

TAC ATTACK

NOVEMBER 1981



WINGMAN, ARE YOU
READY ? ...Pg 4

NOW



READINESS IS OUR PROFESSION

TACTICAL AIR COMMAND
GENERAL W. L. CREECH
COMMANDER

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VICE COMMANDER

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Angle of Attack



To me, November means the heart of the football season, Indian Summer, Veterans' Day, and most of all, Thanksgiving. We can be thankful for many things. First and foremost is the fact that we are around to celebrate it.

One young man who's especially fortunate to be here this Thanksgiving is the author of "Lightning Strikes Twice" in our "Down to Earth" section. In his own words, he explains why he's still around.

Three hunters can be thankful for the same blessing. You can read about their experience in "Rub-A-Dub-Dub, Three Men In A Tub." All of you hunters will find some helpful advice in "Healthy Hunting." The author is an avid hunter and knows what he's talking about.

Another man who knows what he's talking about is Mr. Bobby Moore, whose long experience with F-4 canopies leads him to warn us that we're repeating old mistakes. Read "The Phantom Canopy—Lessons Relearned" and see what he means.

We can be thankful for the good flight leaders and wingmen we've served with over the years. "Wingman, Are You Ready?" takes a look at the wingman's responsibility to discern the difference between good and bad leaders. It's a tough job.

But we have many more good ones than bad ones. That fact is borne out by statistics. Our command-controlled mishap rate is the lowest it's been since 1974, which was our best year ever. That means that most of us have done our jobs well.

That's something for us to be proud of and thankful for this Thanksgiving Day. ➤

Richard K. Ely

RICHARD K. ELY, Colonel, USAF
Chief of Safety



**By Capt Merrill J. Ott
12 AF Flight Safety**

Ever have one of those days, hanging on the wing, wondering how you're going to survive because the flight leader is doing everything wrong? Ever stop to think he too was once a wingman and was probably shown the very things he's doing now by some other flight leader whose level of competence was far outweighed by his pride and flamboyance?

Each one of us has been there. We've all seen both sides of quality flight leadership; and many—perhaps too many—articles on how to lead have been written. We've seen the numerous accident reports and heard about the close calls when the boundaries set by aircraft limits or regulations were exceeded.

One point stands out for the wingman, and it's a point worth thinking about: Are you ready to step into a position of flight leadership? Who has been your example to follow? I often think of the various characters I've seen and followed through some wild antics, all in the name of getting the job done. Maybe many of us have broken the rules at some time or another for the sake of mission accomplishment. But when that becomes the norm rather than the exception, there's something wrong with the thinking of the leadership; and that's when it's time for you, as a wingman, to consider closely the credibility of the

guy that's leading you. Is he leading you down a blind alley into a brick wall?

There has been a heavy emphasis recently on back-to-the-basics discipline and systems knowledge. My best example of a great flight lead was a man who knew the rules and demanded the same quality of knowledge from his wingmen. You found that out before ever leaving the briefing room. He inspired his wingmen to be the best wingmen in the Air Force. What was the trick? As he calmly put it, "Until you learn to follow, you ain't leadin'."

His point was clear. He was hardcore; he pushed regulations and systems knowledge until it hurt. He demanded excellence in the air. If a wingman messed up, it was a lonely and worrisome trip back to home plate to await the wrath of flight lead in debrief.

Now what's happening? The experience-level requirements for flight leaders and instructors have been reduced. At the same time, we're finding more and more ways to break the established norms. We each have our pride and ego which are nurtured by the war stories of older pilots who have made it through some sticky spots after pulling some pretty stupid stunts. But they got the mission done and lived to tell about it. What heroes!

Well, here you are—a young guy, eager to go at it. You want to be a flight lead. How's your wingmanship? Do you condescendingly accept your position,

WINGMAN,

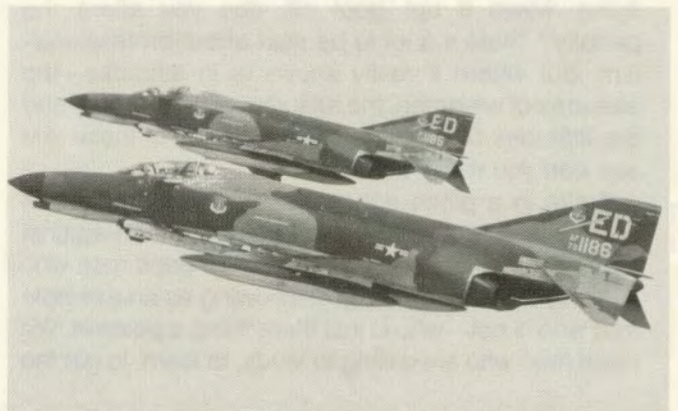
ARE YOU READY ?

or do you eagerly strive to use that time to your best advantage? What do you do when you see poor leaders booting procedures and restrictions out the door on the premise that they can't get the job done any other way?

This is the point where we all have to stop, look, and listen. Obviously, it's a touchy situation to tell someone who outranks you or is a flight lead that he's wrong. But, carefully considered and tactfully handled, it can be done.

A great danger exists in the example the wingman is sometimes shown; for example, you've seen it done successfully, against all rules and procedures. Whatever it was, it's going to remain with you. Poor flight briefing—yet an excellent flight. Sloppy bombing procedures—yet superior scores. Lousy radio discipline—yet commended by supervisors as a strict leader. Does well on tests in the squadron—but doesn't have a lick of sense in the air. Are you getting the picture?

Don't wait until it's too late to change your attitude. Demand excellence as a wingman. Just because the leader is sloppy about his formation procedures is no reason for you to accept it in yourself. If he does not demand strict radio discipline, demand it of yourself, so that your habit pattern is well developed when you get into that lead position. If he breaks the regulations and limitations in order to get the job done, he either doesn't know the rules or is knowingly foolish.



WINGMAN, are you ready ?

I'm sure if dead men could tell tales, there would be a lot of stories saying, "Now I know why they set up those rules."

There's no room anymore for scarf-waving-in-the-breeze cavaliers. We have plenty of them around, and they create problems. We need superb wingmen first. Dare to take the step which demands excellence—the repressing of that pride and ego which entice you to shine your tail just to gain acceptance. You've already been accepted to do a job. You are flying a multimillion-dollar corporation around the skies, and you are its president. Fly it right, fly it smart; and you may retain that privilege of flying. Mess it up, goof off; can you afford the penalty? There's a lot to be said about professionalism, but where it really shows is in attitudes—the attitudes of wingmen, the attitudes of flight leads, and the attitudes of supervisors. How many of those you see can you really admire?

We're in a pinch right now. We need the kind of people who are self-motivated to stand firm against the possibility of poor leadership. We need men who will discern who is worthy of following as an example and who is not—who is just there filling a position. We need men who are willing to study, to learn, to get the

best out of their job as pilots, no matter what type aircraft they fly.

What we don't need are the attitudes of "I'm just a wingman"; or "Well, he led me without much preparation; I guess I can do it too"; or "I'll get the job done, come hell or high water." Those are the danger signs. Look for them. Then look for a way to correct them, and do it in a way which builds up the character of those being corrected rather than tearing them down. It's a peace-time situation; no sense in starting a war within your own squadron.

Look for the best in each of your leaders. Search out the ones who lead with surety, with full knowledge of their aircraft systems, and with strong, prudent adherence to flight procedures.

Don't just shrug your shoulders when you see or have to follow someone who gets the job done the wrong way. Be the excellent wingman (short of hitting the rocks) and be sure to tactfully debrief the leader when you get back. He needs your help; it's possible his experience level is not much more than yours. Don't take it for granted just because he outranks you or has more total time that he is going to be good. Appraise him and yourself honestly. Then apply it. Make sure you retain in your memory banks what you wish he'd have shown you. Then when you get there, show them yourself. Be the example you've always wanted.

The bottom line comes from the conversation of an eyewitness overheard at the scene of an aircraft crash: "Just another dumb fighter pilot out shining his a—!"

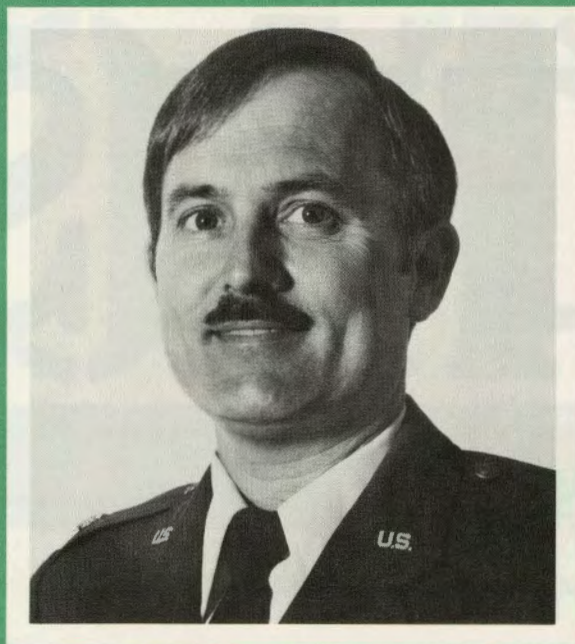
We know the real story behind almost all of our accidents. Very few are "dumb" fighter pilot accidents. But the syndrome and public opinion have not changed. What will you do to change that image?



Aircrew of Distinction

On 17 July 1981, Lt Col Ronald L. Butler, aircraft commander, and Capt Michael D. Mechsner, instructor pilot, were flying an RF-4C on a single-ship, low-level, reconnaissance training mission. At 700 feet above the ground and 420 knots groundspeed, they struck a hawk which shattered the left windscreen. Bird and windscreen fragments exploded into the cockpit striking Colonel Butler in the face and left shoulder area. The impact tore his oxygen mask from his face and rendered his left arm useless by severely cutting the upper bicep. As they had previously briefed, Captain Mechsner immediately took control of the aircraft, climbed toward a safe altitude, and slowed the aircraft. As the aircraft began to climb, Colonel Butler felt Captain Mechsner shake the stick and knew the plane was under control. At this time, Captain Mechsner noted the EJECT light was illuminated; being unable to communicate this with his front seater, he calmly analyzed the situation, kept his body in position to eject, but decided the light was false. He transmitted a Mayday call while turning the aircraft toward home base. He then contacted Houston Center and declared an emergency.

