TAC ATTACK

APRIL 1981

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...Pg 4

TAC ATTACK

READINESS IS OUR PROFESSION

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TACRP 127-1

Authority to publish this periodical automatically expires on 22 Apr 1982 unless its continuance is authorized by the approving authority prior to that date.

TAC ATTACK (USPS 531-170) is published monthly by HQ TAC/SEPP, Langley AFB, VA. Controlled circulation postage paid at Richmond, VA.

POSTMASTER: Send address changes to TAC ATTACK, TAC/SEPP, Langley AFB, VA 23665.

VOLUME 21 NUMBER 4

Angle of Attack

Some Birthday Thoughts

Happy Birthday. Tactical Air Command was 35 years old on the 21st of March. In those 35 years, we've made tremendous advances in safety. However, our driving safety record is still far from enviable.

Maybe it would help if we used some of the ideas that worked in flying. Sure, there are big differences. For instance, flying is an official duty, and we can regulate safer procedures. Most of our driving is off duty and unofficial, but it would pay us to be more professional in the way we drive. On our own, we can apply some of those ways of doing things that have made flying safer. Consider these good driving rules:

- Don't drive tired. Allow for plenty of rest before you start a trip, and don't drive too long in one day. In flying, that's called crew rest and crew duty limits.
- Plan the trip. Good planning will save gas and aggravation. It'll also save you from trying to plan while you're driving. Good flight planning has prevented a lot of aircraft accidents.
- Check your car before you drive it. Walk around it and look it over before you get in. It's the same idea as a preflight.
- Get it fixed before you drive. If you find something wrong, don't drive with the problem. In flying, we never take off in an airplane with a known problem.
- Think ahead as you drive. Scan down the road and try to anticipate what could happen. Flyers call that staying ahead of your airplane.
- Never drink and drive. Your judgment and reflexes aren't capable enough for driving after even a small amount of alcohol. The aviator's rule of thumb is twelve hours between the bottle and the throttle.
- Don't press your limits, or the car's. Speeding and reckless driving are like showing off in an airplane: they cost us lives. You can't prove your manhood with stunts in a car or an airplane, so don't try.
- Avoid get-homeitis. Don't take chances just to get home earlier, whether it's cross-town or cross-country. Better late than never.
- Don't get complacent. Just because the road is familiar doesn't mean it's safe. Most mishaps occur close to home. In flying, the mission isn't over till you've climbed out of the airplane in the chocks.

Well, what do you think? Can we make a dramatic change in our driving safety? It'll give us all a better chance of celebrating TAC's golden anniversary.

Richard K. Ely

RICHARD K. ELY, Colonel, USAF
Chief of Safety

LAND OR EJECT

By Major Tom Lockhart

Editor's Note: In 1974 Major (now Lieutenant Colonel) Lockhart wrote this excellent article for PACAF's safety magazine, THE PROFESSIONAL. Captain Hank Goddard, the F-4 SPO in TAC Flight Safety, brought the article to our attention, pointing out that TAC has recently experienced two mishaps involving fires followed by utility failures. Incidents involving engine bay fires in the F-4 appear to be on the rise. Capt Goddard has made some minor changes to the article bringing its references to the Dash One up to date. Other than that, the article is amazingly appropriate to our situation in 1981.

I was about half-way through an F-4 incident report the other day when I had to back up and

F-4 SINGLE ENGINE RECOVERIES WITH UTILITY HYDRAULIC FAILURE

reread the subject line to be sure I was reading about an incident - the narrative sounded just like several accident reports I've seen. In fact, if the incident flight had lasted another 30 seconds or so, I've little doubt that it would have ended in an accident, too!

The F-4 was on a gunnery range mission, and everything was normal until the right generator tripped off on downwind leg. The crew felt a "thump" while they were trying—unsuccessfully—to reset the generator, and the pilot noticed he could only get 330 knots at 5,000 feet with military power on both engines. (Pretty doggy airplane, eh?) About 2 minutes later, the right fire warning light came on and, when it wouldn't go out with the throttle in idle, the jock stop-cocked the engine and headed for home. Anticipating more trouble later, the pilot—wisely—decided to get the bird on the ground quickly and made a straight-in, downwind approach to the closest runway. He dropped the gear and one-half flaps and, about 4 miles from the runway, saw the utility hydraulic pressure starting to drop. At touchdown, utility pressure was down to 1,500 pounds and it fell to zero as the bird rolled out. The crew stopped the Phantom with emergency brakes and exited, armed with a better-than-average war story for the next happy hour. Maintenance discovered that the aircraft had a bleed air duct failure and the leaking bleed air had damaged equipment in the right engine bay.

Many times, with a malfunction like this, the utility hydraulic system fails, the bird rolls over and dies, and the crew—if they're quick enough—makes a nylon-letdown to conclude the flight. Utility failure, with an engine out or PC failure, is one of the stickiest compound emergencies a Phantom crew may have to contend with. This combination has produced an accident or two within memory and nine documented losses, Air Force-wide. In fact, there has been only one recorded, successful Phantom recovery under these conditions. This does not include combat losses or battle damage recoveries.

I happened to meet the man who made the successful recovery and he had an interesting story to tell. It went something like this—

I knew I would have lateral control problems and kept that in mind during the entire approach. Control wasn't too difficult until I blew the gear down at 250 knots on final. It took a lot more rudder pressure to keep the dead wing up than I thought it would. I kept the airspeed above 230 knots until just before we touched down and I made an approach-end barrier engagement.

There are a couple of important points in this minitestimonial. First, the pilot was expecting lateral control problems so when he encountered them, he was ready. Secondly, it took more rudder pressure than he thought it would to keep the dead wing up at low airspeeds. It does take a lot—like about 300 pounds of pedal pressure at 200 knots! I think you can see that it might take both crew members and some super smooth coordination to get that much push in at the right time.

Two test programs have been run to study the F-4's handling qualities and characteristics with failed hydraulic systems and an engine out. The Navy did some flight testing with the utility system disabled, one throttle in idle and the other throttle as required to maintain flight. The test pilot described the situation as "dicey" at approach speed in landing configuration. It would have been even worse with the "bad" engine actually shut down.

In January 1974, the Air Force did some testing with a specially programmed aircraft simulator. They used the same configuration the Navy had earlier and came to the same conclusion—it's a grim situation. Specifically, the test showed that utility hydraulic failure will result in loss of directional stability if the rudder is allowed to float free. This will reduce the lateral control departure angle of attack. Yaw that cannot be controlled by rudder creates a requirement for lateral control to counteract roll due to sideslip. Together, these conditions create a potential for a yaw departure at lower than normal angles of attack; and the F-4's longitudinal stability characteristics contribute to the problem. Under these circumstances the Phantom displays a slight tendency to pitch up

LAND OR EJECT

above 12 to 13 units AOA. This tendency gets stronger as the center of gravity moves aft and with wing tanks on.

To sum it up, the simulator test proved (as we knew all along) that, with utility hydraulic failure and an engine out or PC failure, the F-4 is extremely difficult to control and is very likely to encounter a yaw departure.

Soon after the tests were completed, interim safety supplements on the subject were fired off to the field. The procedures in these supplements were refined during a flight manual conference and are included in the Phantom's Dash One. I would like to discuss some of the more interesting points.

The discussion of the problem reads: "If the combination of weather, landing facilities and aircrew experience is less than ideal, consideration should be given to a controlled ejection." That should give you some idea of just how hairy this emergency is! Down in the actual procedures section, right after the landing is assured, there's an item that says: "Land or Eject"! The point being that the most probable time for the approach to turn to worms is just before touchdown, as the airspeed bleeds off and you lose windmill RPM on the dead engine just when you need all the lateral control authority you can get to hold the wings level. If the bird decides to roll over and play dead right then, you're gonna have to get out—quickly! There'll be no time for discussion or deliberation.

If you're going to try a double hydraulic failure recovery, I think the first thing that should go through your mind is what you'll do if it turns sour before you're on the ground. Admit that there's a good chance you'll have to leave the bird before touchdown, and make a coordinated escape plan your first consideration. I'd recommend setting the command selector valve for a rear-seat initiated, dual ejection and then briefing the WSO on the exact command you'll use for execution.

The Dash One recommends a minimum of 250 knots during the approach until configuring. Then maintain 230 knots minimum until committed to land. It also contains several caution notes about using slow throttle movements and staying out of burner to minimize yaw and roll problems. One caution note says: "If the pilot runs out of lateral control authority on final, reduce power, lower the nose and recover or eject rather than add power." Yes indeed, lateral control will be a problem!

The Dash One does not recommend taking the approach-end barrier and specifies use of the mid-field or departure-end barriers. I'd like to mention some of the reasons for the mid-field or departure-end recommendation.

To catch the approach-end barrier, the pilot is likely to make a lot of power changes and control inputs to make his touchdown point. That isn't a good idea in a single-engine Phantom with utility failure because, at this point, you'll be just about out of control authority and you'll be rapidly losing what little hydraulic pressure the windmilling

engine was providing for the failed PC system. Wiping the stick around or jockeying the throttle back and forth could be just enough to do you in completely. By flying a little further down the runway—the book recommends touching down within the first third—you'll be able to set the airplane up and leave it alone during the final, critical seconds before landing.

Let's take a moment to talk about those few seconds—the time that starts when you decide the landing is assured and ends when the wheels are rolling on the runway. I can understand why someone might hesitate to start pulling off power and slowing the bird down. Look at it this way—you're on final at 230 knots and the airplane is under control. If you slow down, you lose some lateral control authority. If you lose enough, the airplane will go out of control and you won't be able to do anything about it. You don't really know how much you can slow down and still maintain control until you slow down too much and lose it. Kinda puts you between the rocks, doesn't it?

A possible solution would be to go ahead and land at 230 knots. That's an intriguing idea that would minimize the chances of losing control on final, but you won't find anyone recommending it officially because it could prove disastrous.

For openers, you'd be touching down well above the maximum main gear tire speed—the tires may be able to take it, and then again, maybe not. A blown main gear tire or two is exciting enough at 130 to 140 knots; at 230 it would really be a thrill!

Then there's the problem of taking the barrier. Touching down at 230, even with an airplane that weighs 37,000 pounds or less, you'll probably tear out the barrier when you hit it. This act will slow you down a lot but could, when the barrier lets go on one side, throw you sideways while you're still going pretty fast. That's bad enough, but there's another possibility that's even worse.

