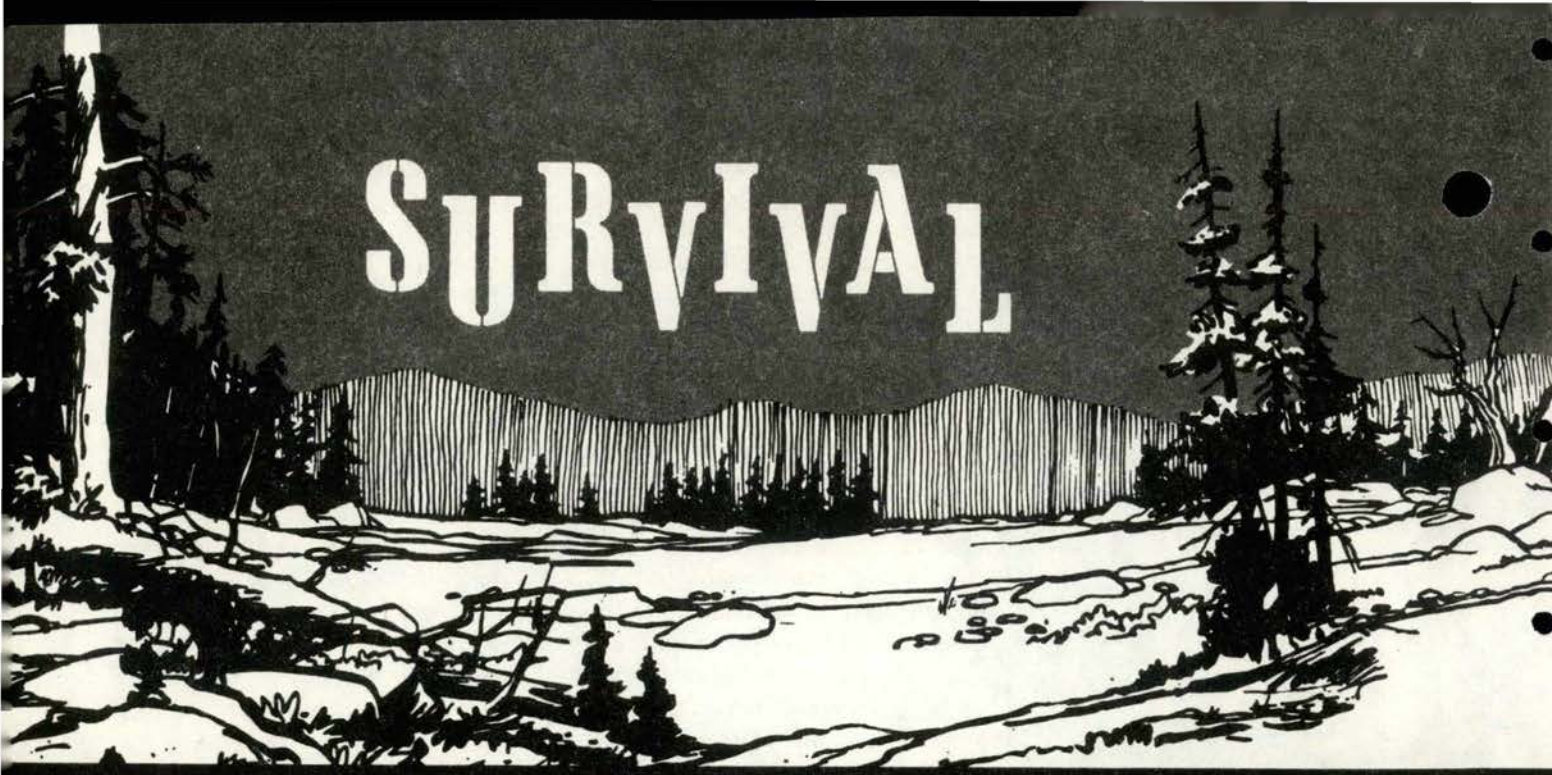
Let's go back over the dominoes:

- Unsafe left gear indication.
- Less than outstanding supervision.
- Indications of gethomeitis.
- Darkness.
- Deflated left gear strut.

The domino effect has been applied to many different situations. It is most appropriate for aircraft accidents. Time-after-time, accidents could have been prevented if someone had removed one of the dominoes. For example, a crew overflew several air fields while the condition of their four engine aircraft continued to deteriorate—one engine after another until, with only one left, they encountered weather and went in.

Example, an F-101 pilot continued a night mission after experiencing attitude indicator malfunctions that made it difficult for him to maintain altitude control during turns. The aircraft subsequently pitched up during an intercept and was destroyed.

Some broke the chain by removing a domino. Those have been the smart ones. Use your smarts, don't let a domino get you. ★



The Secret Of The Desert

Sgt Edward Smith • Det 2, 3636 CCTW • Nellis AFB, NV

The misconceptions and folklore surrounding the hostility of desert environments have led many people to believe that it is impossible to survive in the arid stretches of the Sahara, the Gobi, or even the Great American deserts. True, there are documented accounts of people who have simply gone into the desert and vanished. Why? Was it misfortune, lack of knowledge, or a lack of preparation? Perhaps it was a combination of all plus a failure by the individual to maintain a strong will to survive. Whatever the reasons, the myths have always been a part of desert survival. Myths have contributed to the overall fear and apprehension attached to being stranded in an arid stretch of land we call a desert.

For the purpose of this article, a desert is a dry region rendered barren or partially barren by a lack of rainfall. The average annual rainfall in most deserts is 10 inches or less. Some receive little or no precipitation for several years then are deluged by heavy rains in a short period of time due to some freak change in climatic patterns.

Many people picture the desert as nothing but miles and miles of shifting sand dunes. That's not so. The largest desert in the world, the Sahara, is only 10 percent sand, while the Arabian Desert has only 20-25 percent, and the deserts in the southwestern United States contain even less.

Desert areas are noted for extremes in temperature and dryness and a general lack of vegetation. Yearly temperature variations will range from below 0°F during the winter months to a high in excess of 130°F in the summer. Daily temperature fluctuations between day and night may be as much as 45°F.

All these morsels of knowledge are fine, but it is more important to recognize the impact these factors will have upon you as a survivor in a desert climate. First, the temperature extremes will dictate protection from the sun's rays during the day and insulation from the penetrating cold at night. Second, the lack of water will be your most crucial concern. Without adequate water to replace normal body losses, your expected survival time is only a couple of days at best.

Water plays the most important role in your body's functions. Without this precious ingredient, the body will cease to operate. Under normal everyday conditions, you'll require a minimum of two quarts of water per day. Because of the stress induced by high desert temperatures, the daily requirement is doubled. With increased physical activity or extended exposure to the sun, the 4-quart per day water requirement may be doubled or even tripled; therefore, your survival time depends upon the temperature and the amount of water you have available. At 90°F, with only four quarts of water per day, you would be expected to live 10.5 days; however, at 120°F, your survival time is only 2.5 days!

Your body controls heat primarily through evaporation of secreted moisture (sweat) on the skin surface. When your body temperature increases six to eight degrees above normal for an extended period, death is likely. Therefore, you need a consistent intake of water to allow normal func-

tions to occur and maintain normal or near-normal body temperature. If you lose 2½ percent of your body weight, or about 1½ quarts of body water, you'll suffer a 25 percent loss in efficiency. Also, by working in temperatures of 110°F, your efficiency is reduced by 25 percent. If the two events occur simultaneously, you are operating at 50 percent normal efficiency.

In addition to water losses incurred through evaporation, the body loses water through respiration, defecation, and urination. All of these losses have to be combatted in order to prevent dehydration and incapacitation. If you become dehydrated, the symptoms you can expect are dizziness, headaches, lack of salivation, slurred speech, nausea, flushed skin, and drowsiness.