Colonel Butler repositioned his mask and regained intercockpit communications. He quickly verified to Captain Mechsner that he had not activated the EJECT light. Colonel Butler was in great pain and his left arm was useless. Due to bird remains in the front cockpit and wind blast in the rear cockpit, Captain Mechsner had great difficulty seeing out of the aircraft. He requested a chase aircraft to aid him in returning to Bergstrom. He then had Colonel Butler use his right hand to lower the landing gear, flaps, and tail hook. As the chase aircraft arrived, approach control began vectoring the two aircraft to a 12-mile final. Due to Colonel Butler's severe pain and injuries, Captain Mechsner requested a shorter final. Approach control positioned the formation on a 5-mile final; at 1 mile Captain Mechsner took over visually. Bird remains and the aircraft attitude almost totally obstructed forward vision through the windscreen and canopy, so Captain Mechsner flew the approach by displacing the aircraft from the left side of the runway. Colonel Butler and the chase aircraft aided Captain Mechsner by telling him the plane's position relative to runway centerline. Captain Mechsner flew a flawless approach and successfully engaged the ap-



Lt Col Ronald L. Butler
91st TRS, 67th TRW



Capt Michael D. Mechsner
91st TRS, 67th TRW

proach-end arresting cable. Following Captain Mechsner's calm, meticulous instructions and suggestions, Colonel Butler shut down both engines with his right hand. Crash/rescue personnel aided the crew in deplaning.

The professional competence, superior airmanship, and crew coordination displayed by Colonel Butler and Captain Mechsner prevented possible loss of the aircraft and their lives. They have earned the title of Tactical Air Command Aircrew of Distinction.

TIPS

When a man imagines, even after years of striving, that he has attained perfection, his decline begins.

—Theodore Martin

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

DON'T QUIT TOO SOON

The F-4 overseas was on a combination low-level and instrument training mission. On TACAN final approach, the pilot lowered the landing gear; but both cockpits had an unsafe nose gear indication. The pilot extended the flaps and recycled the landing gear. The nose gear still showed unsafe. The pilot checked the hydraulic gages; pressures were normal. He decided to continue inbound, requesting a visual check of the gear on low approach. On that approach, the gear was confirmed to be unsafe.

On the go-around, the pilot retracted the flaps. Immediately afterwards, the nose gear indicated safe. To be sure, the pilot asked another aircraft to join him and check him over. The chase pilot told him everything looked good, so he decided to land.

The landing went fine. On rollout, the pilot checked antiskid braking and it worked normally. At taxi speed, he turned off the antiskid and tested manual braking. Then he released the brakes and didn't reapply them until it was time to turn off the runway. When he pressed the pedals, they went all the way to the stops. He had no brakes. He dropped the hook and engaged the nosewheel steering, hoping to steer toward the MA-1A barrier. The steering didn't work, and the aircraft drifted to the right, off the runway and into the grass infield. He ran over two runway lights and a barrier marking light before he stopped. The F-4 got off with light damage: only the tires had to be replaced. The aircrew was lucky.

Investigation showed that the problem was caused by a hairline crack in a utility hydraulic pressure line,



which developed a slight leak. The utility hydraulic pressure steadily decreased during flight, although it wasn't noticeable at first on the gage. During high demand, the system didn't have enough pressure to operate the gear and the flaps. After the pilot retracted the flaps on his go-around, the system generated enough pressure to lock down the nose gear. But the system continued to lose fluid; the pilot did not continue to monitor it. The brake applications on rollout used up the last available hydraulic fluid. Neither the pilot nor the weapon system operator saw the warning light come on at the end of rollout because they were busy with their checklists. They didn't realize the emergency wasn't over.

Successfully landing in an emergency is the big step, but it's not the last step. We've got to stay with it all the way, until we're out of the airplane and the men and women who can fix it have taken over. Until then, the emergency shouldn't become routine.

DROPPED DUDS

The A-7 instructor pilot was on a cross-country mission with a student. As they were preparing to depart the base where they'd spent the night, the instructor put his baggage in the travel pod and was about to begin his preflight when the student called to him. The student had a minor problem with his aircraft which took an hour to resolve. The instructor then returned and completed his interrupted preflight check. They taxied out and took off without a last-chance inspection.

When he got home, the instructor pilot found a few things missing from his travel pod. Gone were his baggage, the engine intake and exhaust covers, the seat cover, a maintenance cross-country kit, and three SOAP sample kits. The travel pod's door came open in flight because it had never been properly locked before flight. After being so careful with his student's airplane, the instructor had neglected his own—a common danger for instructors. Fortunately, little damage was done.

But folks in those parts still talk about the strange rain they had.

GOOD HEADWORK, GOOD STORY

Most of the time, when pilots do things right, it isn't reported. But here's a case that was:

It was a hot day, and the 0-2 was operating over terrain that was about 5,000 feet high. One of the pilots heard and felt a thud. Then the other pilot noticed smoke coming out of the air vents. The front engine oil pressure was decreasing. They both noticed an irregular banging.

They knew that under these circumstances the 0-2 didn't have enough power to stay above the high terrain on a single engine. So they let the front engine bang away as they headed toward an Army field in the area. They made a safe emergency landing at the Army field.

Because they knew their aircraft's limitations, they made the right decision. And, as the book says, the "landing was assured." After landing, they shut down the front engine, which turned out to have a cracked cylinder head caused by a broken piston rod.

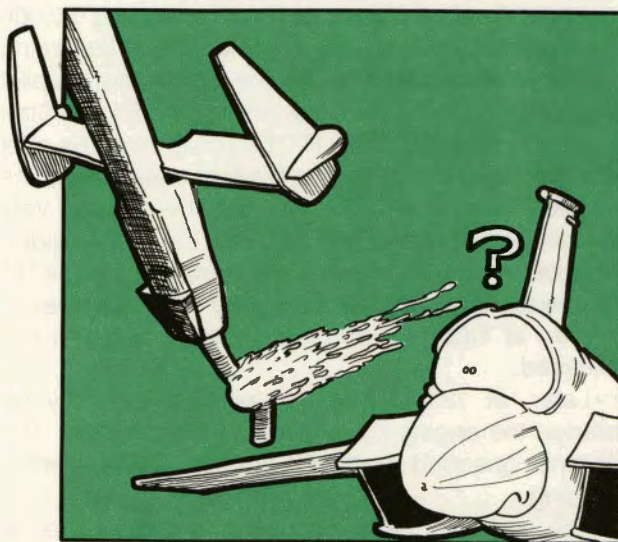
BROKEN BOOM

The F-15 was number 3 on a test refueling with a KC-10. Numbers 1 and 2 had refueled with no apparent problems. Number 3 stabilized in the pre-

contact position where he was given a demonstration of the boom's limits. He was then rebriefed on simulated boom failure, which had been covered in the briefing before the mission.

Number 3 moved in and made contact. After hooking up, he was asked to move slightly right to prepare for the simulated boom failure. When number 3 was in position, the boomer declared the simulated boom failure and directed number 3 to return to center, then move aft and down. At that point, the tanker disconnected the boom. No unusual forces were noted.

But afterwards, number 3 saw fuel streaming from the ball joint of the nozzle. And the nozzle had an



unusual upward cant to it. The F-15 moved to the wing while the boomer moved the boom up and down several times. Number 3 checked the nozzle: it had stopped streaming fuel, and the upward cant had decreased. The tanker asked for another hookup. The F-15 agreed to try. During the attempt, the pilot heard some bumping sounds; and as he looked at the receptacle, he saw the boom being pulled away. The nozzle was hanging only by a wire. The F-15 moved quickly to the right, just as the outer portion of the boom broke free. It missed the F-15 by about 15 feet. The boomer informed number 3 that part of the F-15's refueling door had also come off.

Number 3 headed home, doing a controllability check on the way. He landed without further incident. The tanker also recovered without losing any more parts. The KC-10 is being modified to strengthen that part of the nozzle assembly.

The lesson we get out of the incident is this: Once we find something wrong with the refueling nozzle, we aren't going to refuel—unless we see the boomer climb out there and fix it.

TAC TIPS

A-10 AIRSTART

The A-10 was cruising at 28,000 feet overseas. It had been level for about 5 minutes, holding 220 knots, when the pilot made a 2-G left turn at 45 degrees of bank and maximum power. The pilot heard a pop and saw that the right engine was rolling back: core RPM, fan RPM, and ITT were all decreasing. The pilot began a descent.

About a minute later, as he was passing 20,000 feet, his wingman reported smoke or fuel streaming from the rolled-back right engine. So the mishap pilot pulled the right throttle back to idle. The Engine Start light illuminated. As the ITT began to rise, the pilot decided to continue the inadvertent restart since the airspeed was over 280 knots. But the ITT rose very quickly; as it passed 700 degrees, the pilot decided to abort the start by moving the throttle to Off. The ITT continued to climb until it reached 1,050 degrees. It stayed at 1,050 for about 5 seconds before it decreased.

Later, at 12,000 feet, the pilot successfully restarted the engine by referring to the checklist. The engine operated normally through an uneventful landing.

The cause of the flameout was a delamination of the nickle/graphite coating on the compressor. Salt air attacks the bond which holds the coating on. When the bond fails, the eighth stage of the compressor suffers extensive damage. The bond is being replaced to prevent future delamination problems.

But that won't eliminate all flameouts. We pilots are still going to have to deal with them occasionally (seldomly, we hope). To deal with them correctly we need to know the difference between a flameout and a compressor stall. A flameout is indicated by decreases in ITT, RPM (fan and core), and fuel flow. A compressor stall has an *increase* in ITT with a decrease or hangup in RPM.

The Dash One warns that, in the case of a flameout, retarding the throttle to idle will result in a hot start because of the automatic starting system. The correct action is "throttle (affected engine)—off." This allows the engine to cool down to 150 degrees at least before restarting. Airspeed affects the ability to windmill airstart, but does not change the cool-down limits.