Since the airplane will be well above normal landing speed, it will have a tendency to fly back into the air if you suck in a little extra aft stick right after touchdown. If the hook should catch while the bird is nose high and lifting off the runway . . . well, it's been done before and the results are some kinda grim!

In any case, no matter what airspeed you fly or which barrier you're trying to catch, remember that you'll have nothing but manual rudder, emergency brakes, a little bit of aileron, and will power for directional control on the ground. Hold the bird's nose down and concentrate on steering for the middle of the barrier.

A final point to ponder on the perplexities of barrier engagements: If you do take the wire above normal engagement speed, and the barrier doesn't break—get ready for the greatest slingshot ride of your life, after the bird stops moving forward and the barrier snaps you backwards! I've seen Phantoms flung clear off the runway doing this rollback trick! It usually doesn't hurt anything, but it certainly feels uncomfortable.

SPO's Note: Utility hydraulic failure with an engine out has remained a threat to Phantom crew members. Engine bay fires typically burn through utility hydraulic lines quickly. Have a plan. If you have a fire or overheat warning light, anticipate the possibility of utility failure. If you keep your airspeed up and maneuver away from the bad side, you'll at least increase your decision time. And that increases your chances of being able to talk about it later.

TAC TIPS

tac tips

...interest items, mishaps with morals, for the TAC aircrewman

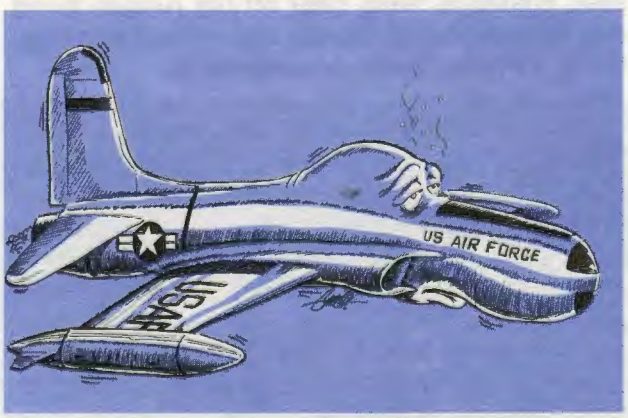
But the advantage of knowledge is that wisdom preserves the lives of its possessors.

Ecclesiastes 7:12

FOOLS AND DRUNKS

The T-bird was at 27,000 feet when the pilot noticed his oxygen blinker wasn't blinking. He switched to 100% oxygen and full emergency pressure—still no blinker and no oxygen pressure at the mask. The pilot began a descent to 18,000 feet. When he was sure he was clear of mountains, he continued his descent to 10,000 feet. He then landed at his destination.

That's pretty much how the pilot remembered the flight. As it turned out, he missed a few things. His transmissions were garbled; at one point he used the wrong call sign. He didn't remember prolonged flight at 23,000 feet; but, since he hadn't declared an emergency, he was given an intermediate level off at that altitude. He flew at 23,000 feet for more than 30 minutes. He missed his frequency change and was finally reached by another airplane on Guard channel. He actually did not have full use of his mental faculties until he was well into his approach for landing. He never thought of using the emergency oxygen bottle.



Now, we could sit here comfortably on the ground and criticize this pilot for not pulling the green apple and getting emergency oxygen, or we could criticize him for not declaring an emergency. But it wouldn't be fair. Without oxygen, his brain couldn't be expected to make correct decisions. As a matter of fact, his brain did far better than we'd anticipate under those conditions; he did make it home safely, after all.

The question is: How did he get the hypoxia? It turns out there was a little 4-inch square of plastic balled up inside the oxygen hose. They probably never will find out how it got there. But a good preflight check of his oxygen equipment by the pilot would have caught the problem before his life was at stake. A check on the blinker during the climb also could have caught it.

Our best chance of countering hypoxia is by preventing it. Once we've got it, we may not be able to react properly. If we are foolish and don't check our equipment, we'll end up drunk with hypoxia. Then we can only pray that "God takes care of fools and drunks."

NO COMMENT

The F-5 pilot across the pond was starting engines when he noticed a red light in the gear handle. At the same time, the crew chief saw the gear doors were down and attempted to raise them by cycling the gear door control switch in the right wheel well, but the doors remained down. So the crew chief asked the pilot to cycle the landing gear lever by using the override switch. The pilot did, and the nose gear collapsed. 'Nuff said.

ANTSY ABOUT THE ANTISKID

Every once in a while, we hear about a pilot who turned off his antiskid system because he couldn't feel deceleration when he applied the brakes. Once in a great while, his action is correct. The rest of the time, it comes out like this:

The F-4 crew overseas was on a cross-country flight when their flight lead noticed that their aircraft's drag chute door was open. Sure enough, the drag chute was missing. They continued on to their destination. The landing runway was reported as dry; however, mixed snow and rain were just beginning to fall. They made a normal approach and landing.

At 130 knots, with 6,000 feet of runway remaining, the pilot first tried the brakes; but he felt no braking action. He released the brakes and tried again: still no deceleration. So he released the brakes and pressed the paddle switch to get rid of the antiskid; then he felt braking action. He kept the paddle switch depressed. At about 90 knots he felt a wheel lock up. Before he could release brake pressure, his right main tire blew. The pilot kept the airplane on centerline and got it stopped safely.

Put yourself in this pilot's shoes. You know you don't have a drag chute. You know that antiskid systems can sometimes fail without a warning light. You are rolling down the runway in your 130-knot tricycle, and you don't feel any braking when you step on the pedals. How much faith do you have in your antiskid system? When do you give up on it and hit your paddle switch? We can't answer those questions for you. We can tell you that in this case, and most like it, the antiskid was doing its job. We can also tell you that in most of our aircraft you cannot sense a skid and react in time to prevent a blown tire when you use manual braking at high speed. The problem is worth thinking about.

HIS FINGERS DID THE WALKING

Have you ever done something and immediately wondered why you did it? It's as though your hand had a mind of its own. Sometimes that mind doesn't think too well.

An Eagle driver in another command suffered from an unconscious switch change. He was on a practice ORI, simulating a deployment with a

round robin flight. The airplane was configured with AIM-9L missiles. At the first turn point, he began to set up his switches for his simulated deployment area. Just then, his wingman called with some minor navigational problems. While his mind devoted itself to his wingman's problems, his hand continued on its merry way, changing switches. One of the switches was the Master Arm which his hand now turned to arm for no good reason.

The pilot got his wingman squared away and returned to his own navigation. He selected ground mapping mode on his radar so he could practice radar updating his inertial nav system. Every now and then he'd hit the search button on the stick. On one of those occasions, he missed the search button and hit the weapons release button instead. That launched an AIM-9L missile. The launch startled him so much that he hit the button again and launched another missile. Fortunately, both missiles hit in the ocean; especially fortunate for the wingman who, after his navigation problems, had been put 2 miles in front.

This pilot let his fingers do the walking, and they walked him right into trouble. Since we were rug rats, we've been told, "You can only do one thing at a time." That isn't quite true; we can walk and chew gum. But we can only concentrate on one thing at a time. If a task requires concentration (like setting the armament switches), don't do it until you can devote your attention to it. Put a leash on those walking fingers.

TAC TIPS

RCR ON PAINT

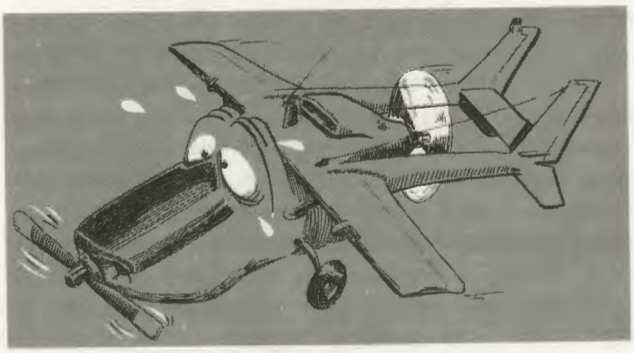
From an incident overseas, we learned something about Runway Condition Reading (RCR) we hadn't thought about before. The reported RCR in this case was 15-18. The F-4 touched down just right of centerline and began braking. At about 100 knots, the left main tire blew. The pilot kept the airplane on the runway and brought it to a stop, although he blew the right tire in doing so.

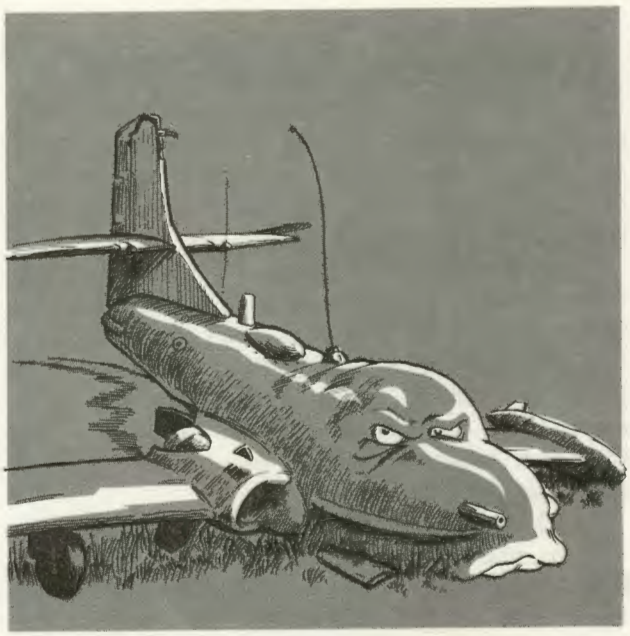
The lesson we learned was in what happened to the left main tire. When the aircraft touched down, the left main gear was on the painted centerline stripe. On the painted surface the RCR was much lower (slicker) than on the porous asphalt, so the wheel locked up. When the locked wheel left the dashed stripe of the centerline, it hit the rougher asphalt, skidded, and blew. The effect was the same as a tire that hydroplanes on a puddle of water and then hits dry runway. Even the antiskid system won't protect against those cases. File this in your memory bank under Miscellaneous.