This all sounds very bad, but there are several things you can do to prevent dehydration. First, drink plenty of water. You'll probably have a very limited supply on hand, but it is important to drink what you have, as you need it. This will maintain your body efficiency for a longer period of time. Your body needs water to create perspiration and to supply liquid for circulation. When the body dehydrates, the blood loses water, becomes thicker, and volume is reduced. The result is more work for the heart and less efficient circulation. These facts point out the fallacy in the old wives' tale which advocates rationing your water. Rationing water will only lower your body's water level to a dangerously low point! You merely lose efficiency quicker.

Your need for water can be controlled, to a certain extent, by rationing water *loss*. This can be done by three interrelated methods. First, keep your activity to a minimum! Work or travel is more desirable at night when the desert is cooler. Second, stay in the shade! The sun of some deserts can literally bake you. You must locate and remain in a shelter that will protect you from the sun and the wind, yet allow cooling breezes for ventilation. Third, keep your clothes on! Clothing will protect you from the sun's rays and absorb your perspiration. Sweat absorption extends evaporation time, and the cooling effect created within the clothing will retard water loss.

Although water is the critical factor in desert survival, food *may* become a problem, *if you have water*. You can live for weeks with no food, but only a few days without water.

Don't plan on living entirely off the native vegetation, although it is possible to supplement the concentrated foods in your survival kit with wild plant foods in many deserts. In the American southwest desert, edible plants are more abundant than in the Sahara, Gobi, or Arabian deserts. But keep in mind that it may take more energy to gather the food than you'll get by eating it.

Animal food is available in some deserts, but the benefits from your exertions could be counter-productive. When meat is digested, the liquid water products must be eliminated from your body through the kidneys. That takes water. If your water supply is low, it may be wise to sun-dry any meat and save it until you have a more abundant water supply.

Desert insects are a good food source, but digesting them also requires water. If your water supply is low, you may want to forgo insect food.

You may be able to get help from desert people. They'll recognize your sign language for, "I'm thirsty," even if they don't understand your words. Once contact has been made with natives in any desert, food and water are usually available. During normal times, desert people tend to be quite hospitable.

Your survival in the desert may depend upon the knowledge you are willing to accumulate about the desert and the skills you develop to combat the forces working against you.

Living in desert conditions isn't easy, but it is possible. Confidence is gained through the positive perceptions you have about yourself and your own abilities. ★

No Walking at all.

Max. Daily Shade Temp° F.	Available Water per Man, U.S. Quarts					
	0	1	2	4	10	20
	Days of Expected Survival					
120°	2	2	2	2.5	3	4.5
110°	3	3	3.5	4	5	7
100°	5	5.5	6	7	9.5	13.5
90°	7	8	9	10.5	15	23
80°	9	10	11	13	19	29
70°	10	11	12	14	20.5	32
60°	10	11	12	14	21	32
50°	10	11	12	14.5	21	32

Walking at night until exhausted and resting thereafter.

Max. Daily Shade Temp° F.	Available Water per Man, U.S. Quarts					
	0	1	2	4	10	20
	Days of Expected Survival					
120°	1	2	2	2.5	3	
110°	2	2	2.5	3	3.5	
100°	3	3.5	3.5	4.5	5.5	
90°	5	5.5	5.5	6.5	8	
80°	7	7.5	8	9.5	11.5	
70°	7.5	8	9	10.5	13.5	
60°	8	8.5	9	11	14	
50°	8	8.5	9	11	14	

This is Table 17B, p. 279, in **Physiology of Man in the Desert**, by E. F. Adolph and Associates, New York Interscience Publishers, 1947. Note that survival time is not appreciably increased until available water is about 4 quarts, the amount necessary to maintain water balance for 1 day at high temperatures. Utilization of shade or saving a few degrees of temperature is as effective and as important in increasing survival time as water.

Pass It On, COLONEL

REPLY TO ATTN OF: Lt Freshout
of-UPT

SUBJECT: Dissemination of Flying Experience

TO: Colonel Megahours Pilottime
Attached For Flying
Anywhere AFB

Sir, I hope you will not take offense at anything that I have to say. I may step on some toes, but I think that these things need to be said. The fact is, sir, I need you.

Let me begin by saying that I hold you in great awe. You flew in 'Nam and Korea. You've flown over places and bombed places that I have only read about. While you were chasing MIGs and dodging SAMs, I was in the backyard playing soldier with stick-guns. Your stories keep me enthralled for hours. You've flown

P-47s, P-51s, F-80s, Huns, Voodoos, Deuces, and many more. Why, I never had that many plastic models! You've had every in-flight emergency twice over. You've landed at fields that were WOXOF. You've buzzed houses and water skiers. You've even flown under bridges and power lines.

You are a modern day barnstormer to be held in high esteem. You have an aura about you that all old fighter pilots have. My fellow brown-bars and I retell your stories even when you aren't there. "The colonel said that he was chasing a MIG in an F-86 once and . . ." we say, as we run intercepts with our hands. It's reciting mythology, your mythology. You are our "God of Flying." We worship, respect, and attempt to copy. If only we could become a fighter pilot like you, we dream!

This, sir, is the problem. Many of us young pilots look upon you as the model for our flying development. We strive to be like you in every way. Therefore, when you talk of violating regulations, buzzing houses, etc., we see this as part of "being a real fighter pilot."

Sir, I'm asking you to take a long, hard look at yourself. Are you giving us the right example to follow? Are you being the correct frame of reference on which we can base our flying? Are you doing all you can to instill professionalism and safety in us? It's not really your deeds that we try to copy. We try to emulate your attitudes. After all, we want to be fighter pilots, too!

Let me be specific. You routinely show up 20 minutes before our takeoff time. You are ready to fly—never checking weather, preflighting your equipment, or briefing the mission. What are you telling me about a pilot's responsibilities? Sure, it looks sporty to fly with your sleeves rolled up and your gloves rolled down; and who needs a checklist? What are you telling me about a pilot's regard for safety? You've flown at 400 knots below 10,000 feet all your life. ("Haven't got a speeding ticket yet!") What are you telling me about a pilot's regard for regulations? You are constantly asking me for ops limits, holding airspeeds, gear speeds, flap speeds, and pattern procedures while *you* are flying. ("I never can remember. . . . What's our airspeed on final?") You even need coaching to fill out a boldface test. What are you telling me about a pilot's professionalism?

This all seems like such a waste. The Air Force has invested 25-plus years and five thousand hours in you. Your expertise and experience is a high resource that remains untapped. You could use them to help us who so desperately need it, but you don't. You fly the entire mission while I play navigator, radio operator, and passenger. Have you ever thought that the techniques you've picked up over the years could help me to be a better pilot? If I never touch the stick when we fly, how can you evaluate my flying? How can you help me to improve? The Air Force, and eventually all of us, are the losers. Don't hang on to the cockpit just because you can. Help us low-timers to be better pilots because we have flown with you. Use your experience to help us safely and professionally get our experience.

Remember, we who are still wet behind the ears are attempting to copy you and your ways. You are continually being studied by those of us with few hours. You are under the spotlight. Our focus is on you. For that reason alone you should show us the highest degree of professionalism at all times. (It's like a tax you have to pay on your five thousand hours.) Help us to see the best you have to offer. Give us the professional example that we need and deserve. Demand professionalism from yourself so that I will see that example and emulate it.

Think back to the last time that you held us in awe with your daring deeds. Now, when was the last time you told us about canceling a mission for weather, going missed approach, turning down an unsafe airplane? When was the last time you bragged to us about your professionalism?

Don't forget us brown-bars, sir. Let us learn from your example of a truly professional "fighter pilot." We need You!!