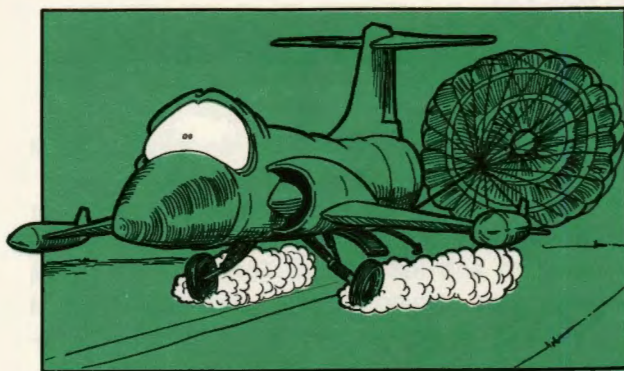
The Dash One also recommends against restart-

ing an engine that has overtemped, unless thrust is critical. The decision on whether thrust is critical is a judgment call which only the pilot can make. He's in the hot seat. But it doesn't have to be that hot.

F-104 MYSTERY ABORTS

The pilot took the runway for his first solo in the F-104G. His instructor lined up in a chase position. The pilot lit the afterburner and felt the surge of acceleration as the engine responded. The engine instruments looked good, and he made his acceleration check speed with no problem. At 177 knots, the pilot tried to raise the nose to a takeoff attitude; it wouldn't rotate. At 195 knots, he gave it up and decided to abort.

The pilot noticed that the runway-remaining markers were whizzing by pretty quickly at that speed. He could see the departure-end BAK-12 arresting gear getting close, so he dropped the tailhook and deployed the drag chute. He yanked the throttle all the way from afterburner to off. The airplane took the arresting gear at about 190 knots. And it held. As it



came to a stop, residual fuel and vapors in the inlet, engine, and afterburner torched off. The fire was quickly put out by the fire department.

Some solo, eh? It looked more like an attempt at the land speed record. But it wasn't that unusual. The no-rotation phenomenon in the F-104G has been documented in over a hundred cases worldwide. In 1967, tests were run attempting to induce the phenomenon under controlled conditions. The investigators varied things like strut servicing, gross weight, configurations, pilot technique, and airspeed. They couldn't duplicate the failure. But in uncontrolled situations the problem has recurred again and again. There's no answer in sight.

When we take the runway in any airplane, we ought to be mentally prepared for a high speed abort and possible barrier engagement. But in the F-104, we'd better be especially prepared.

RUB-A-DUB-DUB THREE MEN IN A TUB



By Daniel T. Dedeo
21st Air Division Ground Safety

Not too long ago, four friends decided to go duck hunting on one of the many beautiful lakes we are blessed with in the central New York region. Being familiar with the area and their prey, they outfitted themselves with the appropriate gear and set out for a weekend of duck calls and decoys.

Saturday was relatively uneventful. The drizzle, soggy sandwiches, and waders mired in the muck did little to dampen the spirits of our intrepid band of hunters. They ventured forth, two in a canoe and two in a skiff, to a nearby island to fill their game bags with the limit. After a few hours, discouraged by the rain and cold, one of the hunters returned to camp vowing never to go duck hunting again. The rest of the party returned later that day without much success.

At zero-dark-thirty the next morning, our hunters set out once again. Their number had dwindled to three because one of them was true to his word and probably never will go duck hunting again. The others decided, possibly in the interests of energy conservation, to use only one craft for the trek to the island. In the darkness, the hunters loaded their bags of decoys, lunch, thermos, waders, shotguns, and other paraphernalia into the 12-foot skiff. The three scrambled aboard, yanked the engine to life, and put-putted towards their hunting area. Everything

was going fine until they hit open water. No longer protected by the treeline, the skiff was subjected to wind-whipped waves. A wave washed over the stern, and the skiff swamped. In the panic that ensued, the hunters fell overboard, all their gear went to the bottom, and the skiff skittered away. Saint Elmo, the patron saint of sailors, must have been watching over them. Instead of having to tread water or swim in the pitch blackness, they found themselves standing in chest-deep water. Uncomfortable, but not life-threatening. The hunters managed to recover the skiff and wade to shore. All their gear is still on the bottom of that beautiful New York lake.

This incident was one of those near misses that could easily have ended in tragedy. This story shows that lapses of common sense and good judgment can occur to anyone at anytime. The secret of mishap prevention is to recognize the lapse and break the chain of events before the incident occurs instead of letting blind luck decide where the chips will fall. This incident could have been prevented in several ways. They could have used two boats, made two trips to their destination, or simply reasoned that the boat wasn't big enough for the three of them and all their gear. Their cost to learn this valuable lesson was relatively slight: several hundred dollars of personal property. Let's hope others who read this will learn these lessons at an even lower cost: the price of the paper and the time it takes to read it.



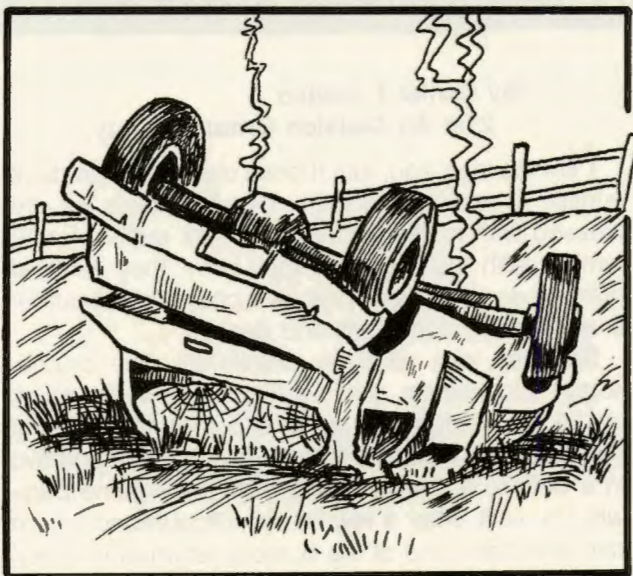
LIGHTNING STRIKES TWICE (a tale of two airmen)

EDITOR'S NOTE: We wrote about this incident in September's "Down to Earth." Here it is from another perspective, that of the driver involved, who hopes that we can learn from his misfortune.

The old saying that "lightning never strikes twice in the same spot" has proven wrong again. Last year, a young airman in my squadron felt that he could safely drive after having too much to drink. That decision proved to have been the worst he could have made. He was traveling at a high rate of speed when he arrived at a curve near a bridge. He was traveling too fast to make it around the curve and needlessly lost his life. Maybe if he had been wearing seat belts he would be more than just another statistic. That was the first strike; the second bolt struck closer to home.

One night recently, I was sitting in my barracks

room with nothing to do. I decided to go into town for a couple of drinks with a few of my friends. We went to a club just outside of town where we began a night of drinking; I had too much to drink. When we returned to the barracks, I made the mistake of not remaining there. I was in no condition to drive, but headed back toward town anyway. When I arrived at the bridge, I too lost control of the car I was driving. The right front tire went onto the soft shoulder of the road. I fought to regain control and overcorrected in both directions which caused the car to skid completely off the road. The car hit the bank and rolled one and a half times and landed on its top, forcing me to crawl out through the window. I am very lucky to be alive to write this! My car landed within 15 feet of where the other airman was found dead. There were many similarities between the two accidents: driving too fast for road conditions, drinking and driving, and the early morning hours. One very important difference was the fact that I was wearing a seat belt! Due to my condition, using the seat belt



probably was not a conscious action on my part. It was, and still is, a habit for me to buckle up. I did not wear seat belts until I arrived at this base. Seeing my friends wear them and hearing it stressed over and over in safety briefings has caused me to make wearing them a habit. This is one habit that I will never break. Everywhere I go I see a sticker that states: "IN THIS VEHICLE EVERYONE BUCKLES UP; IF NO, NO GO." This is true for me and I hope it is for you also. Please learn from my mistake and not from your own. If you are going to drink, don't drive! Whenever you drive, wear a seat belt. Save a life—your own!

TRAFFIC FATALITY RATE IS DOWN, BUT...

Although there's too much bad news in the traffic fatality statistics, the numbers do show that we've improved over the last 15 years. According to the U. S. Department of Transportation, the ratio of fatalities to miles driven has gone down, even though total fatalities are high. The National Highway Traffic Safety Administration says, "A motorist today can drive more than 1,600 miles with the same degree of risk as someone who drove 1,000 miles in 1966."

While the fatality rate has been reduced by 39 percent, the total number of vehicle miles driven is up 65 percent. The number of registered vehicles increased 67 percent, and licensed drivers, 42 percent.

What that all means is that more of us are learning to drive defensively and buckle up. But the totals are getting worse because we aren't getting smarter fast enough to keep up with the growth in traffic. It seems like a losing battle at times.

Yet, we could cause a real drop in the total number of traffic fatalities very simply—by wearing our seat belts. If all occupants of passenger cars in the U. S. wore safety belts, we could reduce the number of highway deaths by 20,000 each year. That's not just statistics we're talking about; that's flesh and blood—our friends and families, maybe even our own selves. Twenty thousand of us.

TO GRANDMOTHER'S HOUSE WE GO

Driving to visit the relatives for Thanksgiving? Plan ahead to make the trip safer and the holiday happier. A man, woman, or child is injured every eight seconds in a highway accident. You don't want your family to be part of those statistics.

Plan on making the trip at 55. It saves money and costs very little time, only 17 minutes more than 65 on a 100-mile trip. And also plan on driving only during daylight. Besides being easier on you, daylight driving avoids most of the drunks on the road.

Make sure the car is equipped for the trip—safety seats for the children and seat belts for everyone else. If the car is due for a tuneup, get it done right now. That way, if something is done wrong on the tuneup, you'll find out by driving around town before you get on the highway. You want at least a week of local driving to check a car out after maintenance.

Just before the trip, check fluid levels, belts, and pressure in the tires. Look over all the lights on the car, and keep some spare bulbs and fuses in the car.

While you're at it, check the windshield wipers and the washer fluid.