DRY DUCK

The O-2 with two FACs on board was trying to do the go part of a stop-and-go landing when the front engine quit. It turned out to be a full stop landing since, fortunately, they were still on the ground when it happened. The reason the engine quit was fuel starvation. The fuel selectors were in the aux position and the left aux tank was dry.

Do you suppose that's why the checklist says to switch to the main tanks during the descent? Following the checklist might keep your engine from quitting during a critical phase of flight. But, if you're going to outsmart the checklist and play Russian roulette with the fuel, we hope you're as lucky as these two—so you're on the ground when your Duck goes dry.





AERO BRAKE + WHEEL BRAKE = BLOW OUT

The A-37 (and OA-37 for you FACs that converted) doesn't have antiskid problems because it doesn't have an antiskid system. Pilot technique controls skidding. It might pay for some of us to review our techniques.

A pilot was landing his A-37 on a wet runway. Touch down was normal, and he used aerodynamic braking to slow the aircraft. As airspeed decreased through 90 knots, the pilot got on the brakes to check the braking action on the runway. The left tire blew as he was lowering the nose to the runway and the aircraft swerved sharply to the left. Nosewheel steering and right brake pressure were not enough to keep him on the runway. The pilot shut off the throttles as he rolled into the dirt and grass. The nosegear collapsed when he hit a raised asphalt road, and he slid to a stop on the other side of the road. The pilot was uninjured.

The tire failure occurred because the wheel locked up when he checked the brakes. Hydroplaning was probably a factor since there was standing water on the runway, but even without hydroplaning the wheel could have locked up. Aerodynamic braking decreases the effective weight on the main gear. If you brake a wheel without much weight on it, it's likely to lock up and blow.

Aerodynamic braking is a good technique, and so is checking the brakes, but not at the same time.

DAHLING!

I'm so glad you stopped. You've just caught me between Saks and Neiman-Marcus, and everywhere I've been the Fleagleshirt is simply a *must*. I was just talking to Jackie, and she tells me the Fleagle T-shirt is now *de rigueur* in her circles. And do you know what I've found out? Not everyone has to sell a chateau just to purchase one. Some people are getting Fleagleshirts for absolutely nothing! It's true. They've been getting the genuine Fleagle T-shirt for simply writing a singularly outstanding article for TAC ATTACK. I do love authors, but that's absolutely *piggy* of them. I mean, Gore and Norman don't have one, do they?

Oh, James says the plane is waiting. I must be off. See you at Cannes, dahling.

• • •

Karen's right. You don't have to sell your chateau for a Fleagle T-shirt. You can get the world famous, highly coveted, and completely rustproof Fleagleshirt for absolutely nothing. Simply write a story, poem, or any other item for TAC ATTACK. If your item is selected as the outstanding article by our panel of critics (all rejects from Famous Writers School), you will receive the exclusive Fleagle T-shirt. Send your original articles to:

Editor, TAC ATTACK
HQ TAC/SEPP
Langley AFB, VA 23665

Photo by Joe Lahouchuc

Photo courtesy Miss Karen Link, Hampton, Virginia.

My friends at TAC ATTACK are waiting to hear from you.

Aircrew of Distinction

Maj Terry W. Buettner
336 TFS/4 TFW
Seymour Johnson AFB, NC

Capt John M. Deloney
336 TFS/4 TFW
Seymour Johnson AFB, NC

On 26 August 1980, Maj Terry W. Buettner and Capt John M. Deloney were leading a cell of seven F-4 Phantoms in a deployment from Seymour Johnson AFB in North Carolina to Ramstein AB in Germany. The 9-hour flight was planned for eight air refuelings.

They were 2 hours into the crossing when their UHF radio failed, leaving them with limited reception on an auxiliary receiver. Major Buettner repositioned the flight on the tankers and passed the lead responsibilities to his deputy lead. The third through sixth refuelings were made in and out of the clouds using visual signals with the tanker.

Shortly before the seventh refueling, in solid clouds, their right generator began to cycle on and off. After that, the heading system started fluctuating up to 40 degrees. Then, the right engine nozzle failed full open, and engine oil pressure decreased. They could not light the right afterburner even with repeated tries. Despite the drag of three external tanks and a baggage pod, Major Buettner and Captain Deloney successfully refueled with the left engine in full afterburner and the right engine at military power.

After refueling, they had to keep the right engine at full military power in order to stay up with the flight. But the right engine oil pressure was decreasing below normal operating limits. If they reduced power on the right engine, they wouldn't have enough thrust to stay at refueling airspeed and altitude. With over 600 miles to go to the nearest divert base, continued air refueling was critical. Major Buettner and Captain Deloney made one more refueling and then descended to an altitude of 13,500 feet where they could cruise with less thrust. They figured out the best possible airspeed and altitude for their situation and flew toward a divert base in Great Britain. With another F-4 as escort, they successfully landed at RAF Upper Heyford, using their auxiliary receiver for communication.

Major Buettner and Captain Deloney showed superb airmanship and crew coordination in handling multiple emergencies on an extended flight. They saved a valuable aircraft and, possibly, their own lives. Their actions together qualify them as a Tactical Air Command Aircrew of Distinction.

Aircrew of Distinction

On 3 February 1981, Capt Thomas M. Ostermann was returning to Langley AFB, Virginia, in an F-15 following an intercept mission. After configuring on the downwind for an overhead traffic pattern, Captain Ostermann checked that he had safe gear indications and began the turn to final. 1st Lt Charles V. Sonson, the runway supervisory officer on his first tour by himself, at the same time confirmed with binoculars that all three gear were down on Captain Ostermann's aircraft. As Captain Ostermann rolled out on final approach, Lieutenant Sonson again looked him over to check the configuration. The approach continued normally until about 5 feet from touchdown when Lieutenant Sonson saw the F-15's right main gear door open and the right main gear retract. Lieutenant Sonson quickly grabbed the microphone and called on the radio for Captain Ostermann to go around. Touchdown, however, could not be avoided. As he touched down, Captain Ostermann felt the right wing drop; and that, coupled with Lieutenant Sonson's warning call, caused him to add full military thrust to go around. With opposite aileron and aft control stick, Captain Ostermann was able to keep the right wing up as he flew the aircraft back into the air. During the go-around, the underside of the right stabilator tip just brushed the runway. After getting airborne, Captain Ostermann recycled the landing gear and was able to extend all three gear. Suspecting an electrical malfunction, he pulled the landing gear circuit breaker. He then made a low pass by the runway supervisory unit so that Lieutenant Sonson could confirm the gear down and locked. Captain Ostermann successfully flew the airplane to an arrested landing using the approach-end cable.

The professional actions, quick thinking, and skill demonstrated by Captain Ostermann and Lieutenant Sonson together prevented almost certain damage to a valuable combat aircraft and possible loss of life. Their actions qualify them for the Tactical Air Command Aircrew of Distinction Award.

Capt Thomas M. Ostermann
71 TFS/1 TFW
Langley AFB, VA

1st Lt Charles V. Sonson
27 TFS/1 TFW
Langley AFB, VA

chock talk

...incidents and incidentals with a maintenance slant.

TROUBLESHOOTING

The first time this F-16 had anti-skid problems was on an air abort for an equipment hot warning light. During landing the pilot noticed the anti-skid failure light on and felt the anti-skid pulsating. He lowered the hook and took the departure-end cable successfully. Troubleshooters found incorrect voltage outputs from the anti-skid control box, so they replaced it.

On the next sortie, the anti-skid failure light illuminated and the brakes pulsated again. This time, troubleshooting found a defective left wheel anti-skid sensor and it was replaced.

On the third sortie, the anti-skid failure light came on during takeoff. After getting safely airborne, the pilot cycled the anti-skid switch and reset the light. When he landed, the light again illuminated. He reset it again, and it worked for about 2 seconds. Then the brakes quit working and the light came back on. He tried channel 2 brakes and that worked for 2 seconds and then quit. The pilot turned off the anti-skid and manually braked the airplane to a stop. This time troubleshooting showed that the right wheel anti-skid sensor was bad and it was replaced. The anti-skid system worked fine after that.

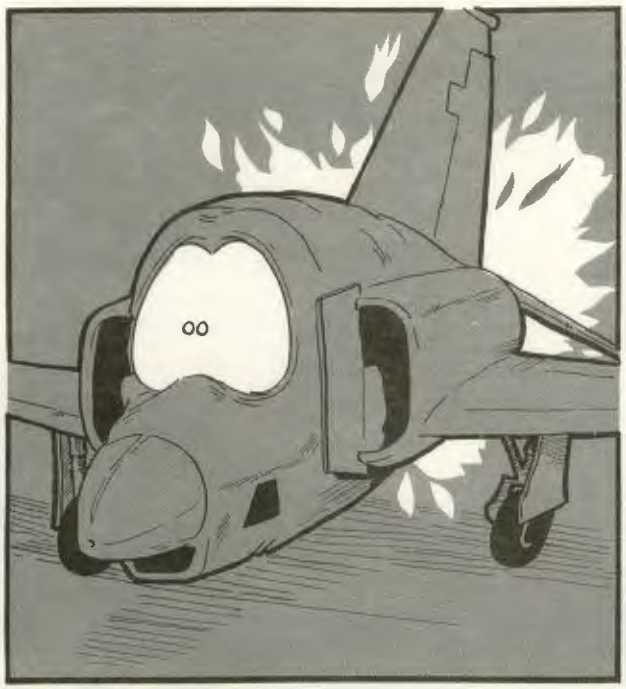
The trouble with troubleshooting is that sometimes we quit too soon. The control box was giving bad output, but it was also receiving bad inputs. We need to get to the source of the trouble when we troubleshoot. It's like hunting: the first thing you find may not be the target. If we all remembered that, there'd be fewer dead cows and enraged farmers—and repeat writeups.

JUST A PAPERWORK ERROR...

The RF-4 pulled into position on the runway. Runup checks were normal and the pilot released brakes. When he selected afterburner, a large fireball flared out of his right engine. The fire wasn't visible to the pilot. Feeling less than normal acceleration, he thought his right afterburner had failed to light; so he recycled it. That was followed by a loud bang, and the backseater spotted the fire in the right aft section. He notified the pilot; at about the same time, tower reported the fire on the radio. The pilot decided to abort and pulled the throttles to idle, but the airplane still seemed to accelerate. He deployed the drag chute, but the suspension lines melted and the panels were immediately destroyed. The pilot noticed the right engine was running at 100 percent RPM, despite the throttle being at idle. He shut down both engines and used the emergency brakes to stop the aircraft. The pilot and the backseater both egressed safely, and the fire fighters put out the fire.