Freshout of-UPT, 2Lt
Anywhere AFB ★

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Ride the WILD horse

Part one

Years ago *Aerospace Safety* featured a series of three articles on helicopter flying by Major Charles O. Weir, who was assigned to the Helicopter Flying Training School then located at Stead AFB, Nevada. Since then we have had period requests for reprints and copies of the magazines. Recently, because of events that occurred during a search for downed aircraft in mountains, interest has again been generated in the series. The articles dealt with helicopter flying in mountains. The aircraft have changed but the mountains, winds, high density altitudes and turbulence haven't. So we are reprinting the articles, with some editing, in this and the two succeeding issues.

The story that follows was not designed to entertain other helicopter pilots nor to toot any horn in any way, rather it is aimed directly at some of you indifferent type supervisors, the "I've got 'em (helicopter), but I don't want 'em types." The helicopter is a complex machine requiring a pilot with the skill and dexterity of a bird. To see him perform is deceptive. To understand why and how he performs is the problem. I hope to help you on your way to a better understanding of the business of being a chopper pilot.

It was a beautiful, warm late November afternoon at Randolph when the boss called me in. "Chuck, how would you like to take two crews Alaska and ferry two H-21As back to Olmsted?" Momentary mental

flashbacks quickly reviewed the Arctic to me. December temperatures of anywhere from 0 to −60 degrees, limited hours of daylight, rugged terrain, broad valleys, unexpected snowstorms, turbulence and high winds and all the other things in the Arctic which are relative to flight planning; things I had learned and experienced on a previous four-year tour of chopper flying in Alaska. Despite a slight apprehension of unforseeable dangers which attach themselves to a project such as this, I replied, "Yes sir, when do we leave?"

As our C-118 approached Anchorage, all looked peaceful and serene, a sparkling panorama of snow-covered mountains and valleys flushed with the sparkle of winter, and Cook Inlet reflecting the total beauty of it all. The tranquil effect of this land was shattered by 40 degrees below zero temperatures as we stepped from the aircraft. For the first time, the entire crew was shaken into utter, stark reality of arctic temperature and the numbing effect it has upon you.

After a week of preparation, at last, favorable weather was predicted: clear and sixty all the way to Palmer, our first stopping point. Temperature would hold at −58 to −62. Winds calm at Elmendorf, three to five knots at Sheep Mountain Pass, five to ten knots at Gulkana, and about the same for Northway. Time en route was estimated as 4:40. A full fuel load of 3600 pounds (we carried extra tanks) was taken on. Flight characteristics were considered good at this gross; most of the extra fuel was not needed for this leg but would save us time and effort in refueling by hand pump at 60 below. The interior of each helicopter presented a conglomeration of equipment, fuel cells, B-4 bags, large duffle bags of arctic survival gear, heavy tarp-like covers for blades, windshield, rotor heads, dorsal fin, etc. In fact, there was just enough room left for the crew chief to park himself on the front edge of the troop seat near the forward rescue door.

Due to loose powdery snow on the runways, we made short running takeoffs and were on our way. The time was 1030 hours. Because of our heavy load, full climb power was utilized. The rate of climb was only 150 to 200 fpm but there was no sweat as rough terrain was still 40 miles away. We leveled off at 1000 feet and settled down to the routine business of nursing our wallowing hulk on its way. As we approached Knik River, we encountered slightly gusty conditions, nothing to worry about as it was probably a little turbulence coming down from Knik Glacier about 20 miles to our right.

After crossing the river, we picked up a little headwind and the gusty conditions had all but disappeared. Looking down at the ground, I could see swirls of blowing snow moving across the fields of the Matanuska farms. I figured our headwind as being about 20 knots and knew that blowing snow on the ground was caused by at least 30-knot winds. There was only one place the wind could be coming from: down through Sheep Mountain Pass, the most rugged leg of our route.

Years ago while flying stiff winged aircraft through this pass, I had encountered some mighty blasts and terrorizing turbulence in this area, and had all the respect in the world for avoiding going through Sheep Mountain Pass when she was on the rampage. I was on the edge of decision to turn back knowing that you can give the arctic winds credit for getting worse instead of better when you are trying to get through. Turbulence was picking up a bit, moderate for a helicopter but not to the point of alarm. Airspeed was reduced and rotor rpm was increased.

At 1110, I called Elmendorf Tower and asked for the winds from Sheep Mountain radio and their reply was "four knots." They further stated my route forecast winds would hold. Still not alarmed, I couldn't figure where the chinook winds were coming from. The only station with any winds at 20 knots was Talkeetna, 60 miles northwest of our position. Impossible that we were riding a feather edge of that flow. Forty miles ahead was a glacier field at an elevation of 8000 feet. Could these ice monsters be generating a flow that was shooting down through a cut in the hills? Of course. That had to be where the winds and turbulence were coming from. Cold air spills and tumbles down through the valleys, cuts and gulleys like onrushing tides of water. By climbing, maybe we could escape the high velocity areas of this stream and in a few minutes be in the waning edge of this invisible force. Luckily, at this check point we have a dog leg to the right; if only we can get to the turn, we shall be free from the grip of this ugly, unseeable monster.

Full climb power was applied. At 1500 feet with 2600 rpm and 42 inches, we suddenly nosed up and over to the left. Rate of descent at full climb power was 2000 feet per minute. We were in a dive! Airspeed 110 knots; Controls would not respond! Downwind! Fifteen thousand pounds and a

Ride the WILD horse continued

double load of fuel would surely make a big splash! Full back stick, trying to turn, any control response would help – got to hold power; can't slow airspeed or rate of descent. Good Lord, I'm not flying this thing; I'm merely hanging on to it! Is this real? Why doesn't the damn nose come up? The family – what is their day like – the smiling faces of the youngsters. Wonder what the future holds? Still no response! Dive angle is about 60 degrees, still going – nothing helps; sweating through my parka; trees are inevitable. We're going to hit – maybe five seconds left!

A smashing jolt from reverse G forces! We're going up! Up! We are pitching up – rotor speeding up – decrease collective pitch – reduce rpm – can't overspeed – 1500 feet per minute up – a delirious feeling!

Imagine 15,000 pounds autorotating upwards at this speed. Recovery! I'm tired; I'm soaked with sweat. I'm confused as though I've been hit a knockout punch – level, all under control! Think! Think! What can I do? How can I guess? What is the right action to take? Do that famous 180, boy! That's the impulse – the urge – no wait. Don't turn your tail feathers to that blast – you will tumble.

Wham! Here we go again! Winds must be over 80 knots – we are in a swirl! Down – down – we're still flying – I thought the aircraft had broken in half. May be imagination, ripping and tearing of metal. How can the chopper stand the punishment? How can we? Rate of descent on the peg 6000 feet per minute. No, no – it can't be! Surely I'm seeing things – dive angle at least 70 degrees! Surely the wooden blades can't take much more – flapping, stalling, compressibility. How can they stay together? Do we have control failure – controls are useless. Poor copilot, I'm beating his legs black and blue with the cyclic. He's trying to get his legs out of the way but can't. Wonder what he thinks – probably that he should be back in Iowa selling corn to the local granary. Call the other aircraft. See if he has us spotted – will make it easier for the ground party to eventually get to us – only a hundred or so feet above the trees now.

"Dave," I yelled into the boom mike. My breath was jolted out of me as we again reversed direction and started up – nose high 35- to 45-degree angle – going up like a homesick angel! Control! I've got control! Big open field below. I'll land. No, can't do that – no rotor brake, it will tear the blades off trying to get them stopped. What can we do?