Plan ahead, get the car in shape, drive carefully, and you'll arrive at grandma's in a much better mood to enjoy the holiday. And that'll be another reason to give thanks.

SLICK STOPPING

November is often beautiful, but it's also a month of transition. Rainshowers can become sleet, and some places may even see snow. Before that hap-



pens, let's review our automobile braking techniques on slick surfaces.

First, no matter how good you are, it takes more room to stop on a slippery surface. So don't follow too closely. Anticipate stops and slow down gradually. When you do have to stop, don't jam on the brakes. Otherwise, you'll skid and make things worse: you won't be slowing down and you'll be out of control. Instead of jamming on the brakes, pump and release them. With disc brakes, you must pump slower because the discs release slower than drum brakes.

If you do find yourself in a skid (you can even cause one by downshifting abruptly), the classic advice is to steer in the direction of the skid. That advice can be confusing, though. When your car is skidding right, its nose is going left. You need to correct back to the right. It's clearer if you think about pointing the nose of the car where you want it to go. Meanwhile, all you can do is pray that you won't hit anything while you're out of control. The only way to safely deal with skids is to avoid them.

Dr. Sam: FLYING CAN BE

BLANK



"DR. SAM, the USAF School of Aerospace Medicine published an article in the November 1978 issue of *Aerospace Safety* about loss of consciousness during air combat maneuvering (ACM). In that article, the author stated that, according to laboratory findings, a pilot could lose consciousness for several seconds during a high-G maneuver. These episodes of loss of consciousness could occur without warning to the pilot and could cause short term loss of memory, so that the pilot would be unaware that he had been unconscious and not in control of his aircraft.

"Further, DR. SAM, the question was asked in that article if the occurrence of loss of consciousness could account for the loss of some of our high performance aircraft and crews. Tell me, have you further examined this loss-of-consciousness situation and have you been able to document its occurrence in USAF high performance aircraft?"

For the last 9 months, DR. SAM has been following physiologic incident mishap reports, which are important sources of aeromedical information about the operational Air Force. From these reports, DR. SAM finds that it's much easier to document G-induced episodes of loss of consciousness in 2-seat aircraft where they are only incidents. Single-seat aircraft episodes that result in accidents can only be speculated on, and those which are incidents may or may not be reported or even suspected because of amnesia and confusion following G-induced loss of consciousness. What follows is a summary of pertinent information about G-caused losses of consciousness collected from reports which have come across DR. SAM's desk over the last 9 months.

During those months, DR. SAM has received reports on 18 incidents. Seventeen of these occurred in T-37 aircraft and the other incident involved an F-16. All incidents except two had a crew of two. The range of G where loss of consciousness occurred was from +2G to +8G. The 2-G occurrence involved G-induced pain which caused the loss of conscious-

A REAL KNOCKOUT

ness. The major causes of loss of consciousness were an improper M-1 maneuver, no M-1 maneuver when needed, or too slow an M-1 maneuver. The aircraft maneuvers which brought on the G-forces included high speed dive recoveries, visual-intercept turns, Immelmans, split-S pullouts, and loops or Cuban-8s.

A recent class-A mishap which killed a pilot in an F-15C may have been a loss-of-consciousness episode. At least some form of physiological degradation because of high-G forces was a probable factor in the mishap.

From this study, DR. SAM has concluded:

- G-induced losses of consciousness are occurring, especially in student pilots.
- These episodes of loss of consciousness are occurring primarily, but not always, in aircraft not requiring use of the anti-G suit, such as the T-37.
- High, sustained G is not a requirement for loss of consciousness.
- Faulty performance of the M-1 maneuver is the

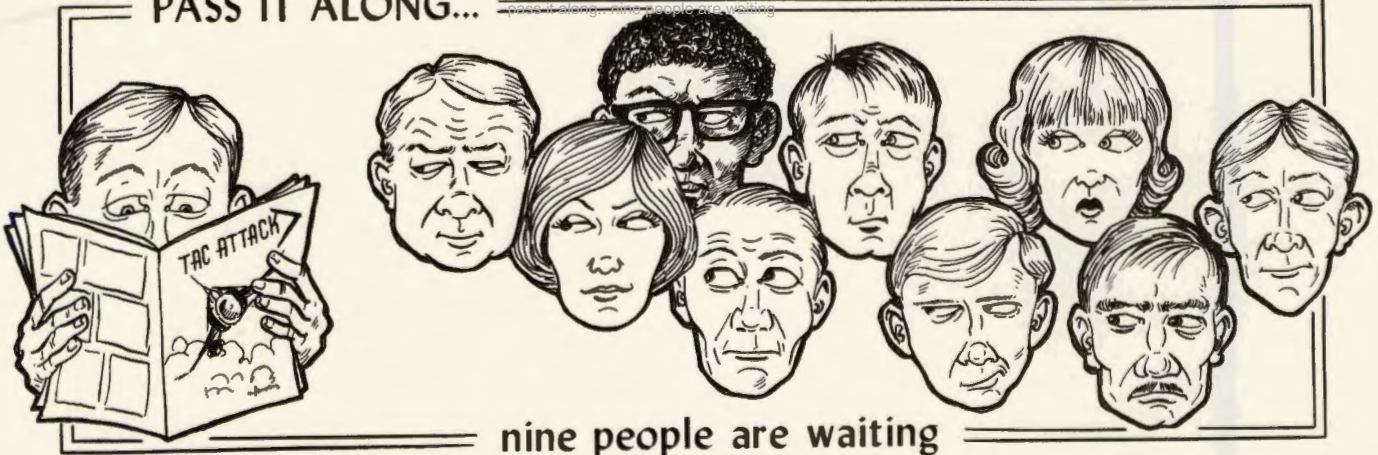
principal cause of G-induced loss of consciousness.

- Confusion, amnesia, convulsions, and no awareness of the loss of consciousness are frequent occurrences in the incident reports.

Based on these conclusions, DR. SAM stresses the following:

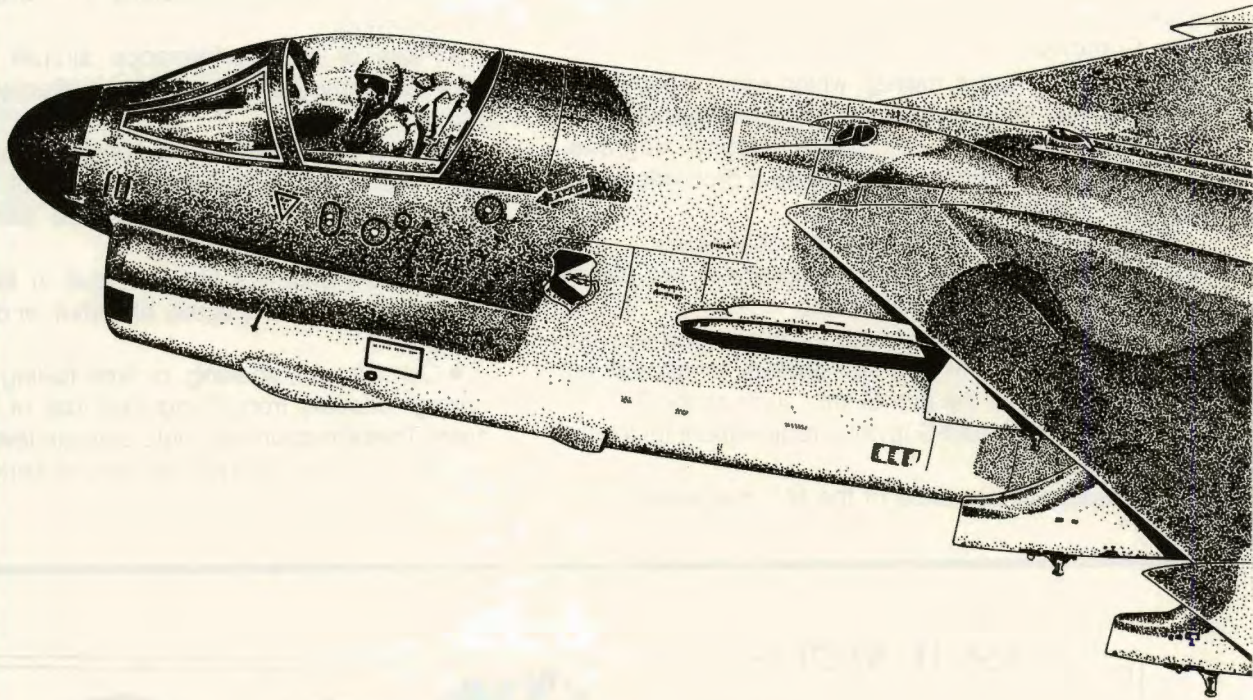
- Pilots of high-performance aircraft should be sure that they are performing an effective M-1 maneuver.
- These same pilots should be aware of the symptoms associated with G-induced loss of consciousness, so that they can recognize when loss of consciousness has occurred.
- Sudden onset of G can result in loss of consciousness without greyout, blackout, or other symptoms.
- Convulsions, shaking, or limb flailing can occur during recovery from G-induced loss of consciousness. These responses could activate levers, knobs, or buttons in the cockpit, resulting in serious consequences.

PASS IT ALONG... ~~pass it along... where people are waiting~~

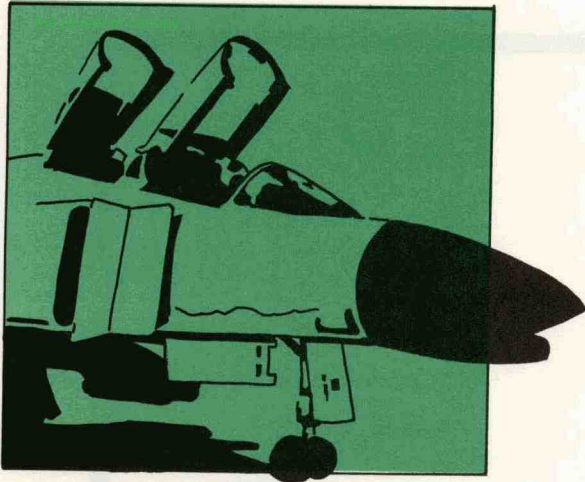


nine people are waiting

A-7D Corsair II







THE PHANTOM CANOPY

LESSONS RELEARNED

By Mr. Bobby Moore
MCAIR Senior Field Service Engineer

Solomon said there was nothing new under the sun. When it comes to F-4 canopy losses, I can confirm that truth. I've been in the F-4 program for over 16 years, investigating canopy losses and fitting and rigging many canopies. Those losses seem to run in cycles, and the cycles seem to be governed by the knowledge and concern of our aviators and maintainers. For example, look at our recent history:

Canopy Losses, 1972-1980

Year:	72	73	74	75	76	77	78	79	80
Losses:	8	12	10	18	3	7	9	8	11

As you can see, '75 was a peak year for canopy losses. In 1976, we did something about it. We published articles in *TAC ATTACK* and McDonnell Aircraft's *PRODUCT SUPPORT DIGEST*, and I went on a whirlwind tour of TAC bases, briefing the problem.