The cause of all this excitement was tracked down to the phase dock. During 500-hour phase

inspection, the low pressure fuel filter was removed, inspected, and reinstalled; however, no



red X entry was made in the AFTO Form 781A. The requirement to run engines for a leak check following filter installation was also not written in the form. Phase dock, engine shop, and flight line supervisors did not catch those oversights; and the engines were not run and leak checked prior to flight. Murphy's Law being what it is, this naturally was the time the fuel filter was installed incorrectly: the clamp was cocked and not seated correctly on the filter bowl and main pump flanges. So during takeoff roll, the filter separated from the pump, allowing raw fuel to pour into the engine bay.

This incident points out a weak link in the chain of supervision. The phase dock monitor is an airplane general technician (crew chief type), and he is not trained to inspect the work of specialists. His job is to control the work flow. The phase work card deck itself does not alert the phase monitor to look for AFTO 781A entries generated by the inspection, but other aids prescribed by the TAC supplement to AFR 66-5 do. Work on the aircraft by specialists is normally only inspected by a 7-level specialist if a red X must be cleared from the form. But what if the red X isn't entered on the form? Who checks on that?

We often look upon paperwork as redundant and meaningless. Maybe sometimes it is, but here is a case where an error in paperwork and not following the tech data in the phase dock could have cost us two aircrew members and an aircraft. Installation errors will happen on occasion, but the established system of following tech data should catch the error before takeoff roll.

SEAT ABHORS A VACUUM

During phase inspection of an F-15 overseas the inspector was vacuuming the cockpit. In order to do a good job in the hard-to-get-to places, he had taped an extension of 1-inch diameter hose onto the 3-inch vacuum cleaner hose. The taped area had become worn, and reinforcement wire from the vacuum hose was poking out about 1/2-inch through the tape. As the inspector vacuumed the right side, he inserted the hose between the ejection seat and the cockpit wall. The 3-inch hose just fit between the seat and wall; but as he finished and pulled it out, it snagged. The protruding reinforcement wire caught the parachute arming cable. When he continued pulling, it fired the explosive delay cartridge and activated the automatic parachute ripcord release.

A longer piece of 1-inch hose would probably have prevented the incident. So would a good check of the hose connection and taking the time to retape it where it was worn. Maybe somebody somewhere knows a better way to set up the vacuum hoses and would let the rest of us in on it.

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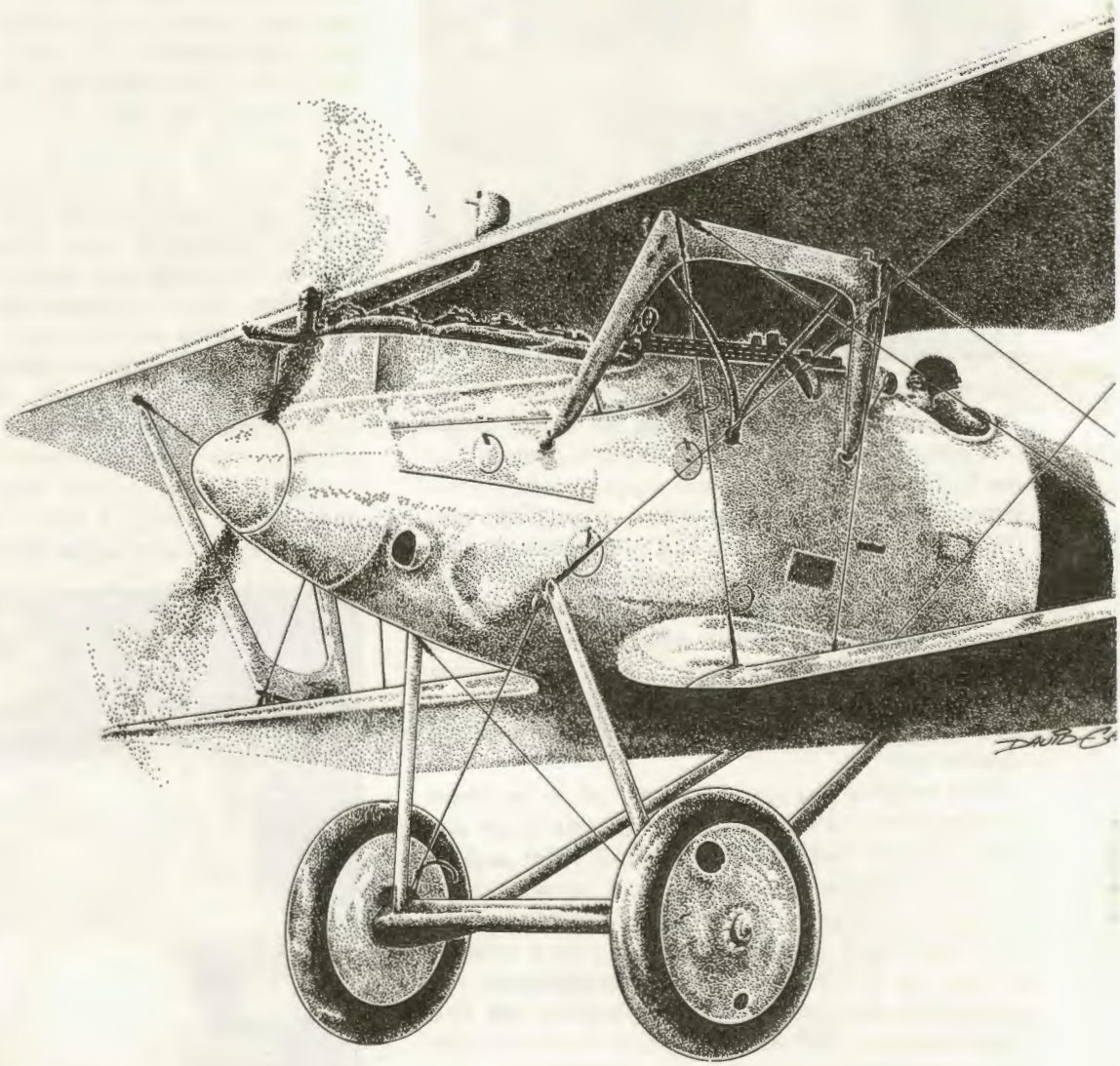
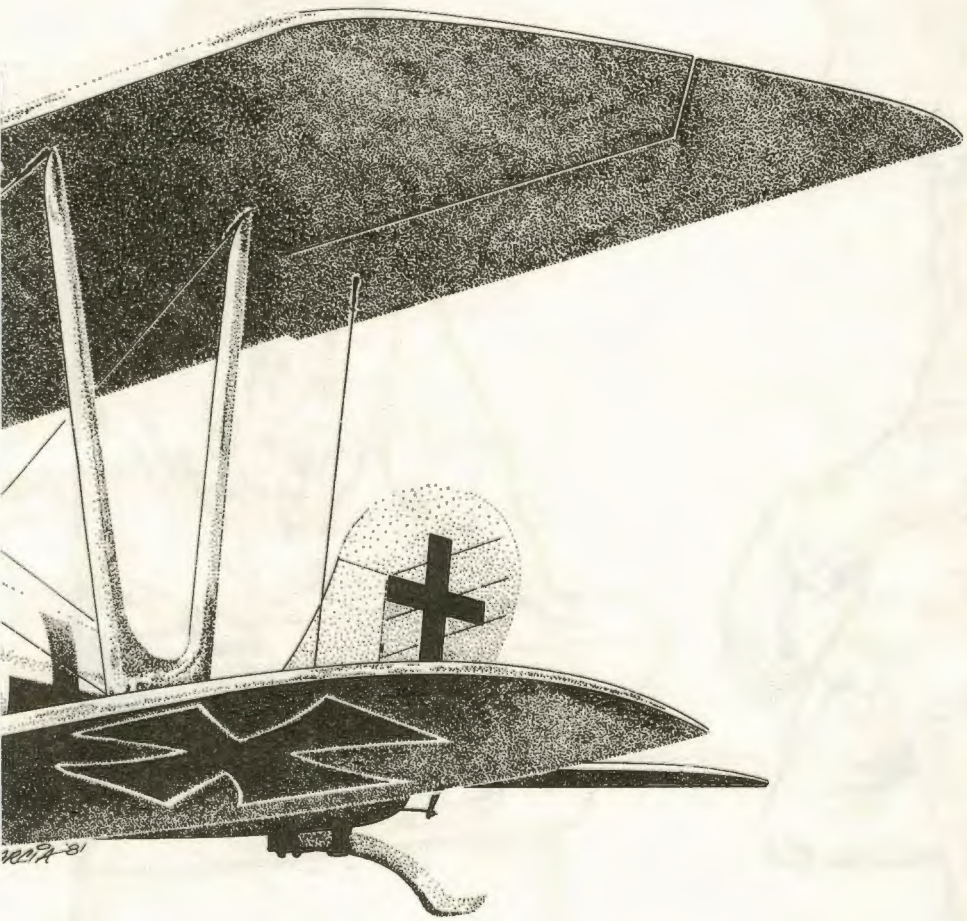
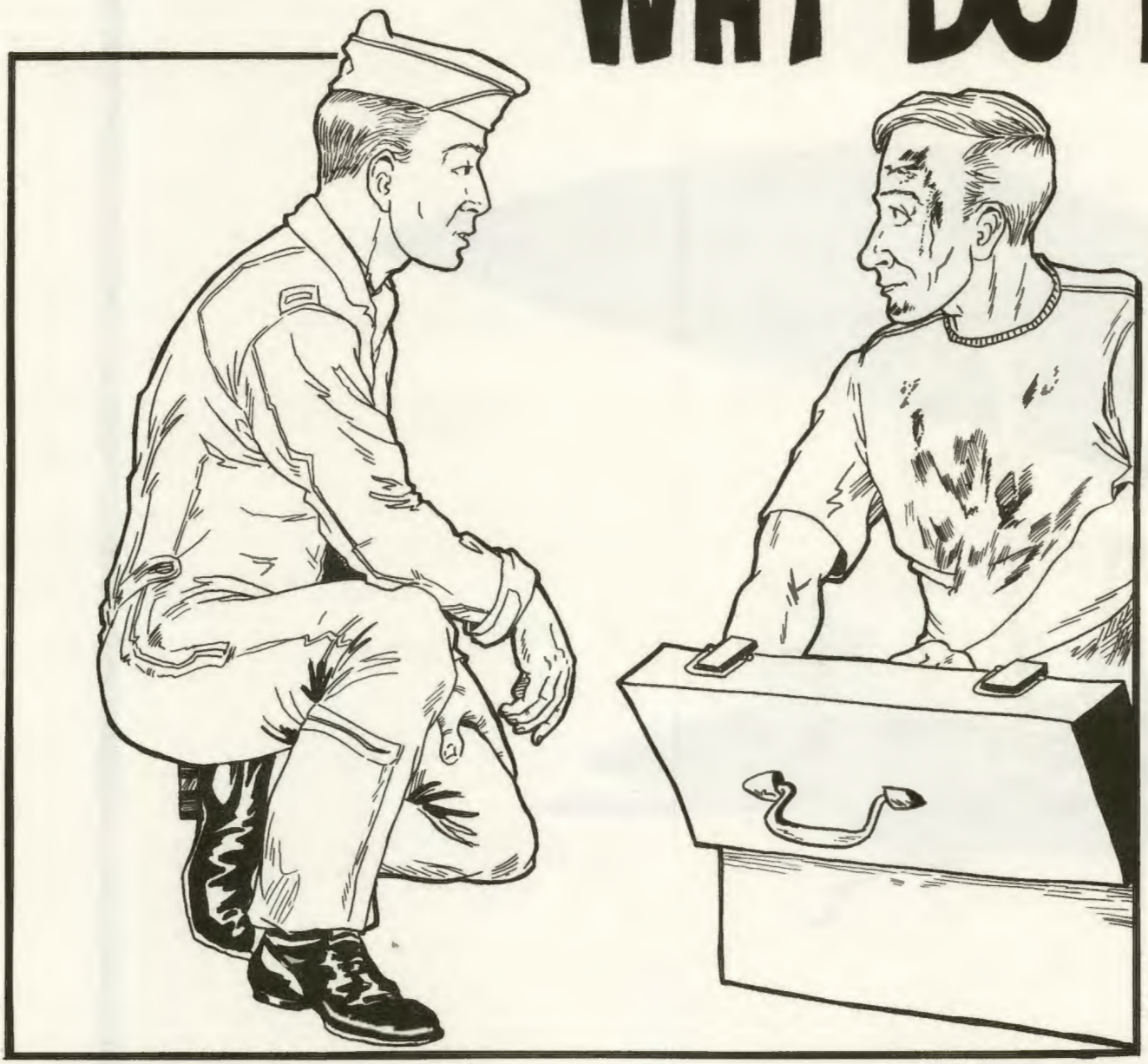