The thought of a 180-turn to Elmendorf was a strong compulsive urge. What could we lose by trying? Negative, we'd tumble like a rolling sagebrush if we tried to run downwind in these conditions – not enough aft cyclic control to keep the tail down. Call the other aircraft. See what his conditions are and what his position is. Good, he's a mile behind and about a mile to our right, in turbulence and wind, but not in any serious trouble.

I'm right! The wind is coming through a slot eight to ten miles ahead of us; to our right, maybe three to five miles, is the waning effect I am searching for. How to get there. Now a crosswind from the right. Full right stick and rudder – she won't come around – here we go again! Nose going down, being blown into a descending left turn. Not severe this time – am controlling rate of descent and partial rate of turn – help the aircraft turn! Let up on right rudder, try natural cyclic; that's it, it's coming – rate of descent is steady – head for the airstrip – keep control – easy now – we're doing fine. Call Dave and see how close to the strip he is. Good, he's only a mile or so away. Says he'll be right over. "Keep your eye on me, buddy, I'm still not sure we have it made!"

Holy Smokes! A real blizzard brewing on the ground – winds must be 60 to 70 knots, blinding snow blowing and tumbling every which way. Regardless of winds and velocities and snow, we have to get on the ground; better to tear the blades off on the ground than in the air. Shut down procedures would be as though the voice of doom had spoken. Shake, rattle and roll, fight! Got to keep her upright. The strip – we can see it! Easy now, slow the airspeed. At 70 knots we are hovering; ease her up. Over the strip. One hundred feet up – reduce collective. That's it, let her down slow – up we go! Reduce collective! Slam – now down. Up on collective. My God, we're making like a 7½ ton yo-yo! Quickly now, slam the pitch stick down. Forget about a hard landing – have to get it on and keep it on! Call Dave and have him come in for landing to my right. "Roger, looks mighty bumpy, we'll give her a go!"

What instructions do you give your copilot (he, too, is an IP)? The handbook says "Use Caution." No guidance in this case. Do you throttle back to 2000 and let the blades flap? Or, do you hold 2500 rpm and take a chance on a big gust lifting your yo-yo up to a hundred feet again? For some reason or other, I chose the latter and I didn't have to tell Robbie what he could expect. I got out, locked the shoulder harness and seat belt so Robbie wouldn't have any flapping distractions to worry about and waited for Dave to approach and land.

Watching Dave approach the strip was as if I had had my picture taken and was now looking at it. Up – down – surges of power – a real fight! Thrilling, actually, to watch man and machine battle the uncanny treacherous winds that were blowing with blizzard force and velocities. Bang! He's on, or he was. Steady boy, you're up about 50 feet. Try again – easy as you go – that's it, that's it, reduce pitch – wham it on! Hold rpm. Good! You're on!

I climbed aboard and went forward to talk to Dave. "Hi, old buddy – how goes it?" Asinine question but it provoked a grin from Dave. "Now that we are on terra firma – what next? Wanta try for Elmendorf?"

"Not NO, but HELL NO."

"Good, I'm with you, ole friend." During this time the airspeed needle was jolting up and down. As little as 40 knots. Steady around 55 knots and as high as 70 knots! Fortunately the birds were heavy or there would not have been any possible way to keep them from flying when battling such great gusts of wind. Several light aircraft had broken their moorings and lay tottering and flapping in the wind. Nearby was the office of the bush pilot who worked from this strip. Obviously no one around. Better check and see if there is a phone in the shack. It wasn't easy to make my way through deep snowdrifts and the howling winds (particularly at 40° below zero) to the shack. There is a phone! It works! "Operator, emergency government collect call to Base Operations, Elmendorf AFB, please."

"One moment, please, I will try and connect you."

"Base Operations Airdrome Officer speaking. What can I do for you?"

"Buddy Boy, this is the pilot in command of the two H-21s that departed your base an hour and fifteen minutes ago and you can plant a hefty boot to the derriere of your blankety-blank weatherman who goofed on my briefing, that's what you can do for me! We are on the strip at Palmer 35 miles from Elmendorf and we are staying her until these blankety-blank winds die down. Close out our flight plan. If you don't hear from me again tonight, you will know that we shut down safely and don't need any help."

"Yes, sir. Gee, I don't understand it. Pilot reports moderate turbulence around Skwentna and Talkeetna but none from your area."

"Well, old buddy, you're getting a pilot report now. See ya."

Outside both old hens were still squatting there as though the eggs were about to hatch, Robbie was glad to see me. The aircraft had tried to fly a couple of times during my absence. He reported one gust of nearly 80 knots!

"Dave, I'm going to hover over next to that clump of trees and try to shut down – maybe the trees will give us enough windbreak to safely stop the blades."

"Roger, buddy. We will wait here until you have it made."

Trying to hover sideways was as critical as the approach had been; up, down, narrowly avoiding sharp ground contact by full power increases and using full control movement to keep her into the wind took all my effort and attention. Finally, after what seemed an eternity of fighting, we hovered into the windbreak and nudged the forward rotor as closely into the trees as I dared. I called Dave and invited him over to join up on my left side. He experienced the same difficulties that we had. He set his bird down about 50 to 60 feet from us. I told him to throttle down – watch the blade flapping and when rpm was right, to throw the clutch switch into the friction position. This would be the crucial point to the shutdown – as blade rpm would be around 100 rpm (a very high flap potential) and to prevent extreme damage to the clutch, 30 seconds should be allowed to use the friction position on and off to slow the blades smoothly. Too much fric-

Ride the WILD horse continued

tion would create a sudden stop and cracked blades could result.

As we decreased blade rpm, flapping was severe. The tips were bouncing up and down from six to ten feet. I didn't know what the mechanical limitations of tip flap were but could well assume that part of the total flap arc could be attributed to blade flexing. At any moment we fully expected a blade to slap into the fuselage. Rpm kept decreasing down, down, friction now! Hit it again! We had done it – blades were stopped and still intact!

I glanced over at Dave's aircraft. The rear set of blades were flapping through a 10 to 15 foot arc! Apparently he was judging the safety of the operation by looking at the forward blades. They were flapping but not to the dangerous degree the rear ones were. My radio had faded out due to the low engine idle speed – the generator cuts out at 1300 rpm. I couldn't call Dave to tell him to add rpm to avoid the rear blades from striking the fuselage.

Quickly I unbuckled and clambered through to the rear door and as best I could, was trying to beat my way over to tell Dave of the hairy situation. Leaning full forward into the blizzard, I looked up in time to see the retreating blade on the rear rotor zoom way high. I knew this one was going to come down and tear into the fuselage. I dove forward, face down into the snow to present as small a target as possible for the shrapnel pieces of steel spar and wood that would soon be slinging themselves from the rotor system. I dared look up in time to see it happen. From reading of past H-21 accidents, I knew that some sections of the blade spar could be thrown nearly a quarter of a mile and could cut small timber in half. The blade suddenly hit its peak of upswing and then slashed as suddenly as a cobra into its victim, the fuselage. As the blade sheared and went sailing on its way, the unbalanced rotor system caused the airframe to shudder violently like an elephant doing the rhumba. The next two blades whopped off the two vertical stabilizers. Sections of spar and wood flew in all directions. The rotor system turned only about five times and stopped. Only the howl of the wind was to be heard and it dawned on me that I was still in one piece. Impossible that a man could stand in front of a firing squad and not get hit by one bullet. Those were the odds and I had beat them!

As I climbed forward through Dave's aircraft, I could see that Dave and Harry had their helmets off and were just sitting there, dejected and yet thankful the ordeal was over – one way or the other.

On the bus ride back to Elmendorf I decided I'd better send a wire to Texas, "Mission over, not completed, more to follow."