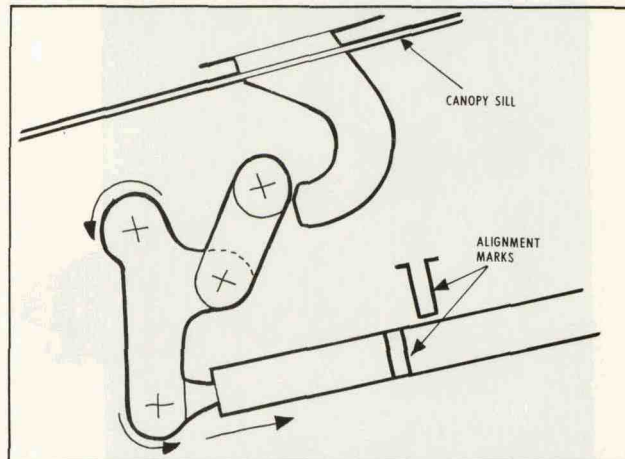
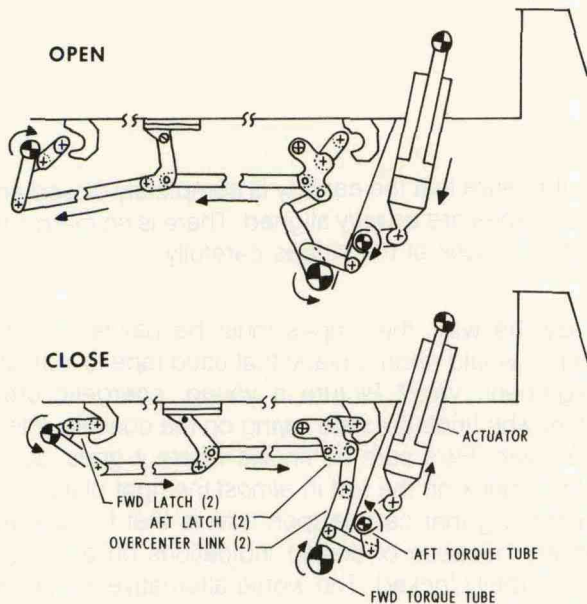
So here we are again, five years later. The trend is again up. I've just returned from a trip west where I briefed the problem at the western F-4 bases. The information hasn't changed much since 1976; but to a new generation of aviators and maintainers, it's news.

The primary cause is still stalls. A stalled canopy is

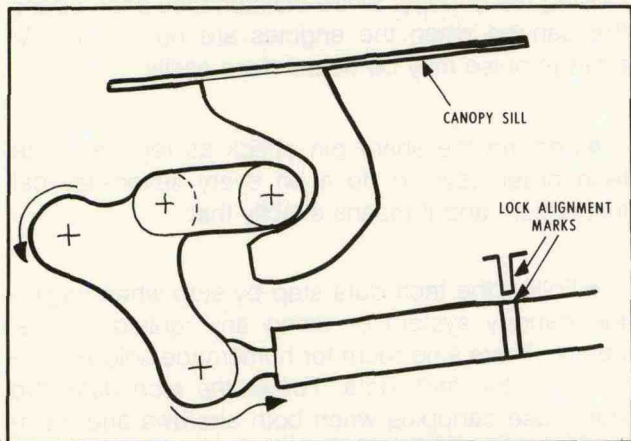
one that is closed, but not really locked. Of a total of 86 canopies lost since 1972, 56 were stalled canopies. The other causes are: inadvertent jettison by the aircrew member or by FOD; canopy unlocking in flight because of improper rigging, component failure, or unintentional lever movement; and shear pin failure.

The fact that the F-4 canopy is automatic may contribute to our problems. When the crewmember moves the lever to the closed position, the canopy closes and locks itself. In most other aircraft, the crewmember must make a separate action to lock the canopy. That action may help to remind him to be sure the canopy is really locked. The single action F-4 canopy normally works perfectly; it may lull us into a sense of complacency as we close the canopy by rote.

The normal operation of the canopy is pneumatic, using air from a 3,000 psi storage bottle which is reduced to 900 psi by a regulator. The canopy actuators contain pistons with 900 psi air normally directed to the top of the piston. When the lever is moved to Open, air also gets directed to the bottom of the piston which has greater working area than the top. With 900 psi air on top and 900 psi air on the bottom, the bottom pressure overcomes the top pressure because of the greater area; and the canopy unlocks and opens.



When we move the lever to Close, air on the bottom of the piston is vented overboard, and the actuator moves in the opposite direction. The upper end of the canopy actuator is attached to the canopy; the bottom end attaches to a torque tube that moves the linkage. That linkage moves the rollers that engage the hooks and lock the canopy to the aircraft. When the canopy is down on the canopy sill and the linkage has moved the rollers to fully engage the hooks, the stripes on the linkage will be aligned.



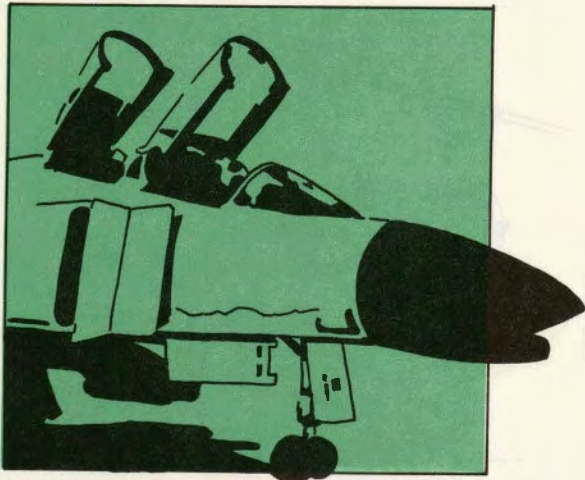
That's the cue for the aircrew: on a properly rigged canopy, the aligned stripes mean that all four lock-box rollers have engaged the four canopy hooks properly. If the stripes aren't aligned, the canopy is *stalled*; that is, the linkage stopped before it moved full travel.

So what happens if you take off with a stalled canopy? You lose it. The canopy raises in the air-stream shortly after takeoff. As it does, the piston is drawn up in the actuator, compressing that 900 psi air above it. When the canopy shear pin fails, the compressed air drives the piston back down into the actuator cylinder with enough hammering force to bend or break the mounting bolt and shear the shuttle valve bolts.

To investigators, those broken bolts are a sure indication that the lost canopy was stalled. If it had been unlocked or jettisoned, there would have been air pressure applied to the bottom of the piston which would have prevented the hammering. If shear pin failure had caused the loss, the piston wouldn't have been pulled up enough to hammer back into the actuator. So that kind of bolt failure indicates a stalled canopy.

Why do canopies stall? There are several reasons. Anything on the canopy sill when it is being closed will certainly prevent the canopy from closing completely. Binding linkage can also cause a stalled canopy. How about throttle and air conditioner settings? That's right—throttle and air conditioner. A test was made with seven flight-ready aircraft. With the engines at idle RPM, all the canopies on all the aircraft closed and locked. With one engine at 80 percent RPM and the other at idle and the air conditioning temperature set at medium (2 o'clock position), the front canopies closed, but consistently remained unlocked.

What happened is that the flow of conditioning air into the cockpits provided enough resistance to significantly reduce the rate of closure as the canopy neared the fully closed position. This allowed the canopy seal to begin inflating before the canopy was full down. This premature inflation resulted in stalled canopies again and again during the test.



THE PHANTOM CANOPY

The whole history of F-4 canopy losses makes one point very clear: preventing canopy losses is a twofold responsibility, shared by air and ground crews. What the aircrew can do is:

- Inspect the canopy and sill for foreign objects.
- Before closing the canopy, make sure both throttles are at idle and the temperature controls are no higher than the 2 o'clock position.
- Check that the canopy closes in a normal amount of time. If it seems slow, but locks okay, write it up.
- Watch the unlock light go out as the canopy locks. The light may be difficult to see in bright sunlight if you don't watch it as it goes out. When the light goes out, it indicates that the torque tube is locked overcenter. That's the very last operation to take place during the locking cycle.

- Ensure that the canopy is completely closed and the stripes are *exactly* aligned. There is no margin for error, so look at the stripes carefully.

By the way, the stripes must be painted on the rods. I would abort a plane that used tape to indicate alignment. Why? Picture a young, energetic crew chief who finds the tape laying on the console where it's fallen. He's sure he knows where it goes, so he puts it back on the rod in *almost* the right place. The best thing that can happen now is that the aircrew aborts because of stalled indications on a canopy that's really locked. The worse alternative is that the aircrew doesn't abort a stalled canopy because it has good indications. That's why the tech order specifies paint, no tape.