WHY DO I



By SSgt Stephen M. Moriset
479th Component Repair Squadron

Several months ago, I was working on the flightline when I noticed a young lieutenant walking past me, probably towards debrief.

It seemed to be especially hot that day. A few minutes earlier I had wiped the sweat off my forehead with my hand before I remembered the grease and soot that was all over them. This, of course, left a black smudge on my forehead that had now started to run down my cheeks with a fresh crop of sweat. I'm sure I must have presented quite a sight to the pilot who was proudly wearing his highly shined boots and bright squadron ascot.

The pilot stopped and, in a friendly way, peered into the panel I had removed from the side of the aircraft I was working on. He looked around and

DO IT ?

gave an approving nod. Then he stretched a bit and squatted down.

It was plain to see that he had something he wanted to say, and I did my best to divide my attention between our casual conversation and the work I was doing.

We discussed the weather and the squadron party that was coming up the following weekend. Then he said, "Sarge, can I ask you a question?"

"Sure, sir. What is it?" I asked as I began to put my component back into the aircraft.

"Why do you guys do it? What is it that keeps you guys in the service? Why do you stand out here in the heat or snow or rain or whatever to fix these airplanes at all times of the day and night?" he asked.

I wasn't really sure how to answer his question. As it worked out, that was okay because the shuttle truck came and the lieutenant jumped up, quickly gathered his helmet bag and flight case, and hustled toward the truck. He poked his head out of the open back doors and hollered, "Sorry, Sarge! Next time."

We watched each other as the truck drove away, until the heat rising from the ramp caused us to disappear from each other's view.

I thought about the lieutenant and his questions all that night and much of the next day. I finally had formulated an answer to his honest questions and was set for our next unscheduled meeting. I never saw him again. I found out he had been transferred overseas. The following is the answer I think I would have given him, had we ever met again:

I know that I'll never "slip the surly bonds of earth," but I can fix your "laughter silvered wings." I know I'll never strap a fighter on my back or travel those "footless halls of air." But when I walk down the flightline, you come to me to see if you can do those hundreds of things I've never dreamed of. I'll never "soar where neither lark nor eagle dare," but my spirit is with you on each of your flights.

When I go home in the morning and go to bed, when most men are getting up, I sleep well. Screaming children, chatting wives, doorbells, and street sweepers do not disturb me in my well-earned rest. However, the distant roar of your engines will wake me from my deepest sleep.

A sure and certain smile comes across my face as I hear and feel your engines push your aircraft skyward. I know that I've done my part, and now it's time for you to do yours. As the sounds of your engine are replaced by the sounds of garbage trucks and school buses, I drift back to sleep; and I dream of the things that you must be doing, not in an envious way, but almost as a flying mechanic.

When you raise the gear handle you feel a slight change in control pressures; but, in my mind's eye and ear, I see squat switches close and uplocks move; I hear the pumps wind to a halt as the limit switches are engaged. A checklist is run in my sleep and I monitor each gear, cam, seal, and limiter that is tucked away under those panels now securely fastened down.

I've read that you imagine you become a part of your aircraft; that man and machine become one; that your airplane practically reads your mind and seems to react almost before your gloved hand moves the controls. You imagine that steel, aluminum, titanium, and plastic become muscle, bone, nerve, and sinew.

If you can feel the pulse of your aircraft by placing your feet on the rudder pedals, then I'm the surgeon that replaces the cables, valves, motors, and bell cranks that are the imagined strength that moves your living rudder. I'm the specialist that has serviced, topped off, drained, filtered, purged, and pressurized the fluids that you imagine to be the life-blood of your friend. I've tweaked and peaked, tightened, torqued and tuned, miked and measured, routed and rerouted, fitted, fixed, filed, beat, bent, banged, and bucked each vital part of metal and plastic on your companion.

Sir, I am not belittling you for the things you feel about your airplane, because I feel things about it too. Most of the time I feel less than happy about the location of a certain part and I'll call it a "bucket of bolts" or holler at it when it comes home broken and it's my anniversary. I'll gripe and groan and tell it that it's just so many thousands of rivets flying in close formation.

There are, however, those other feelings that can't be explained as you watch a sunset reflected on its polished aluminum skin. I've sat on a tool box and watched the moon rise, twisted and distorted, through its canopy.

WHY DO I DO IT ?

There is also a satisfaction I get as I work on or service a part on the airplane you'll never see. Perhaps it's a rivet high on the tail, or a clamp somewhere under your seat, or a rib or stringer, a screw or bracket, in places you didn't even know existed. I've seen cables and wires, pressure seals and lines, bulkheads and formers, all painted zinc chromate green. And there are torque tubes and fuses, exciters and pistons, lag chambers, relays, bladders, and drybays. I know where each one goes, what it does, and what will happen if it doesn't do what it is advertised to do.

It's hard for me to imagine that you think of this airplane as being yours when I think of the blood I've left in the engine bay and the skin off my knuckles up in the wheel well. I remember the rib I cracked when I hit the pitot tube the wet morning I fell off of *your* airplane.

I've been bumped, bruised, pinched, poked, soaked, cut, scratched, scraped, skinned, burned, nicked, picked, smacked, cracked, and shocked. My hands generally hurt and my knees are sore from kneeling under or crawling over *your* airplane.

My utilities are stained and worn, but they are comfortable. Can you say the same about your flying gear jammed full of maps, charts, clipboards, and a plastic spoon? My underwear may be stained pink from the hydraulic fluid they've soaked up, but I'm cool. Can you say the same about your long-handle, nomex, fire resistant underwear? My hat only weighs a couple of ounces, and it doesn't cause hot spots on my scalp like your helmet. I'm not the one who has to wear an oxygen mask that causes the face to itch and sweat.

As an aircraft mechanic I don't have to worry about being ejected or passed over or birdstruck or midaired. If I get punched out, all I have to worry about is a loose tooth, and the last time I was grounded was when I was 12 years old.

I am happy turning wrenches in this man's Air Force. I am grateful to be an American and proud to wear the US Air Force blue. You see, sir, I know that in other parts of the world there are enlisted men and officers who wear a different uniform than we do, and they work on aircraft that have markings different than ours. Their views on right and wrong, and God and family, are also different than ours. If my having to stand out in the snow once in a while helps to ensure that those men and their aircraft pose no threat to me or my way of life, I will do it gladly.

I know that our airplanes will never be used to start a fight. They are a deterrent force that guards a great way of life. Our country doesn't really ask that much of you and me in exchange for the life we so often take for granted.

So, sir, I promise that if you'll keep flying 'em, I'll keep fixing 'em.