The shattered H-21A was put on a flat bed and returned to Elmendorf. Four days later, I flew my bird back to Elmendorf. It had seven red diagonals on it for popped rivets and wrinkled skin. The chopper had been gone over by highly qualified people – a structural engineer, a maintenance officer and inspectors – only my crew was afraid to fly it back. We were the ones who had ridden the "Wild Horse." I had a feeling that the fore and aft rotor masts were out of vertical alignment with each other and that the aircraft should not be cleared for even a one time flight to Elmendorf without benefit of a levels and protractor check. My opinion was not honored; the bird was cleared. Needless to say, we flew low and slow *all* the way back. Six months later I learned of the disposition of the two choppers. My bird was found to have a twisted fuselage and it *was* out of alignment. Both H-21As were returned to Z.I. by C-124 airlift. The old Line Sergeant put it this way, "Both of 'em, Class 26!"

Let's re-hash this story. Surely, we can place the blame for an unsuccessful mission somewhere! Before leaving Texas, I had cautioned the proper authorities of the perils of attempting this assignment. I further recommended that if no urgent need existed to move the aircraft, they should be put in storage and no attempt made to fly them out before late May or early June. If there was an immediate need, why not airfreight them out in C-124s? The decision was not mine to make – all four pilots were highly qualified. All the weather forecaster had on his chart was a big high, no stations reporting abnormal wind conditions, no way of guessing that a phenomenon existed only a short distance away. The clearance officer in base ops had no reason to refuse clearance. The pilot in command? "Me," what about this guy? Is he to blame? Maybe so, maybe no. I personally did not receive any criticisms on any of my actions or decisions. Doubt, yes. My answer to the ones in doubt was, "There were no fatalities, there were no injuries; I am grateful, I think I did right."

We have the requirement, the supervision, the crews, the birds, the people who help you along your way, the weather *and the unexpected*. If you cannot determine *who* was the cause factor, then determine *what* was the cause factor. Maybe somewhere in the future a requirement will come along that supervision and hard training will be able to acccomplish even the most formidable of tasks successfully. (To be continued). ★

Secretary of the Air Force SAFETY AWARD

Major Command with a small or no flying mission

AIR FORCE SYSTEMS COMMAND

General Alton D. Slay, commander AFSC, accepts Secretary of the Air Force Safety Trophy for 1978 from Dr. Hans M. Mark, Undersecretary of the Air Force. The well-defined and effective accident prevention program of the Air Force Systems Command fostered achievements that reflect a high degree of safety involvement throughout the command. For the second consecutive year, the command experienced only one Class A aircraft mishap, the lowest number accidents in the history of the command. In addition, total Class B aircraft mishaps were reduced more than 50 percent, and only one high cost Class B aircraft mishap was experienced in 1978 compared to four the previous year. This record is particularly impressive when considering that flying operations were conducted in a test mission environment featuring one-of-a-kind aircraft, unique aircraft configurations, and missions designed to test the limits of a system's capability. Ground safety accomplishments were equally impressive. On-duty injuries, off-duty fatalities, and Air Force motor vehicle mishaps were each more than 25 percent lower than the previous year, and most categories evaluated were below the Air Force average. ★

OPS TOPICS

ATC FACILITIES TO PANAMA

The FAA will turn over the agency's air traffic facilities and related responsibilities in Panama to the Republic of Panama beginning October 1.

FAA Administrator Langhorne Bond said the transition will be complex and will take five years to accomplish. Present schedules call for Panama to assume full control of the International Flight Service Station (IFSS) by 1981 and the Center and Terminal Radar Approach Control (CERAP) facility by 1983. By October 1 of the following year, the operation and maintenance of radar equipment serving the CERAP will be handed over to Panama along with the responsibility for all other air traffic services provided up to that time by FAA.

CROSS-CHECK

A recent incident in a T-38 reminds us that maybe if we become dependent upon, and complacent with our fancy gadgets, the back-up systems may not back us up. Seriously, the main ADI gyro and standby ADI gyro apparently went TU (tumbling under) at the same time. The crew recovered successfully, but a comment by the instrument technician struck home! "Probably not a premature failure . . . installation dates were 1976 and 1975 . . . most pilots don't cross-check and really monitor the standby enough to notice that it may have been getting sluggish." I plead guilty! Cross-checking and writing up more often may prevent a bad attitude. (Sorry.)

LOADMASTER INJURY

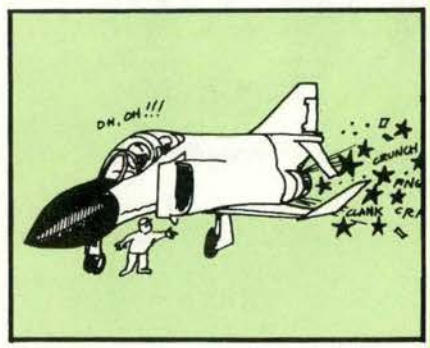
While a C-130 was taxiing in, the load master was preparing for parking. Brakes were not being applied at the time, but the individual somehow slipped and fell to the deck below. Result: broken leg with associated work loss. Could have been worse, but we'd still like to pass on the reminder to *watch your step*. Unless the task absolutely needs doing, it's smart to stay seated and belted until stopped.

PRESSURIZATION PROBLEMS

A recent incident again pointed to the need for timely action by flight crews carrying passengers. A transport aircraft departed a western base and was climbing through FL 330 when pressurization problems were encountered. During troubleshooting of the problem, a rapid decompression occurred. The crew accomplished an emergency descent and returned to their departure base without additional problems. No one was seriously hurt but some valuable reminders can be passed on:

- A timely descent to a non-oxygen altitude should be made (when feasible) because passengers (although well-briefed) may not react quickly or properly to a pressurization problem.
- Don't let complacency set in concerning the checking or "readily available status" of *all* oxygen equipment aboard the aircraft.
- Make your passenger oxygen briefings/demos thorough and ensure that there is no confusion as to location and use of equipment.
- A crew and passenger "buddy" plan is not a bad idea to prepare for a possible pressurization problem. (One emergency oxygen cylinder failed during this incident and the individual was saved only because others put him on an alternate source of oxygen.)

As crew members, we practice procedures for pressurization emergencies. We are also trained in the altitude chamber to recognize our individual symptoms to prevent insidious hypoxia. Passengers do not have the luxury of this training and experience. They depend on us to pass on the knowledge they require and then to operate the machine with their well-being in mind.



GULP! FOD

The End of Runway (EOR) crew were just trying to do their job, but they pushed a little too hard. While the weapons specs armed the bomb dispensers, one of the aircraft specialists, to move things along, opened the gun bay access door and removed the safety pin to arm the gun. After closing the door he started for one of the weapons specs to hand him the pin. But the left engine had other ideas and sucked it out of his hand. FOD to all 17 stages of the compressor. ★