That leads us to maintenance's responsibility in preventing losses. Maintenance people spend more time in and around the cockpit than the aircrew, so they have a good chance of discovering problems if they:

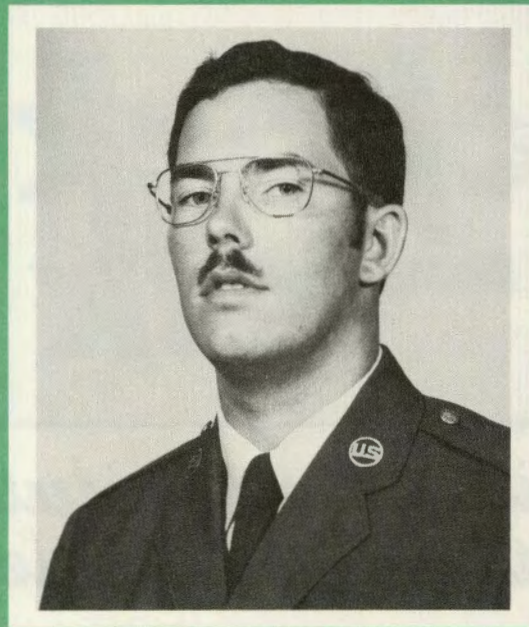
- Inspect canopies and sills for damage, foreign objects, or any unusual conditions.
- Listen for unusual noises when opening and closing the canopy. Since maintenance often opens the canopy when the engines are not running, a strange noise may be heard more easily.
- Perform the shear pin check as required. The tech order says to do it on every seven-day cal inspection, and it means exactly that.
- Follow the tech data step by step when rigging the canopy system or doing any related maintenance. There's no room for homemade solutions. Follow the tech data. *Follow the tech data.* We don't lose canopies when both aircrews and maintainers follow the tech data. ➤

For more information on the F/RF-4 canopy system, call Mr. Moore at AUTOVON 432-4009 or write in care of TAC/LGMF-4, Langley AFB, VA 23665.

TAC Safety Awards



A1C Linda I. Pilz



A1C Johnscott Pfaff

INDIVIDUAL SAFETY AWARD

A1C Linda I. Pilz is this month's winner of the Tactical Air Command Individual Safety Award. Airman Pilz works in the flight simulator shop of the 1st Component Repair Squadron, 1st Tactical Fighter Wing, Langley Air Force Base, Virginia.

On Monday, 8 June 1981, Airman Pilz was on duty at the flight simulator following a weekend of heavy rain in the Langley area. At 0830 that morning, she discovered water backing up through the sewer system into the simulator's electrical cable trench. Realizing that the cables carried 470 volts and 130 amps of electricity, she immediately began to shut off power to the simulator, using emergency shutdown procedures. She performed an emergency egress to get the pilot out of the simulator safely. Once the pilot was out, she finished shutting down the simulator. Then she notified her shop chief and shift chief about what had happened. By that time, the cables were completely covered with water. Airman Pilz and the rest of her crew then removed the cables and dried them.

The quick actions of Airman Pilz prevented damage to the equipment and eliminated life-threatening hazards to the pilot and the simulator crew. She has earned the TAC Individual Safety Award.

CREW CHIEF SAFETY AWARD

A1C Johnscott Pfaff is this month's winner of the Tactical Air Command Crew Chief Safety Award. Airman Pfaff is an assistant crew chief on UH-1N helicopter with the 24th Consolidated Aircraft Maintenance Squadron, 24th Composite Wing, Howard Air Force Base, Panama.

On several recent occasions, Airman Pfaff has shown a keen insight and attention to detail which have prevented costly maintenance repair and possibly saved lives. Once, while monitoring munitions being loaded on his aircraft, he saw sparks coming from the MD3 power unit. He immediately shut down the unit. Then he found that the exhaust stacks were on fire and the area near the stacks was glowing red. Despite the risk of injury to himself, Airman Pfaff removed the unit to a safer area and put out the fire.

Another time, while inspecting the inside of the fuel receptacle during a refueling operation, Airman Pfaff detected foreign material in the fuel tanks. The material turned out to be paint chips which had penetrated the foam in both outboard fuel tanks. If the paint chips had become lodged in the filters, fuel starvation could have occurred. In an area where jungle operations are routine and rough terrain is normal, the results of fuel starvation could have been tragic.

In the areas of safety and leadership in aircraft maintenance, Airman Pfaff stands as an outstanding example of the dedicated crew chief. His actions in preventing the loss of Air Force lives and property have earned him the TAC Crew Chief Safety Award.

chock talk

*...incidents and incidentals
with a maintenance slant.*

SHORTCUTS

The A-7 was loaded with drop tanks because it was the spare aircraft for a deployment. It turned out not to be needed; but since this unit's runway was being closed for repairs, the airplane was deployed to another unit. There the tanks were removed and stored. When they were stored, the tanks' fuel and air holes were covered with tape instead of being sealed with plastic caps called for by the tech data.

When the time came to return home, the tanks were reloaded on the airplane. Since the tanks were simply being transported empty, the fuel, air, and electrical lines were not attached; so the tape was not removed.

During flight, the A-7 climbed to 17,000 feet. When the airplane descended again, one of the fuel tanks collapsed. The tape over the air holes had let the pressure out during the climb; but on the descent, it sealed tighter as the outside air pressed against it. The tape wouldn't let the air in to equalize pressures, so the tank collapsed.

At the deployed location, the maintenance troops had been working long, hard days. They were launching a large number of sorties with a low number of people to do the job. The temptation to take shortcuts under those conditions becomes almost irresistible. But when we don't resist the temptation to ignore the tech data, we've sold our souls to Murphy. His laws cost us more work, time, and money in the long run.

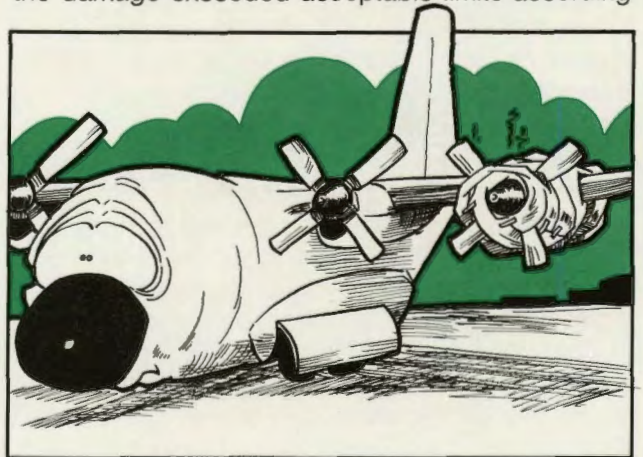
DEPLOYED DOUBLE STANDARD

A C-130, which was deployed on an exercise, aborted for a "Propeller Low Oil" light on the number 1 engine. The prop proved to be defective, so a maintenance crew was tasked with removing and replacing the prop.

The maintenance crew assigned to the job included one man fully qualified for the job and two others without a record of training in prop changes. The crew had been on extended shifts of over 12 hours because of the exercise deployment. They completed the prop change at 2300 hours, an hour before midnight, working in a poorly lit area. The intake was inspected by a certified inspector. Then the engine was run to check the prop.

After the engine run, a pod check showed nicks on the first and second stage compressor blades. An engine specialist decided the nicks were within limits, but the damage wasn't documented. So the aircraft flew its mission the next day and the day following. On the third day, the airplane redeployed to its home field.

At the home field, quality assurance inspectors rediscovered the damage. However, they found that the damage exceeded acceptable limits according



to the tech data. They also found that the damage extended from the first through the tenth stages of the compressor.

Odd, isn't it, how the damage that was acceptable when deployed became unacceptable at the home station? Perhaps the damage worsened in the three flights. Or perhaps the standards when deployed were lower than the standards at home. Some of us seem to have a double standard when it comes to exercises.

A double standard isn't the solution; it's just another problem.

THE \$20,000 SCREW

Some mighty small parts can cause some mighty big damage. In a recent case overseas, a small screw caused \$20,000 worth of damage to an F-4 engine.

The screw belonged in panel 9L on the fuselage. Two errors allowed it to come out of the panel and enter the engine. The first error took place at an unknown time when the wrong nut plate was installed behind the panel. The nut plate, which was installed at the factory or depot, was too deep. The correct size screw would engage the nut plate and torque down, but would not extend the required 2 1/2 threads beyond the nut plate and might not engage the self-locking feature.

That's with the correct screw. But in this case, the wrong size screw was used. During a 600-hour periodic inspection (PE), the panel had been removed and replaced. The person who replaced it used screws that were too short; instead of the correct part number, a mixture of three different part numbers were used. Out of 76 screws, 23 were the wrong size. When a too short screw was matched with a too deep nut plate, there was no way it could hold.

After the PE, the aircraft took off on a functional check flight (FCF). During an aural tone check at

19,000 feet and military power, the left engine compressor stalled. It had swallowed the screw. The pilot brought the airplane back without any other problems.

If you've ever wondered why your boss is so fussy about little things like screws, that's why. When screws start costing \$20,000 apiece, they're no longer little.

MORE FASTENER PROBLEMS

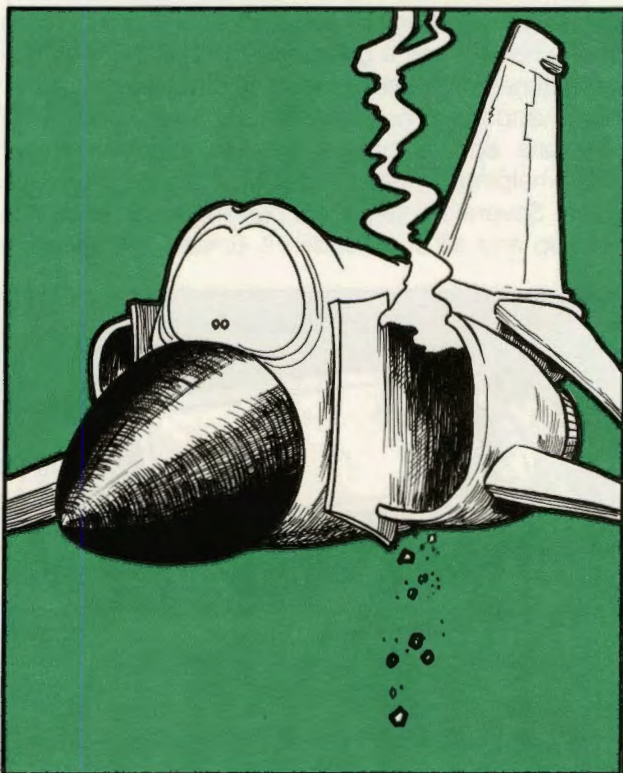
The number 1 engine on an F-5E overseas was being run to check on a generator problem from the previous flight. The first time the maintenance workers ran it, they found a hydraulic leak and had to shut down. The second time they started up, one of the workers saw sparks coming from the rear of the engine. Again, they shut down. Inspection of the engine showed major damage to the compressor rotor.