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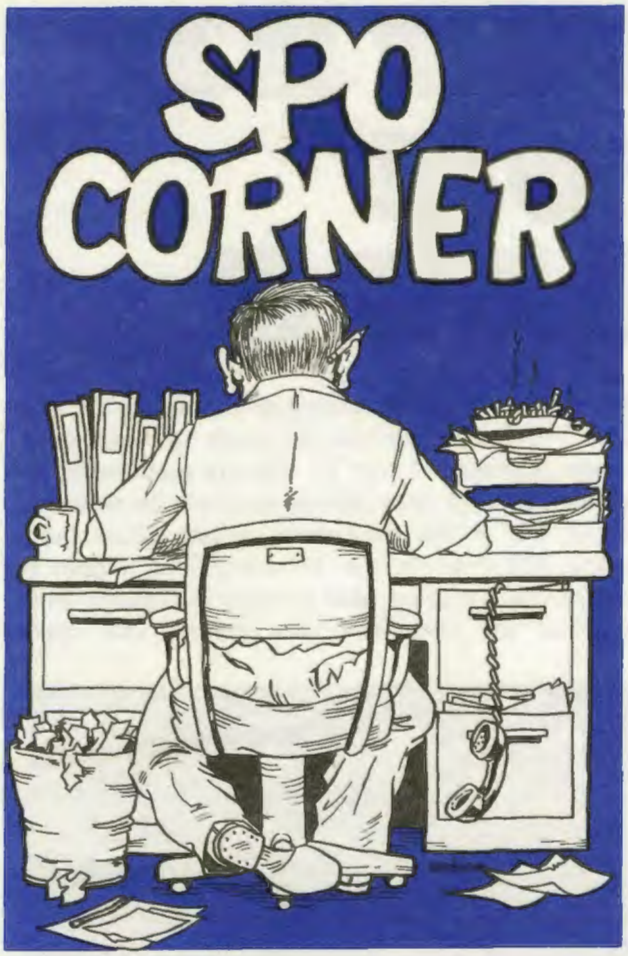


RUNNING THE GAUNTLET

By Major Gary Porter
TAC Flight Safety

Would you believe 33 hazards on one visual low level route? In these 475 miles of designated VR, you must dodge 33 towers and high-power lines reaching up to at least 200 feet AGL. This means that every 14.4 miles, on the average, you could encounter some man-made object which requires a deviation to your flight path. But wait—158 miles of this particular route are over the Atlantic Ocean. Over land, where these hazards lie, the average is 9.6 miles between them. Of course, this is no excuse to run into anything, but it illustrates a point. Why subject yourself to the high risk of hitting something on a low level? Take a look at the low levels available to your unit. Do any contain a high number of hazards? Do your unit briefing guides reflect this? Are you doing anything to certify less hazardous routes? Why run the gauntlet?

F-16 BRAKE FIRES

By Major Roger Parks
TAC Flight Safety

The TAC F-16 fleet has had numerous brake fires. Most were caused by an aluminum liner in the brake piston assembly failing and allowing pressurized hydraulic fluid to spray onto heated components. This failure mode has been well documented and new stainless steel liners should be available soon. In the interim, we must make sure current restrictions designed to compensate for this deficiency are observed.

Pilots, think about your brakes: Do you understand what the brake problem is and why moderate to heavy braking situations warrant special attention? Do you understand why it's better to "think conservative" when hot brakes are a possibility? Do you know when to expect hot brakes? It's important to note the F-16 brakes were designed for the air-to-air configuration; consequently, when we start "hanging iron" on the airplane, the brakes operate at a high percentage of their total capacity. This means quicker heat buildup even though you may not think braking was heavy, relative to normal operations.

Maintainers and de-armers, have you established procedures to chock aircraft as soon as they enter the de-arm or parking area? Do your procedures compensate for the unusual situation, e.g., unscheduled landings due to air aborts and aborted takeoffs? It is important to chock the aircraft as soon as possible during de-arming, especially when unusual heat buildup is likely. Holding the brakes while waiting for chocks inhibits dissioation of the heat in the brake discs and adjacent wheel assembly. Excessive heating of the wheel assembly causes failure of the aluminum piston liner.

Fire fighters, do you understand the brake problem? What precautionary hot brake response procedures do you have? Most of the brake fires to date have been characterized by very rapid fire propagation. Atomized hydraulic fluid sprayed onto 1,200°F or hotter brake discs is bound to flare up quickly. Timely response is critical.

These are just a few thoughts on dealing with brake fires. If you have other ideas or have developed local procedures which you think are noteworthy, let us know; and we'll make sure the entire F-16 community gets the word.

PHATIGUED PHANTOM ROLLERS

By Major Dion Johnson
4 TFW Flight Safety

I just got back from attending the latest F-4 System Safety Group at Hill AFB. Those folks at Ogden are working some 20-odd safety related mods and fixes and are trying hard to get a pot of money to fund each one. We're hoping to (eventually) get such things as: new hydro-mechanical nose gear steering, a better fire warning system, a low altitude/canopy unlocked voice warning system, beefed up hydraulic transfer fuel pumps, static suppressors to stop radio squeal in precip, and other goodies including 3,498 new main landing gear wheels.

At this point, the discussion dwelled a bit on wheel rim failures. Between early '79 and late '80, 25 aircrews had an interesting story to tell about the time one of their main landing gear wheels blew apart. Luckily most of these happened during taxi. Another 22 bad wheels were found by sharp troops in nondestructive inspection (NDI) shops. Obviously, this is the preferred method of detecting defective rollers. NDI people do a great job; at every tire change they use eddy current to detect cracks. Some base NDI shops go one step further and also use the zyglo dye penetrant method to detect surface cracks. What are they looking for? The flange locking ring groove on the main landing gear casting is failing because of cyclic plastic tensile strain. What's that? Fatigue cracks! A fatigue crack grows in the locking ring groove, and when it gets big enough—if undetected—it lets the wheel explosively blow itself apart. What now? If you happen to be sitting in the jet, it's like a blown tire. You probably won't recognize the difference from the cockpit.

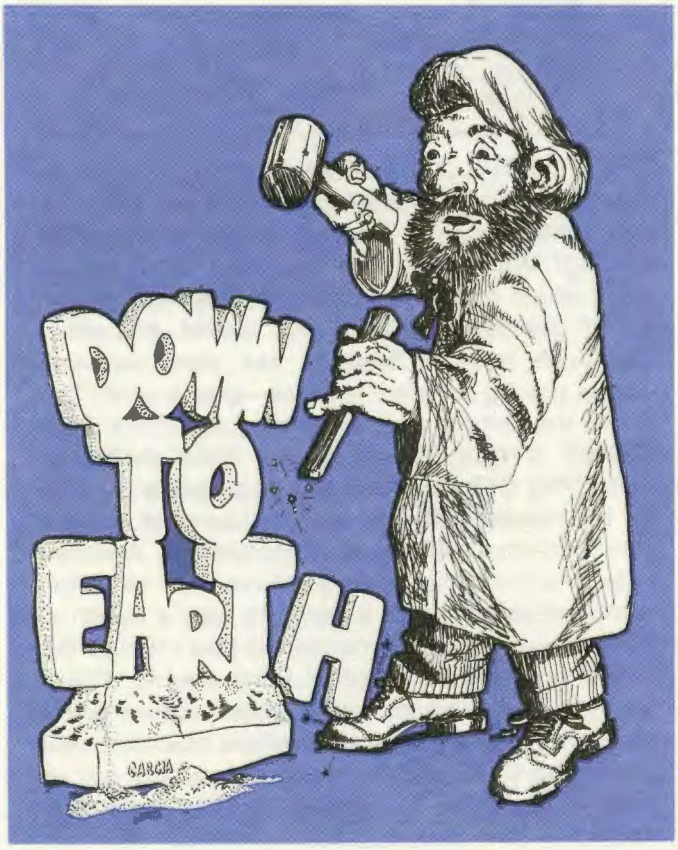
The failure rate on these wheels is going up, and rightfully so. The F-4 wheel was supposed to have a 10-year service life. But that was before we started rolling slatted E's and Wild Weasels around on the rollers designed for spritely C's and D's. The failing wheels all seem to have been made between '71 and '74. We are now anxiously awaiting 3,498 new wheels that will be delivered in FY 82. In the meantime, at last count there were 723 F-4s in the inventory and a total of 1,705 main landing gear wheels worldwide. Even without my calculator that means 259 spare

wheels have to last for two more years. The figures also show that condemnation at the Ogden ALC wheel shop increased from 5% to 28% since some new NDI gear was tested in May 1980. A separate contract has been let for 159 wheels due in '82 but that isn't going to help too much.

What are people doing about this in the meantime?

- We're encouraging the NDI folks to keep up the good work. For example, the 4CRS NDI specialists at Seymour Johnson have found nine bad wheels since June 1980.
- Ogden's engineers and technicians are developing an NDI inspection to be done between tire changes with wheels still on the aircraft.
- Aircraft generation people, especially crew chiefs, need to realize that an F-4 wheel rim is much more fragile than a car wheel. When you let a 150-pound F-4 wheel fall on its side, bonk!. . .it lands on the metal rim, not on the rubber tire. This is the same rim that is fatigue cracking and breaking off. Dings on the rim can grow fatigue cracks. So, if you see someone slamming a wheel around on the ramp, pass along a word of caution.
- Lastly, what can aviators do to help? Here comes a tough pill to swallow—SLOW DOWN THE TAXI SPEED! I used to think anything short of go speed was okay for taxiing. When do you think the max cyclic strain is exerted on our wheels? On landing? Wrong again, D'Artagnan! The heaviest cyclic strain on the F-4 rollers is when you launch out of the chocks. You're fully loaded, and when you push up the throttles and start bouncing across the big concrete squares—guess what? You are at the point of max cyclic load, and MAX SUSTAINED CYCLIC LOAD equals MAX FATIGUE-INDUCING STRAIN. Then you do a couple of turns for the needle, ball, and whiskey compass and put some monster side loads on the wheels. And that little 3/8-inch thick aluminum rim that holds the whole wheel together is going to take a bunch of punishment. Earlier, I mentioned that most of the wheel rim failures occurred while taxiing. That's because the greatest cyclic strain occurs while taxiing. So, even though it may look macho to race out to the arming area—sense of urgency and all that—if you want the wheels to last, you'll slow down.

Maj Dion Johnson
is this month's
FLEAGLE T-Shirt Winner



down to earth

TIPS ON AIRLESS PAINT SPRAY GUNS

By CMSgt Reinhard Mausolf
Safety Directorate HQ ATC

The U.S. Consumer Product Safety Commission warns that high pressure airless paint spray guns may be hazardous under certain conditions. The commission said the problem may arise when the user's hand, finger, or other parts of the body come into close contact with the jet spray of paint. Because the paint in airless spray guns is ejected with a great deal of pressure and velocity, the skin may be penetrated, injecting paint into the underlying tissues. The injury to the skin and tissue may cause permanent damage or require surgical amputation.

Airless spray guns are manufactured in two types: the large capacity units used by professional painters and small capacity units, often called "cup guns."