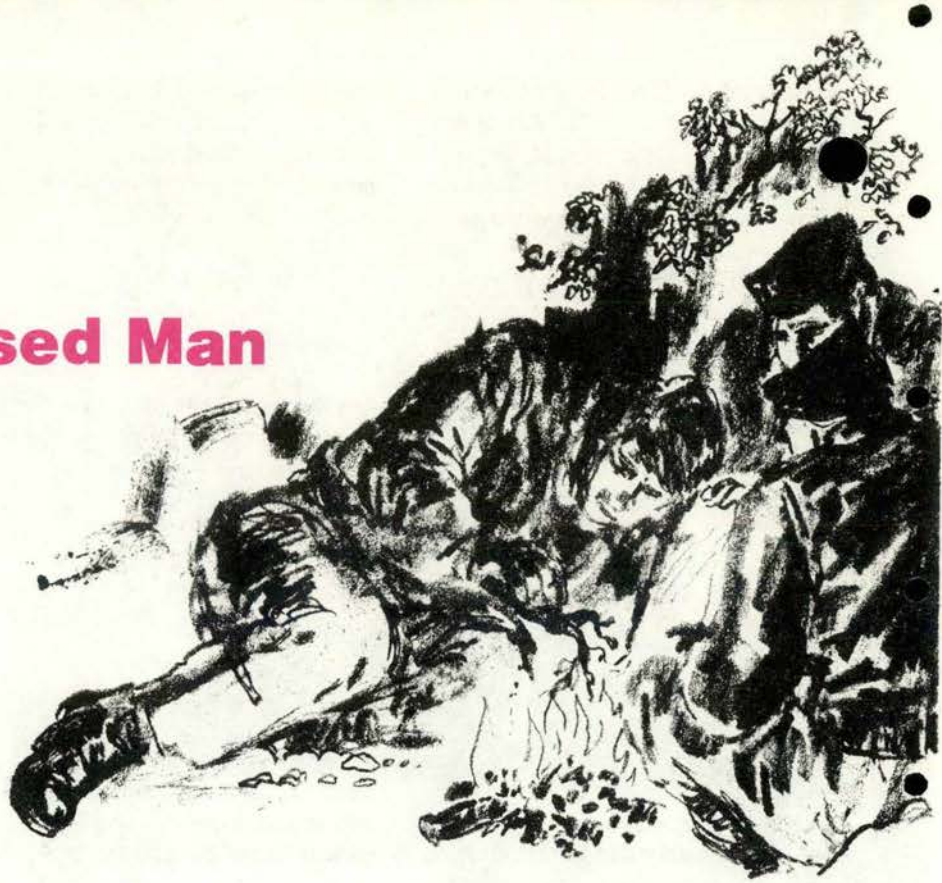
Secretary of the Air Force
SAFETY AWARD
Major Command that flies more than 2% of total USAF Flying Time

STRATEGIC AIR COMMAND

General Richard H. Ellis, Commander in Chief, Strategic Air Command, accepts Secretary of the Air Force Safety Trophy for 1978 from Dr. Hans M. Mark, Undersecretary of the Air Force. Strong command support and supervisory involvement, coupled with professional adherence to procedures and standards, resulted in outstanding safety program effectiveness throughout the command. Only one aircraft was destroyed, aircraft-related casualties were reduced to a near record low, and the aircraft major mishap rate was the lowest in the long and brilliant history of the command. This remarkable achievement, compiled while flying more than one-third of a million hours of worldwide, strategic operations, is a demonstration of dedication to high standards of excellence. Impressive accomplishments in other safety disciplines complement the flight safety achievements. The nuclear safety mission, largest and most complex in the United States Air Force, was performed in an outstanding manner, reflecting superior unit motivation. The explosives safety mission was accomplished without experiencing a single Class A or Class B mishap. Ground safety accomplishments were equally impressive. The command did not experience a single military or civilian on-duty fatality during the year, and off-duty fatalities were nearly 25 percent less than the previous year. ★

The Well Dressed Man

MSgt James A. Patterson, Jr.
36th Tactical Airlift Squadron
McChord AFB, WA



"Aw, Sarge, do you mean we gotta wear this nomex underwear under our flight suits all the time? You know how hot these nomex flight suits are in summer and how cold they are in the winter! What good are they anyway, huh?

When we fliers started receiving our first issue of nomex underwear, how many times did you hear similar statements like the one above? Quite often, I'm sure. I've heard it myself many times. As a matter of fact, the same thoughts went through my mind, plus, it's another piece of clothing to account for, take care of, and to carry for mobility.

I guess everyone had his own thoughts about nomex, and most of those thoughts were on the negative side. Remember when the nomex flight suits were first issued? Everyone tried to hang on to the old K2-B flight suits until the very end. Some people had to be ordered to wear the new nomex. When the new nomex flight suits were washed for the first time, remember how they used to get all those little lint balls all over them? Then, the seams would come apart and there would be a million loose threads. After they were washed a few times, you could almost see through them. Maybe that's why we heard that they lost their resistance to flame and heat. Of course, we've all been told how expensive nomex is. Uncle Sam had been taken again! How could the Air Force expect us to wear these flight suits and maintain a good military image?

The nomex flight suit has come a long way since its first issue. Today, the seams are holding better and the little lint balls are gone. The material seems to be a little heavier and warmer in cold weather. With these improvements, I think the nomex flight suit is a lot better looking than the old K2-B flight suit. Plus, now we've got nomex underwear, gloves, and both winter and summer weight flying jackets.

Experience is the best teacher, so to answer a couple of these questions about nomex, I'd like to pass mine on to you. Maybe I can save you from some of the discomforts and pain that I've been through.

Being a hunter and fisherman, I've gotten a lot of use out of my nomex underwear. As a lot of you will agree, it didn't take long to find out that the nomex underwear is not only lighter and more comfortable to wear, but it's just as warm as the old woolies. I have transited arctic bases with temperatures of 70° below, and hunted in temperatures down to 10° below freezing. These nomex underwear will keep you as warm as any other type of long john.

First of all, no one is going to criticize you for not wearing your nomex underwear in hot or even warm weather. If I were preflighting or loading my airplane in warm weather, I wouldn't be wearing mine either. But, would you have a pair with you? Probably not, but you can bet a month's pay that I'll have mine with me. I have a pair in a plastic bag, packed in the outer pockets of my helmet bag, all the time.

During our last ORI, our crew was selected, and put through 2 nights and 1 day of Escape and Evasion and Survival. After completing our heavy equipment airdrop, without any warning, we were hustled off, received a

short briefing then found ourselves out in the middle of the Nevada desert. The next 36 hours would be very interesting; the only things we were allowed to take were items we carry with our professional gear. We had nothing but flashlights, our gloves, my heavy equipment safety line and a couple of knives. We were given a map, a compass, 1 gallon of water, the coordinates of our safe area and our approximate location.

The six of us took off in the direction of our safe area. By daybreak, we had reached the foothills of a mountain range where we could safely E and E to our safe area. That first night wasn't too bad, except for an occasional break, because we were continually moving. At first, our map reading wasn't what it should have been and we headed in the wrong direction. As a matter of fact, we made several mistakes at the start. I think this was probably due to the situation we suddenly found ourselves in, the darkness and the cold. However, when we stopped for a break, believe me, it was cold. Our only clothing was our nomex flying suits, and summer flying jackets. What a relief when the sun came up!

Once we found out where we were and headed in the right direction, the rest of the day was great. We were outstanding in our E and E; matter of fact, at one time, we became the aggressors. At least, that's what the aggressors thought. Even though they knew the area we were in, they couldn't find us. They had crept into our position, but we spotted them in time. Our evasion at that time was not in the opposite directions, but in the direction of their vehicles. Even though we turned and headed for another safe position, the aggressors thought we were moving to capture their truck, causing them to retreat to their own area as fast as they could run.

We kept them in sight all day and, by knowing their position and moves, made our E and E to the safe area highly successful. However, too soon, the good came to an end. With darkness came the cold and freezing desert wind. Our E and E gave way to a much greater need – SURVIVAL! Our light summer flying clothes were no match for the freezing night wind of the desert. Even though we built a wind break, we had to build a fire, too. None of us slept, we took turns gathering firewood all night long. Around 0300, we built a second fire within our shelter and huddled between them. The one thought that went through my mind all night besides praying for the sun, was wishing I had a pair of nomex underwear. At that time, even there in the Nevada desert, I'd have given $100 for a pair of them.

If the aggressors really wanted us, they could have taken us at any time during the night, without much trouble. If it were an actual situation, right now I'd either be a POW or dead. Eventually, the sun came up and again the heat of the day. We were picked up and the exercise terminated. Although I had many thoughts of packing a pair of nomex underwear with my professional gear, I still had not learned my lesson. In less than a year later, I learned the full value of nomex.