Just above the engine intake, a panel was missing a turnlock fastener. But the fastener that was missing was a #5 length, according to the tech order. The damage marks on the compressor blades showed that the engine had ingested a #3 fastener. The plot thickens.

This particular panel (562) uses several different size fasteners, varying in length from #3 to #7. As they looked more closely at the panel, the investigators found that the retaining spring washers were missing on half of the fasteners. They checked other aircraft. Every airplane in their unit had some kind of discrepancy in this panel when strictly compared to the tech data. They found that a #3 fastener used in place of a #5 can be torqued to the proper value without locking into the nut plate. It looked as though that was why the engine had swallowed a #3 fastener.

There were other factors that contributed to the incident. The maintenance crewmembers were at the end of a 12-hour duty day. They didn't have a left intake screen, so they used a right intake screen on the left intake. Intake screens were on order. Using a right intake screen caused gaps between the intake and the fuselage where unscreened air could enter the engine. That's how the fastener got to the engine.

Good supervision might have prevented the whole problem. Quality assurance inspections had shown up fasteners as a repetitive problem area in this unit. The problem was not corrected. This incident just proves once again that if we ignore it, it won't go away.





HEALTHY

hurt by the things associated with hunting rather than the hunt itself.

The first and last thing a hunter has to do is get to and from the hunt. This involves the infamous (at least to us safety guys) PMV. I've been hunting for more years than I care to tell, and I've never witnessed a serious shooting mishap or lost a friend from one, but I have had several friends hurt in PMV mishaps while hunting. The most recent one involved a friend traveling from one camp to another just a few miles apart. Traveling in a VW bug, he lost control on a wet and slippery backroad, ran off the road, and overturned several times. He was ejected and seriously hurt. The VW was totaled, a beautiful automatic shotgun was lost, and he spent two weeks in a hospital several miles from home, plus another two months convalescing. He has never hunted since. It wasn't a fun experience, and past hunts are overshadowed by that one.

Some hunters are also "four-wheelers," and they like to get way back off the road. There's no denying four-wheelers are a great asset to hunting, but they sometimes are overextended and get awfully stuck. This happens to two-wheelers also. Just a couple of seasons ago, a companion was almost run over while helping to push a pickup out of a ditch on a fire road. Several hunters were pushing and rocking the pickup and all of a sudden it jumped free, bowling

**By John D. McColman
TAC Ground Safety**

Hunting is a fall tradition. It's for fun, fellowship, and sportsmanship and should involve experiences that will be happily remembered and long talked about. The average hunter is truly involved with the land, woods, and water. He enjoys the hunt more for the atmosphere than anything else, and the game he bags is little more than the icing on the cake.

In TAC each year, however, we have mishaps involving hunters that mar the picture just described. The first thing that comes to mind is someone being shot. This happens, but infrequently; and when it does it's usually done by someone else. It's this hunter's experience, though, that people are often



HUNTING

the fellow over. The rear wheel barely missed him.

Sometimes winches are used to recover vehicles. On one such occasion, a pickup became hopelessly mired on an old logging road, where they had gone in to pick up two deer. A heavy duty rig with a winch went in after it. The pickup was crossways on the road and, in the process of getting it turned around, the wire rope on the winch broke. Boy, you talk about a couple of wild milliseconds while that wire rope was whipping around. No one was hurt, but we were all impressed. The thing about a scene like that is there aren't any chiefs—just a bunch of indians; and, in that case, we were all standing around in the way.

Then there was the case of the four good ol' boys who went after some more to drink one night and didn't make it a mile down the road. It not only hurts, it's embarrassing.

Another area of concern is knives. Knives are as popular with hunters as guns and maybe more so. Knives are bragging items and most are kept razor



sharp. They are also very necessary and useful tools. At our camp, we have the facilities for skinning and butchering the deer we get, so it's a very common sight to see two men, each with a very sharp knife, working right next to each other. To my knowledge, no one has cut anyone else yet, though I've seen some pretty good self-inflicted wounds. The thighs

seem to catch it a lot, maybe because they're used to brace things, and one fellow severed the tendons in his left wrist when his knife slipped while dressing a deer.

I have quit carrying a sheath knife. I've heard of people falling on them, or dropping them and having them cut through the sheath. I now carry a large two-bladed folding knife. Folded, it is perfectly safe and secure in my pocket. I also have the benefit of two blades instead of one.

About guns, be it shotgun or rifle, you must become intimately familiar with the gun you're going to use. Train yourself in safe handling until it is natural. I treat the muzzle of a gun the same way I treated the prop zone on an aircraft when I was on the flight line. I have to get in front of the muzzle sometimes, but when I do I know good and well the action is open, just like I knew the ignition was off when I had to rotate a prop.

I open the action of a gun every time I pick it up, be it mine or someone else's. If I hand a gun to some-



one, I do it with the action open. Several years ago, a friend asked to see my new pump shotgun. I had just come in from bird hunting and had put the gun up without cleaning it. I would have wagered the gun, my car, and one of my kids that the gun was empty. When I brought the gun out, I dropped the action open and nothing happened; then I racked it through one time and out popped one round of bird shot. I had left one round in the magazine. It was embarrassing, but it didn't hurt. I still own two pump guns and if you see me racking them through several times empty, you'll know why.

An article by a technical editor in a national magazine for American hunters says you should work with your gun 30 days before you go hunting. It's also a good time to fix those things you learned about last year but forgot. In my case, I remembered the red

HEALTHY HUNTING

paint on my 12-gauge pump safety had worn off. Some denatured alcohol for cleaning and the wife's bright red nail polish for color, and the safety was as bright as new.

When someone is shot, it's usually by someone else; so you have to be selective and critical of your hunting partners. Hunt with someone you trust and enjoy being with. You also have to be selective of where you hunt. Most public land is saturated with hunters, so make yourself conspicuous. I believe in blaze orange, and use it. I don't like it, because I believe deer see it just as readily as hunters do. I also believe that deer don't associate it with danger necessarily, but hunters associate it with other hunters. So use it please!

I honestly believe that most shooting accidents are just that—accidents. Hunters put themselves under great stress. Buck fever is a fact of life for hunters. Everyone experiences it sometimes, and the best of us can do something dumb while we have it. Mix in a little carelessness and you have the potential for a mishap. That carelessness may be on the part of the victim as much as the shooter.

Two cases involving TAC guys happened a few years back. Two troops from a western base had bagged a deer and were packing it out. Now a deer looks like a deer, even when it's been bagged; and that's what some other hunter thought as he started shooting at it. When the packers started shouting, the shooting stopped. As I recall, one of the men received a flesh wound. In the other case, a TAC hunter from an eastern base was hunting in a public hunting area. Unbeknown to him, some local hunters came in with dogs and drove the area. When driving, hunters take stands along a woods road or fire cut. About this time, the victim decided to walk out, maybe because he was tired or maybe because he heard the dogs. Anyway, as chance would have it, he walked through the area where the dogs were and almost directly towards a stander. The area was heavy brush. He was 20 yards away when the stander shot. He was fatally wounded.

We have had several hunters get lost; and if my memory serves me well, one hunter died from exposure while lost. Getting lost is easy, but it's tough keeping your head screwed on right after you realize you're lost. Being lost isn't much of a problem until

you panic. The panic is like buck fever—you're going to get it so you need to know how to get rid of it. You can help yourself by being prepared. Check out the area where you'll be hunting. Always hunt with a partner. Tell him where you're going and go there. Arrange for a time and place to meet, and establish signals.

When you go in the woods, you should always carry a compass. Anyone who hunts big country should also have a map. Here's what I do: I use a



small rucksack. It's large enough to hold my blaze-orange, heavy-insulated jacket plus a poncho; a good length of strong nylon rope; a couple of boxes of waterproof matches; toilet paper and kleenex; sometimes a small can of sterno; two plastic bags—one very large and one small; two or three granola bars; extra ammo; and a small folding seat. I start each day with a pint thermos full of hot tea or chocolate. I always have a map and a compass on me, even when I know the area. I sometimes include a package of cough drops, and sometimes I carry a couple of handwarmers and some fluid. This year, I'm going to purchase one of the new 12-gauge flare guns and a package of flares, like boaters are required to have.

This list could be altered. A cushion could be substituted for the seat. A small sterno stove could be added along with a small aluminum pan and a spoon. Then you could add tea bags, packages of hot chocolate, and soup mix. A person so equipped could spend a couple of days lost—comfortably; and

it would help eliminate panic.

Another area should be touched on: fatigue. If you're in the over-40 crowd, you should be thinking about it. One of the most tiring things is dragging a deer out. Get help and take your time. Climbing or just walking at high altitudes can be fatiguing. While it wasn't related to hunting, we lost an airman at survival school a few years ago, apparently from overexertion and fatigue. He was found dead in his bedroll the following morning.

If you are staying at camp, you probably have disrupted your routine and will not get as much rest as you are used to. If you find yourself indifferent and irritable, fatigue is setting in. Take an afternoon off and hit the sack. You'll be amazed at how much better you'll feel.

Fire is an ever present danger to the camper-hunter. Coupled with this is the threat of carbon monoxide. One thing that I will not tolerate is a gasoline or kerosene lantern in a tent. Also watch out



for gas-fired stoves and gas refrigerators in cabins and campers. In some older facilities, they have oil heaters and hot water heaters. Be sure they are vented to the outside and that the pipes are in good condition and are not clogged. (Birds love to build nests in them when they're idle.) Review the symptoms of carbon monoxide poisoning so you can identify the early signs. Never, never use an open charcoal fire in a closed area. Charcoal cooking is for outdoors. If a gas lantern is the only light you have, hang it up outdoors and let the light shine through the door or walls of the tent.