The commission is aware of 25 case histories of accidents involving airless paint spray guns. Seventeen of those victims required partial or total amputation of a finger. The commission advises, do not clean or attempt to unclog the nozzle while the machine is plugged in and keep away from the paint spray at all times.

If injury does occur, the commission recommends immediate medical treatment. What appears to be a small pinprick could result in a serious injury.

MANHOLE FIRE

Two workers in another command were planning on using an acetylene torch in some manholes. That command requires testing for combustible gases immediately prior to lighting an open flame in a manhole. The two workers had three manholes to deal with, so they tested them all; and they all had enough explosive gas to set off the alarm on the detector. The three manholes were ventilated until they read zero on the gas detector. Then they put the lid on one manhole and worked on the other two. An hour and a half later, they set up at the last manhole. They opened it up, and one of them went down with the torch and tried to light it. The worker on top saw flames coming from the manhole. He reached down and pulled out the other worker, whose nylon jacket was now aflame. That worker ended up with first to third degree burns over 20 percent of his body.

When the book said test for gases "immediately prior," it meant IMMEDIATELY prior. Apparently, it doesn't take long for the gases to reach the danger level.

BROWN BAG IT, SAFELY

From The National Safety Council

Packaging foods to be eaten away from home can present possible safety hazards if precautionary steps are not taken. The following tips can prevent the painful symptoms which result from eating contaminated food.

If food is meant to be hot, keep it hot. Use a vacuum bottle to preserve a food's heat. Sterilize the bottle before each use with boiling water.

If food is meant to be cool, keep it cool. Ideally, lunch should be kept in a refrigerator. If one is not available, freezer gel devices are also effective. Certain types of sandwiches may be frozen and will thaw in time for lunch and keep the rest of the food cool. Never let your lunch sit in a warm place, such as on top of a radiator.

Be sure fruits and vegetables are clean and scrubbed before eating.

Lunch boxes, especially insulated ones, hold the cold better than paper bags and are easy to keep clean and sanitary. If you use the familiar brown bags, use them only once. Don't use bags in which you bring home leftovers, groceries or other items.

Avoid salad dressings, mayonnaise and perishable spreads in bag lunches. These products can become contaminated quickly if they are not kept cool.

You can prevent food contamination by following sound food care procedures. Don't send bacteria to work or school in that innocent brown bag lunch.

—U.S. Department of Agriculture

ROUND AROUND THE ARMORY

In a security police armory, the armorer on duty was playing around with a revolver. It was a privately owned gun belonging to someone else, and it was being stored in the armory. For some reason, the armorer loaded a round into the revolver, cocked the hammer, and then dropped the pistol.

The gun fired; the bullet ricocheted off a brick wall, just missed the armorer, and bounced around the armory. Nobody was hurt.

We assume the pistol had been stored there for *safekeeping*.

THE DOZING DRIVER

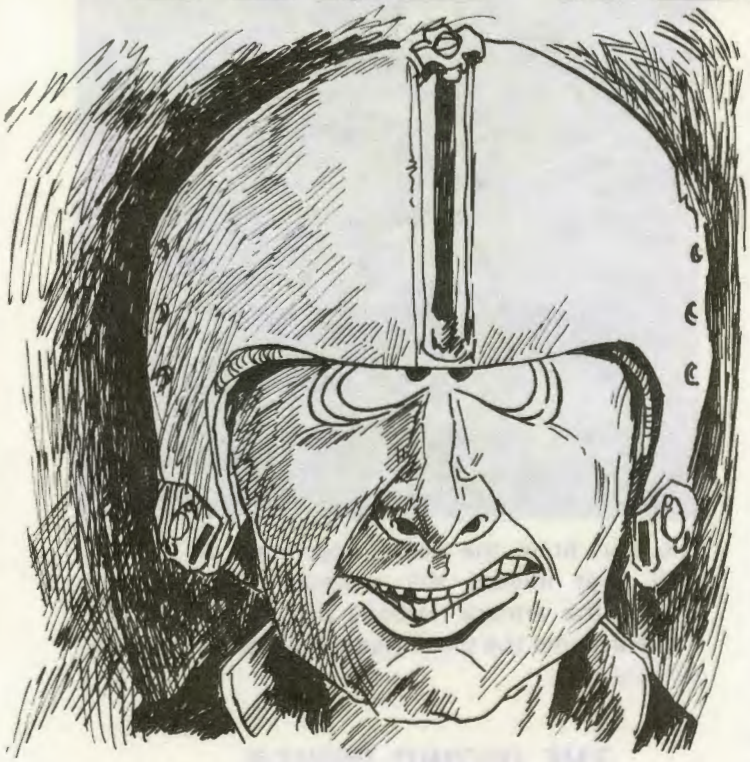
"Let's drive straight through. We can make it." Sound familiar? Lots of us have tried it; some made it, some didn't.

Two airmen from another command were driving from a temporary duty location in the Southeast to their home base on the West Coast. The driver had only 3 hours of rest in the last 32 hours. The driver had his seat belt fastened, but his passenger, sleeping beside him, did not. The driver fell asleep at the wheel; he was awakened by his passenger who was frantically pulling on the steering wheel. The car left the road and began to roll. The passenger was ejected as the car rolled over several times. The passenger suffered fatal injuries while the driver survived.

You know, we impose strict limits on our pilots in how long they can be on duty and still fly. We require an absolute minimum of 8 hours of uninterrupted "crew rest" before that duty day begins. That's because we've learned the hard way what the effects of fatigue are. It wouldn't hurt to transfer that knowledge to our automobiles.

Oh yes, we also require our pilots to strap in . . .

GRAY STEEL DESK WARRIORS



By Capt Edmond L. Ransford III
20th Air Division, Flying Safety Officer

Once upon a time there was a staff weenie who broke away from the Gray Steel Desk (GSD) long enough to go fleagleing—on a weekend no less! Only one hitch, his temporary steed had to reside at Goodtown AFB for display of its mighty powers to those who had paid for it. This meant our intrepid warrior had to "park-it" by noon on Saturday.

On the morning of "slipping the surly bonds" our intrepid pilot showed up eager to get it moving. However, Joe Wrenchbender advised him that there would be a slight (called sliding ETIC) delay.

Several hours later, the time authorized for flying had passed and our weary warrior, visions of South AFB dancing in his head, staggered away from the flightline—tomorrow was another day.

Saturday broke warm and sunny—spelled S-U-C-K-E-R-H-O-L-E. The weatherman was consulted and his crystal ball gave all bad news. South AFB did not have a qualifying alternate and Goodtown's closest alternate was Homeplate! Oh, well, a small inconvenience for our intrepid warrior; he had many, many hours of experience to draw on. At least he had plenty of gas. Oops—the Opso needs what? OK, a short trip to North AFB to pick that up and our warrior can still make it to Goodtown, shoot an approach, and make it back to Homeplate. No sweat.

A quick trip to North AFB and our warrior is again checking weather—*200 and 1/2* at Goodtown. Heck, I've flown hundreds of hours in the north country where it was so bad *200 and 1/2* was VFR—no problem, thinks our intrepid warrior.

A hundred miles out, our warrior starts his enroute descent—"hmm, hit the soup at 31,000—hope it doesn't get much worse," thinks our intrepid warrior. Passing 5 thou, lightning scars the dark clouds around our warrior's bucking steed, rain pelts mercilessly against the windscreen, and our intrepid (spell that S-T-U-P-I-D) warrior can't tell up from down, but continues the approach—he ain't going missed approach.

"You're coming down, going below glide path, going well below, going right of course, coming back to glide path, on course, shifting left of course . . . " Splat!! down!! "Thank HIM who guides those who fly—and those of us who fake it." Thinks our scared warrior: "Boy, it never seemed that hard when I was flying in the unit; I really had to work at it to get it on the ground. What would I have done if it had been *100 and 1/4* and I didn't have anyplace else to go—could I have made it?"

The rest of our intrepid warrior's weekend came off okay. A week later he's trying to again schedule a few hours away from the GSD.

"Yeah, Scheduler, how 'bout getting me a simulator before that flight? I think I need a little instrument practice. Thanks."

Our intrepid (spell that S-M-A-R-T) warrior turns back to the never ending pile of paperwork on his GSD.

The moral of our story (you know, every story like this has a moral) is quite obvious: when's the last time all you many-hour GSD and fair weather warriors practiced your instrument flying? Think you can hack *100 and 1/4?*

SAFETY AWARDS

SSgt Thomas M. McCormick

crew chief safety award

SSgt Thomas M. McCormick, 56th Aircraft Generation Squadron, 56th Tactical Fighter Wing, MacDill Air Force Base, Florida, is this month's recipient of the Tactical Air Command Crew Chief Safety Award. Sergeant McCormick has, on several different occasions recently, shown his concern for the welfare of others. In one case, he prevented a student aircrewmember from connecting his ejection seat leg restraints incorrectly. The error could have caused disabling injuries in an ejection. Another time, Sergeant McCormick discovered a fuel cell cavity drain was leaking, and he had the aircrew abort the aircraft. That type of fuel leak has historically resulted in an aircraft fire. On a third occasion, Sergeant McCormick had an aircrew abort their aircraft for a dragging brake, which turned out to be assembled wrong. At the same time that he has shown such concern for the safety of others, he has maintained an enviable mission capable rate on his own aircraft. Sergeant McCormick is well deserving of the TAC Crew Chief Safety Award.

SSgt Timothy J. Fullagar

individual safety award

SSgt Timothy J. Fullagar, 27th Equipment Maintenance Squadron, 27th Tactical Fighter Wing, Cannon Air Force Base, New Mexico, is this month's recipient of the Tactical Air Command Individual Safety Award. Sergeant Fullagar recently prevented a major fire in an aircraft. He had been dispatched to the phase hangar to do an electrical check on the armament system of an F-111D aircraft. Prior to applying power, he detected a strong odor of jet fuel inside the hangar. He searched for the cause of the odor and found a fuel leak in the engine bay. He immediately opened the hangar doors and notified the maintenance coordination center of the dangerous situation. Sergeant Fullagar halted what could have been a catastrophic chain of events. This alertness is typical of his performance day in and day out. He has had a number of zero deficiency reports written on him with outstanding comments from each evaluator. Sergeant Fullagar's alertness and thoroughness qualify him for the TAC Individual Safety Award.