Before hunting season opened this year, I purchased a new pair of hunting pants, named "Brushbuster Pants," from Sears. They were made of 100 percent cotton duck with a vinyl covering on the front of the leg up to the crotch, and a vinyl covering on the back, covering the calf. The vinyl is for resisting snags in brush. The pants also had a nylon lining in the seat for waterproofing. For hunting here in Washington, these pants really seemed to be ideal. However, they were missing one thing – a label stating: WARNING-FLAMMABLE CLOTHING.

The opening week of elk season, my buddies Mel Rae, Dick Ring, and an old friend George Rath, were camped in the Wenatchee Mountains. Most of the week the weather had been clear, a little windy, and mild. The hunting wasn't as good, we had only seen several cows. Thursday evening the weather had turned cold and windy, and by Friday morning we had an inch or two of snow. On Friday Dick, Mel, and I hunted near the top of the mountain; George

hunted near camp. After the day's hunt, we drove back to camp, finding George had already built a good campfire. On top where we had been hunting, the temperature was approximately 9°F, but back in camp, it was around 20°F. The wind was blowing about 10 to 15 mph. It was COLD. The campfire was a welcome sight. By 1830, I had finished eating, cleaning up, and was back outside to the campfire.

Dick and George had just left to visit some friends in the camp above us; Mel was still in his camper eating. I stood about 3 to 4 feet from the fire facing it, and after several minutes I turned around to warm up my back. After several minutes with my back to the fire, my left leg started to get warm, so I took a step away from the fire. Instead of cooling down, my leg continued to get hotter. I turned my head and saw a small flame on the back of my left leg, below the knee. I reached back with my left hand and slapped the flame two or three times. After the second or third slap, I realized two things: one, my left hand was burnt and, two, the flames were getting bigger. I dropped to the ground in a sitting position, and rolled my legs attempting to smother the flames. This did not work either. As a matter of fact, the flames were getting bigger, and now my right leg was also on fire. Realizing this dangerous situation was getting worse, and I was already burnt, I called for Mel. At the same time, I unbuckled my belt, and pulled my zipper down trying to get those blazing pants off. I couldn't get the burning legs over my hunting boots. Mel had come to the door, and seeing me ablaze, he grabbed an empty duffle bag, jumped out and wrapped it around my legs, pounding on it several times in an attempt to smother the flames. This did not work either so Mel threw the duffle bag aside. I was a human TORCH. Mel then took his hunting knife and cut the pants off my legs.

What seemed to be an eternity, actually happened in approximately 3 to 4 minutes. Mel helped me into my truck, sprayed my burns with a first aid spray, then went after Dick. Dick and Mel returned, and after giving me first aid, Dick drove me to a hospital, 13 miles away. I was treated for shock, and second degree burns of my left hand and leg, kept overnight, and released the next afternoon. Monday I reported to the flight surgeon and was sent to the hospital. I was kept for 8 days, then given 4 weeks of convalescent leave, readmitted for 4 more days then given 13 more days of convalescent leave. This is my last week of convalescent leave, my hand has healed, but the burns on my left leg are still not quite healed. It's really leaving quite a scar, but the pain has been indescribable.

Besides having a buddy who risked great harm to himself, receiving severe minor burns of his own, and another knowing first aid, I was also wearing my nomex underwear. This time I had them on when I needed them.

Picture a man sitting on the ground, both legs completely engulfed in flames for 3 to 4 minutes, flames leaping about a foot in height. You will probably expect 40 to 50 percent of my legs were burned. Mel, who had witnessed the fire with me, when he saw my legs exclaimed, "Is that the only place you got burned?" After seeing what was left of my hunting pants, Dick made a similar statement. However, only my left leg received serious burns, and probably not more than 10 to 15 percent of it. My right leg also had several minor burns which I didn't notice until 3 or 4 days later. By that time, the minor burns were just about healed and never needed attention.

The serious burns, I believe, were caused by the molten vinyl sticking to the nomex. If the molten vinyl had not stuck to the nomex, I would probably be well and back on flying status at this time.

I've still got the nomex underwear, just as they were after the fire. Besides being soiled and the vinyl still stuck to them, there is little else wrong with them. If I can get the vinyl off, I may be wearing them again next year. Another point that I feel should be made is: the nomex underwear I was wearing is 4 or 5 years old and has been washed many, many times. It has not lost its resistance to fire. One thing that amazed a lot of the medics and nurses was, even where I received the second degree burns, the hair on my leg was not even scorched. The flames did not get through the nomex. Nomex has proven itself to me.

As fliers, we should always expect to be caught by the unexpected. The Boy Scout Motto tells it best—"Be Prepared." Not only does the climate dictate the wearing of our nomex underwear, but so does our job. We work in an environment where the risk of fire is very great. This includes both ground and inflight duties. Then there is the thought that none of us ever likes to think about, CRASH. If you've been paying attention at your Flying Safety Meetings or watching the news, you already know there have been far too many crashes within the last year. I wonder how many men survived a crash but perished in the fire that followed? I'll bet if we knew the actual numbers, we'd all have a lot more respect for fire.

One thing I am very certain of, I DON'T EVER WANT TO GET BURNED AGAIN. If I am ever killed in a crash in a hot climate, my body will be easy to identify. It'll probably be the only one with nomex underwear, either under or over my flight suit. But on the other hand, because of my nomex, I may be the only survivor. The next time I need my nomex, whether in a training or actual situation, I'll be prepared. I have mine with me, do you have yours? ★

ABOUT THE AUTHOR

Sergeant Patterson is an Element Chief and Instructor Loadmaster on C-130 aircraft.

NEWS FOR CREWS

Information and tips to help your career from the folks at Air Force Military Personnel Center, Randolph AFB, TX.

Major Gary E. Wallace
Rated Officer Career Management Branch • Air Force Manpower and Personnel Center

FAIP/Other Assignments

The FAIP/Other assignment process is the method by which follow-on rated assignments for ATC's First Assignment Instructor Pilots (FAIPs) and "Other" non-major weapon system identified pilots are determined. The basic intent of this process is to provide every FAIP/Other the opportunity for major weapon system identity, thereby maximizing downstream career opportunity and optimizing utility within our pilot requirement structure. The process has been in being for nearly five years, with the major variable being the relationship between the number of folks "on the market" and the availability of major weapon system training. The latter is determined by training budgets, RTU/CCTS capacity, and the capability of the various weapon systems to absorb FAIP/Others in addition to UPT graduates. These considerations have caused training opportunities to vary substantially, from a low of 10-15% in FY76 to 100% in FY79.

The process is managed by the Rated Officer Career Management Branch at AFMPC, with the Trainer Assignment Section having administrative responsibility. Assignment packages are worked six months prior to an officer's available date (DEROS, Rated Supplement completion date, IP tour completion date, etc.), and aircraft of assignment are generally released the first Friday of the fifth month prior to the available date. For example, an officer available in December would be worked during June. The release date for his aircraft of assignment would be the first Friday in July.

The process is competitive in nature, based on a comprehensive evaluation supported by a complete career brief, an OER file, a current AF Form 90, and any pertinent correspondence relating to the officer. The career brief contains the bulk of an officer's stored personnel file. The primary items used in the assignment process are duty history (emphasizing job title, level, and performance – OERs), rated progression, and flying time. This information is supplemented by a thorough review of each officer's OER and correspondence file to extract additional indications of job performance, other duties, awards, education, and recommendations. Based on this composite data, the entire monthly package is rank ordered – the most difficult step of the process. This ranking is reviewed by a board representing the needs and interests of every operational MAJCOM, and chaired by the Chief of Rated Officer Career Management. We realize the weight of our decision, and fully appreciate that our board action may well determine the primary area of endeavor for each officer during the remainder of his career. We do not take this responsibility lightly.

As stated, during the formulation of the package each officer's correspondence folder is reviewed and any pertinent correspondence is included in our deliberations. As a minimum, this includes his latest Form 90, but often also includes letters of recommendation or letters documenting items not included in OERs or personnel records. Such attachments can effectively supplement the selection process provided they are objective, factual, and consistent with other data. If they add nothing of substance to the officer's duty history or OERs, or are in obvious conflict with other data without explanation, they are somewhat superfluous to the process.

Unless forced to by unusual circumstances, we simply will not work an officer's assignment without current Form 90 information. We feel that no games should be played with the Form 90, and every block and the remarks should "tell it like it is!" A workable Form 90 – one that helps both you and us – is different for a FAIP/Other than for a major weapon system identified pilot, in that the former is competing for initial weapon system identity rather than seeking a particular job within a major weapon system world. We request that the FAIP/Other list weapon systems in his priority order until he reaches a point where he no longer has a preference. Eighty-nine choices are the maximum number we've seen! This may be overkill, but it's better than underkill. A comprehensive listing helps us be responsive to you no matter where you rank in the total package. Geographic preferences can also be worked, so long as you define what you want and give preferences within the defined area. A supplemental priority listing of aircraft is appreciated and often useful, in the event the geographic preferences are not available. Also, any remarks that you feel might be relevant to the assignment process should be included. Help us to do the best we possibly can for you!

The monthly package is now a carefully rank-ordered group of competitor's records, each with a workable Form 90 and pertinent correspondence attached. Our next step is determining the assignment (aircraft type, supplement DAFSC, etc.) for each individual. Air-

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.

CAPTAIN

KENNETH L. STANFORD

9th Strategic Reconnaissance Wing
Beale Air Force Base, California

On 26 June 1978, Captain Stanford was flying an overseas operational U-2 high altitude reconnaissance sortie. After one hour of flight, Captain Stanford retarded the throttle slightly to adjust the engine EGT. Throttle movement resulted in no corresponding movement of engine instruments. Further throttle movement proved equally ineffective. With the engine now operating above maximum EGT limits, Captain Stanford found himself with a runaway engine which could only be shut down by activating the emergency fuel shut-off switch. A check revealed that all normal alternates were IFR. Captain Stanford headed toward the nearest VFR base, which was several hours flying time away. By this time the EGT was considerably above maximum limits and Captain Stanford was faced with the decision of descending to a lower altitude to reduce EGT but consume more fuel, or to maintain his altitude to conserve fuel but risk further possibility of engine damage. Because the nearest VFR base also had crosswinds within one knot of U-2 landing limits, the possibility of further diversion had to be considered. Captain Stanford chose to remain at altitude and save fuel. Upon arriving over his first recovery base, Captain Stanford discovered the winds had abated slightly and decided to remain there. After holding for several hours to permit a recovery team to be assembled, he shut down the engine and began gliding down for a "deadstick" landing. Passing FL 280, Captain Stanford attempted to configure the aircraft for landing, but discovered the hydraulic system would not function properly. Realizing that a no-flap flameout approach to a strange runway in a strong crosswind would be extremely hazardous, he elected to attempt a restart to get sufficient hydraulic pressure to properly configure the aircraft. During the restart, the EGT again went out of limits, but allowed him to get the flaps down and reset trim before he shut the engine down again. Maneuvering between buildups and low clouds, Captain Stanford made a flawless flameout pattern and landing. The timely and decisive actions of Captain Stanford under sensitive operating conditions and with marginal weather prevented possible injury or loss of life to himself and resulted in the safe recovery of an extremely sensitive and valuable reconnaissance aircraft. WELL DONE! ★

craft training allocations are made in annual blocks, which are further broken down into monthly quotas corresponding to the number of available candidates. For example, if 10 percent of the projected availables for the year are in a monthly package, then roughly 10 percent of the annual training allocation for each weapon system will be assigned that month. This method of distributing training equalizes opportunity regardless of when an officer becomes available during the year. Figure 1 shows the FY79 annual training allocation for FAIPs and other available pilots without major weapon system experience.

FY79 FAIP/Other Training Distribution

Ftr/Recce/Intcp		Bomber/Tanker		Airlift/Helo	
F-4	114	B-52	20	C-130	32
A-7	21	FB-111	6	C-9	11
A-10	57	KC-135	66	C-141	107
F-15	79		92	C-5	40
F-111	24			C-140	4
RF-4	12			C-135	3
Intcp	19 (1)			WC-135	1
FAC	36			Helo	32
	362				230

52.9% - Ftr/Recce/Intcp
13.5% - Bomber/Tanker
33.6% - Airlift/Helo

(1) T-33/EB-57/F-106

Figure 1

With a monthly breakout of assignments, aircraft are assigned to the rank-ordered package based on qualification and Form 90 desires. If the top officer in the package is qualified in accordance with AFM 50-5 requirements, he gets his highest "available" Form 90 choice. The F-16 is currently a frequent top preference; however, it won't become "available" to the FAIP/Other category pilot until operational squadrons begin to convert. If the first preference of the highest ranked officer were an F-16, we would therefore have to skip it and go to his second choice, etc., until we came to his highest currently available preference. If an officer were not qualified for fighter training in accordance with AFM 50-5 and yet fighters were his top nine choices, his tenth choice would be the highest to which we could possibly assign him. As aircraft are assigned, the typically desired weapon systems allocated to that month are taken and no longer available to the remaining officers. Hence, there are three primary factors that affect an assignment: (1) the officer's qualification for training, (2) the rank ordering of the package, and (3) the personal preferences of officers who rank higher in the package. The interplay of these factors makes it impossible for us to predict an officer's assignment – something we're constantly asked to do. As outlined above, the highest ranked individual could get his tenth choice, and the lowest ranked officer could get his first choice – it's relative not only to ranking, but also to the preferences of all the other officers in the package.

Once the aircraft assignments are made, the package is distributed to the various weapon system resource managers, who will then work with the officer to determine the end assignment and training sequence.

In summary, we view the FAIP/Other follow-on assignment process as a vital part of the overall USAF rated officer management scheme. The vast majority of our rated requirements are designed to be filled with officers with a solid major weapon system foundation. From another perspective – that of the officer himself – failure to establish that foundation at a relatively early stage in his or her career could lead to problems downstream. If you doubt that last statement, talk to any of the FAIPs reassigned directly to supplement duty in the drawdown years of 1973-1976; many are facing "green bean" status in operational squadrons today as senior captains or even junior majors. This challenges both the individual and his unit. It's something we think we can avoid in the future by systematically ensuring available training for our FAIPs as they complete their initial tours in ATC.

Taking several recent management initiatives into account, it looks like that 100% training opportunity we (and you) are enjoying today will be with us through 1984, which is the end of our current planning cycle. While things could change between now and then, this is a much improved picture over what we foresaw just a year or two ago. FAIP/Other training is an important investment for the Air Force, and remains high on the list of rated management priority issues.

That's where we stand today – what we're doing, why we're doing it, and how it's being done. Our commitment to you – the individual – and the Air Force is to keep the process unbiased, fair, and responsive. Your two direct links to this process are: (1) through your CBPO, by keeping records and Form 90 up-to-date, and (2) through us here at AFMPC. You play a big role in this process, so give us a timely note, call or visit to discuss that role: AUTOVON 487-6124/5 or AFMPC/MPCROR6, Randolph AFB TX 78148. ★

ABOUT THE AUTHOR

Major Gary E. Wallace is Chief of the Trainer Assignments Section at AFMPC. He is responsible for all ATCIP assignments, to include follow-on assignments to major weapon systems. Major Wallace's background includes tours in the F-4, T-41, T-37, and T-38.

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