HOW TO SAVE YOUR NECK

By Capt Jim Porter
4 TFS, Hill AFB, UT

You fighter types have been there before, cruising along in your alotted area when a strobe suddenly appears at 6 o'clock. A quick glance reveals an eager bandit quickly closing to firing range. Your vast knowledge and experience dictate that very soon you'll be laying on one of your better turns to ensure this intruder learns quickly that today he's not dealing with just anyone. In that nanosecond between decision and action, you twist around to get a good padlock, and now you're ready to pull the string on this guy. With a snap of the wrist, he's looking at a 9-G target and you're looking at...oh! *-#:@/?*!

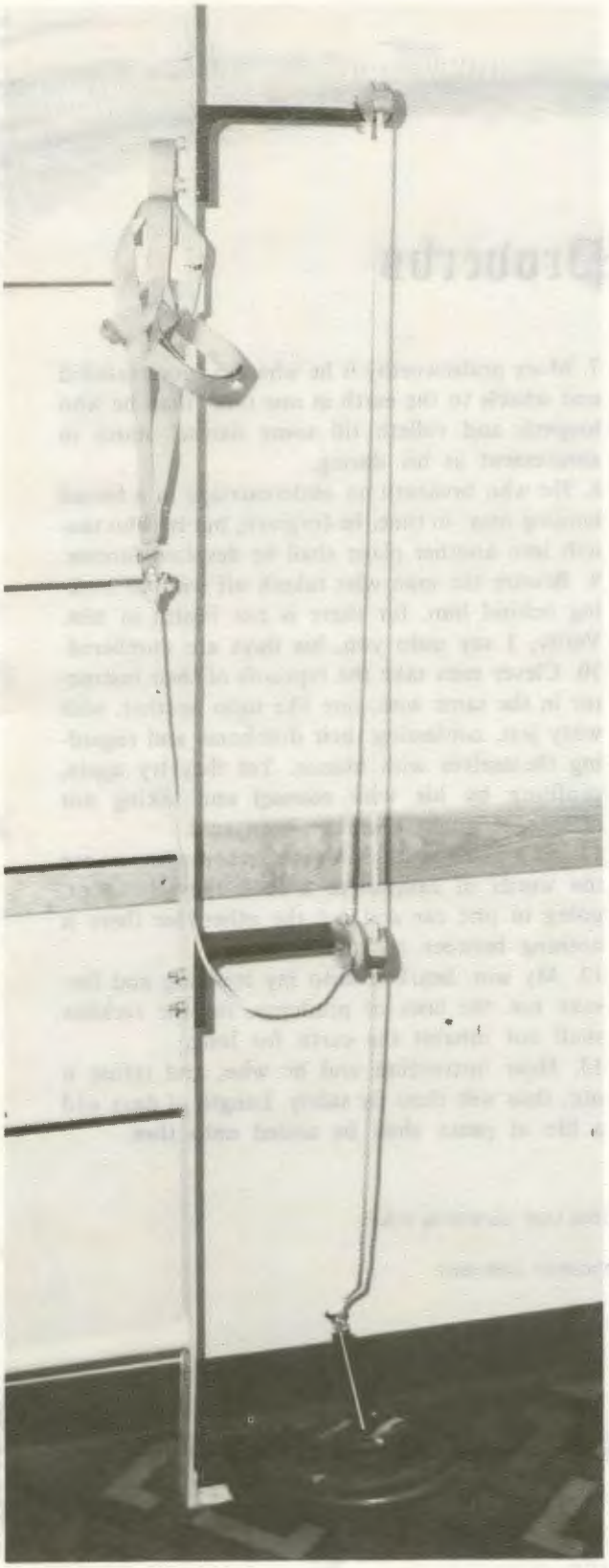
What happened? When you laid that turn on your body, your body came back with: "Idiot, you're not ready for that turn." You succumbed to an equally lethal bandit—pain—and now you're just another strafe panel. Your neck failed you miserably and left you with little interest in the ensuing air battle.

You experienced a sensation which I have heard described best in two ways: (1) Somebody stuck a knife in my neck and slashed it down my back, or (2) a thin wire about 2 feet long was heated to 800 degrees and pressed into a line joining the neck and back. No wonder he's ready to RTB (or pull the handle, if it's for real).

Transition of the tactical fighter force into high-G aircraft is well under way. At 5-6 G's, most people held up well and neck problems were uncommon. However, with the introduction of aircraft that can sustain 9 G's until they run out of gas, the limiting factor is the pilot; specifically, his neck.

What can you do to minimize neck injuries and ultimately better prepare yourself physically for the air-to-air arena? The first objective should be strengthening those muscles, which will increase your G-capability and lessen your likelihood of neck injury. How do you best accomplish this?—by making exercise convenient. The chances of getting your average fighter jock to the gym for the purpose of hitting the neck machine lie somewhere between slim and none. However, if that neck machine is in one of the squadron briefing rooms or in the lounge, guys might just use it.

The neck exercise machine must be expensive and hard to build? Wrong on both counts. Note the accompanying picture. The first requirement is a solid foundation to attach the hardware. Your base sheet metal shop can help with items such as



angle iron and cutting and drilling. Tack on miscellaneous parts, such as a couple of pulleys, some rope, a wooden dowel, a few weights; and the machine comes together easily. A little negotiation with the fabrication shop will yield a head harness, and you've got it The total expense is minimal.

Now that we've discussed a simple way to work the problem, consider a couple of additional tips which will reduce air combat neck injuries. In the arming area and then again as part of your fence check, limber up the neck by twisting around in both directions to check six. Once you're involved in the fight, set your neck and think about when high G onset will occur.

Fighter pilots who work with high-G aircraft know that an unconditioned neck can transform then from 9-G killers to 3-G targets. Simple neck conditioning in the squadron can significantly improve the pilot's ability to beat this painful adversary. Also, don't forget to limber up your neck before the fight and set your neck during the hassle. In the end, he who can check all aspects at 9-G's has a considerable advantage.

The Pilot's Proverbs

By Captain J. D. Olive

1. As the telephone operator who giveth wrong numbers, so is he who extolleth his exploits in the air.
2. He shall enlarge upon the dangers of his adventures, but in my sleeve shall be heard the tinkling of silvery laughter.
3. Let not thy familiarity with airplanes breed contempt, lest thou become exceedingly careless at a time when great care is necessary to thy well-being.
4. My son, obey the law and observe prudence. Spin thou not lower than 1,500 cubits nor stunt above thine own domicile. For the hand of the law is heavy and reacheth far and wide throughout the land.
5. Incur not the wrath of thy Commander by breaking the rules; for he who maketh right-hand circuits shall be cast out into utter darkness.
6. Let not thy prowess in the air persuade thee that others cannot do even as thou doest, for he that showeth off in public places is an abomination unto his fellow pilots.
7. More praiseworthy is he who can touch tailskid and wheels to the earth at one time, than he who loopeth and rolleth till some damsel stares in amazement at his daring.
8. He who breaketh an undercarriage in a forced landing may, in time, be forgiven; but he who taxieth into another plane shall be despised forever.
9. Beware the man who taketh off without looking behind him, for there is not health in him. Verily, I say unto you, his days are numbered.
10. Clever men take the reproofs of their instructor in the same wise, one like unto another, with witty jest, confessing their dumbness and regarding themselves with humor. Yet they try again, profiting by his wise counsel and taking not offense at aught that has been said.
11. As a postage stamp which lacketh glue, so are the words of caution to a fool: they stick not, going in one ear and out the other, for there is nothing between to stop them.
12. My son, hearken unto my teaching and forsake not the laws of prudence, for the reckless shall not inhabit the earth for long.
13. Hear instruction and be wise, and refuse it not; thus wilt thou fly safely. Length of days and a life of peace shall be added unto thee.

Reprinted from: "Lessons That Live" as told by A.A.F. pilots.
Date and location of publication unknown

TAC TALLY

	TAC			ANG			AFR		
	FEB	THRU FEB		FEB	THRU FEB		FEB	THRU FEB	
		1981	1980		1981	1980		1981	1980
CLASS A MISHAPS	1	3	4	0	2	3	0	0	0
AIRCREW FATALITIES	1	3	2	0	1	3	0	0	0
TOTAL EJECTIONS	1	3	4	0	0	3	0	0	0
SUCCESSFUL EJECTIONS	0	2	3	0	0	2	0	0	0

TAC'S TOP 5 thru FEBRUARY '81

TAC FTR/RECCE	
class A mishap free months	
36	33 TFW
29	1 TFW
28	31 TFW
21	67 TRW
19	58 TTW

TAC AIR DEFENSE	
class A mishap free months	
111	84 FIS
97	57 FIS
50	5 FIS
47	48 FIS
28	49 FIS

TAC GAINED FTR/RECCE		
class A mishap free months		
106	188 TFG	(ANG)
98	138 TFG	(ANG)
97	917 TFG	(AFR)
94	116 TFW (128 TFS)	(ANG)
84	434 TFW	(AFR)

TAC GAINED AIR DEFENSE		
class A mishap free months		
103	191 FIG	(ANG)
84	102 FIW	(ANG)
80	177 FIG	(ANG)
46	125 FIG	(ANG)
29	119 FIG & 142 FIG	(ANG)

TAC/GAINED Other Units		
class A mishap free months		
139	182 TASG	(ANG)
132	193 TEWG	(ANG)
123	110 TASG	(ANG)
119	USAFTAWC	(TAC)
115	919 SOG	(AFR)

CLASS A MISHAP COMPARISON RATE 81/80

(BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	1981	4.0	3.0												
	1980	2.0	4.0												
ANG	1981	9.3	4.7												
	1980	5.0	7.6												
AFR	1981	0.0	0.0												
	1980	0.0	0.0												

☆ US GOVERNMENT PRINTING OFFICE: 1980—635—083/11


FLEAGLE
THROW!
PRAANG-GALANG-GALANG!
HARRISON
HERE'S YA' TIRE, SARGE.
YA' OUGHT NOT LET IT FALL LIKE THAT, FLEAGLE.
AW, IT DON'T HURT NOTHING. DO IT TO MY MG TIRES ALL TH' TIME.
PRAANG-GALANG!
© RICHMOND SYNDICATE, 1981
AIN'T TH'SAME. YA'COULD DAMAGE TH'METAL RIM AND CAUSE TH' WHOLE MESS TO...
BLAM!
BLOW.