A little gadget that can get real interesting when you're firing it up is a handwarmer. Shake the excess

fuel out of it before lighting it. Otherwise, the fuel will boil out when it starts to generate, and that li'l dude'll be a ball of fire. If you're holding it, you'll dump it in a hurry. Follow the manufacturer's instructions and you won't have any trouble. Some places not to start them: inside your car, in the trunk of your car, on the counter in the wife's kitchen, in a tent, in a hay barn, on the table in camp. But on a deep cold day, they're super handy.

Last, but not least, is frostbite. We in TAC haven't had many problems with frostbite, but the potential is always there. Be particularly watchful on cold, windy



days. Be aware of windchill. Watch the other fellow and each other; we sometimes don't know when we're suffering from it. Your body doesn't have to be very exposed to suffer frostbite. I've seen minor frostbite on the nose, cheeks, forehead, and ears. I've also seen it on the skin around the wrist in the area between gloves and coat sleeves, and on the tips of little fingers. Probably most frostbite occurs because of ignorance of the hazard, and being ill-prepared and ill-equipped. If you're going into an area of extreme cold, prepare yourself with knowledge and equipment.

I hope we have warmed up your memory of past great hunts and that you'll go forth and have many more. And I hope as you go, you'll remember to watch for the little things. It's not only the gun that can get you.

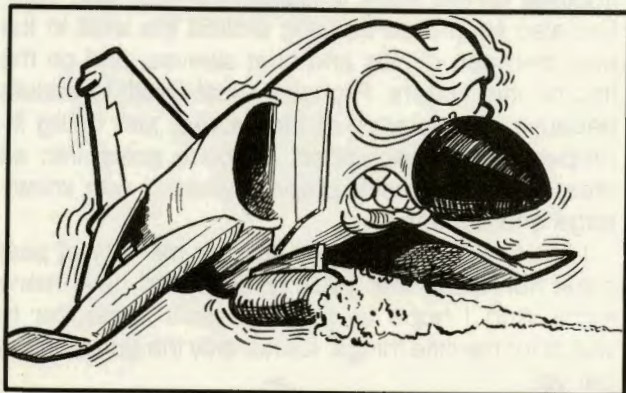
WEAPONS WORDS

RUNAWAY GUN

Overseas, an F-4D was flying its second gunnery mission of the day. The aircraft had a SUU-23/A, 20mm gun pod, on the centerline station; strafe was to be the last event.

After completing the bombing events, the pilot armed the gun, using the conventional arming panel. The DCU-94 option selector, which he had used for bombs, was in the safe position; so he moved it to off. As he did so, the gun fired. He immediately returned the switch to safe as the gun quit firing. The aircraft was on downwind leg over water when the gun fired. Fortunately, there were no boats in the area where the rounds impacted. When the gun fired, the pilot didn't have either hand on the control stick, much less the gun trigger.

Because of the relationship to moving the DCU-94



switch, the investigators concentrated on the aircraft wiring and switches. That turned out to be a dead end. Both conventional and special weapons delivery circuits checked out okay. The front and rear cockpit stick grips, conventional weapons panel, DCU-94, electrical terminal strips, and all weapons relay panels also had no discrepancies. The problem couldn't be found in the airplane.

They brought out the same gun pod and put it back on the airplane for another functional check. During the check, they noticed a small voltage on the gun firing lead when it was supposed to have zero voltage. The gun pod was returned to the gun shop where it was torn down for a full inspection. When they removed the cover plate from one of the canon plugs (J-17), they found moisture contamination and corrosion on all of its pins. Plug J-17 is hot wired to another plug which is directly connected to aircraft power and trigger circuits. The faults in the J-17 plug allowed 208 volt AC drive-motor voltage to be induced or shunted to gun firing and clutch solenoid circuits. That's why the gun fired. The DCU-94 had nothing to do with it; the timing was coincidental.

Until this incident, the J-17 plug was exposed to the atmosphere, protected only by a cover plate. Now this unit has sealed the J-17 connection cover panels with silicone to keep water out.

THE COST OF EDUCATION RISES

There's a whole school full of lessons to be learned from this incident. You may want to take notes.

The load crew was assigned to download an F-4E. The #2 man connected the pneumatic loader (low-pac) to the reload shaft and they began. Halfway through the download, the low-pac lost pressure. After a few minutes without a load, the pressure again increased. Before restarting the loader, the #2 man should have set it back to a lower pressure, but he didn't. When the loader restarted, the increased pressure broke the reload shaft.

Now the load crew chief had to make a decision. He could stop the download operation and have the shaft replaced. Or he could have a hydraulic mule connected to the airplane to drive the gun. The problem with that choice was that the crew chief wasn't checked out on the hydraulic mule.

Those were the two options allowable under the tech data. However, this unit had created a third option: the use of -6A hydraulic carts. Upon the advice of the unit's senior weapons manager, the deputy commander for maintenance had approved the use of -6A carts because of the shortage of pneumatic loaders. The -6A carts are not authorized for use in gun operations by the tech data.



But since it seemed to be a valid option, the crew chief went for it. The crew chief connected a -6A cart and continued downloading. Downloading should be a two-man operation, but he had his #2 and #3 crewmembers configure a bomb rack while he downloaded the gun.

After about 100 rounds had been downloaded, the gun slowed. The crew chief looked things over but didn't see anything wrong, so he continued downloading until he thought the last round was out. After he thought he was done, he found out that there should have been rounds in the gun. So he tried to rotate the gun again, but he couldn't. The gun wouldn't budge.

While the -6A was powering the download, several 20mm rounds had come off track and severely damaged the drum assembly. From this damage, we hope everyone learned something. But the tuition for these particular lessons was over \$8,000.

CERTIFIED OR QUALIFIED

The sergeant and the airman were sent to check the emergency pneumatic system of an F-4E canopy. The airman, who was a 3-level egress systems repairman, climbed into the cockpit to do the check, while the 5-level sergeant instructed him from the side. The airman connected the air bottle on the tester to the ballistic hose leading to the sequence actuator instead of the hose leading to the pressure operated valve. When the valve on the tester was opened, air at 3,000 pounds pressure fired the sequence actuator, which blew the explosives charge in the system.

The tech order warns about making this very mistake when doing the functional check. The airman was inexperienced: he had watched the operation on a classroom trainer, but hadn't done it himself. The sergeant who was there to supervise the airman had himself only performed the task once. Although fully certified, the sergeant was a recent arrival from another base where he had been assigned to an AMU and had not done this type of maintenance.

It's possible to be qualified without being certified. This incident shows it's also possible to be certified without being qualified. But our need is for supervisors and instructors who are qualified and certified.

WHAT'S YOUR RULE ?

By Major Wayne Skora
HQ TAC Flight Safety

Most of us have personal rules we live by and fly by. Capt Charles Girvan, flight safety officer with the 23d Tactical Fighter Wing at England AFB, Louisiana, sent us the results of a survey of wing pilots. He asked them, "What is the one rule *you* never break when flying, which is most important in keeping you alive?"

Here are some of the pilots' responses:

"Never overestimate your capabilities, or your wingman's."

"Keep in mind where my airplane is in relation to the ground and other airplanes at all times."

"Don't press weather, range instructions, etc."

"Never violate crew rest."

"Treat the ground as a super wingman: he is always there and never out of position. If he's out of position, I did something wrong."

"I always have a plan that follows the regulations and the good judgment to follow it."

"Don't do anything you wouldn't want your wingman to do."

"Be sure your PE (personal equipment) gear is all there and working properly at all times."

"I never fly with my hands in gear and my mind in neutral."

"Stick with a sound decision based on the situation and don't let yourself rationalize any other way out."

"Never fixate on one specific thing, but concentrate on the overall flight."

"Always keep an ace-in-the-hole. If you have to play your ace, go through the deck and find another."

"The lower I get, the more heads-up and out I get."

"Be flexible; don't follow a rule that is inappropriate or dangerous in the situation."

"Don't be afraid to 'knock it off' when things aren't going right."

All of the rules given are worth thinking about. What's your favorite? Or do you have your own? My favorite (and the one that most impressed Fleagle) sums up all the others. It is: "Always fly as if the D.O. was on your wing." ➤

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TAC TALLY



CLASS A MISHAPS	▶
AIRCREW FATALITIES	▶
TOTAL EJECTIONS	▶
SUCCESSFUL EJECTIONS	▶

TAC		
SEP	THRU SEP	
	1981	1980
2	29	22
2	17	16
2	25	22
1	22	17

ANG		
SEP	THRU SEP	
	1981	1980
2	5	10
0	2	8
2	2	8
1	1	5

AFR		
SEP	THRU SEP	
	1981	1980
0	1	3
0	1	1
0	1	3
0	0	2

TAC'S TOP 5 thru SEPTEMBER '81



TAC FTR/RECCE	
class A mishap free months	
43	33 TFW
36	1 TFW
35	31 TTW
23	49 TFW
22	355 TTW

TAC AIR DEFENSE	
class A mishap free months	
104	57 FIS
57	5 FIS
54	48 FIS
13	318 FIS
4	87 FIS

TAC GAINED FTR/RECCE		
class A mishap free months		
113	188 TFG	(ANG)
105	138 TFG	(ANG)
104	917 TFG	(AFR)
101	116 TFW	(ANG)
91	434 TFW	(AFR)

TAC GAINED AIR DEFENSE	
class A mishap free months	
91	102 FIW
87	177 FIG
53	125 FIG
36	119 FIG & 142 FIG
26	144 FIW

TAC/GAINED Other Units		
class A mishap free months		
146	182 TASG	(ANG)
139	193 ECG	(ANG)
134	26 ADS & 4787 ABGp	
130	110 TASG	(ANG)
126	USAFTAWC	

CLASS A MISHAP COMPARISON RATE 81/80

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

TAC	1981	4.0	3.0	3.2	5.6	6.0	5.9	6.3	6.2	6.0			
	1980	2.0	4.0	5.2	4.4	4.7	5.2	5.3	5.2	4.8			
ANG	1981	9.3	4.8	4.6	3.3	2.6	2.2	1.8	1.6	2.4			
	1980	5.0	7.6	6.6	7.1	6.5	6.1	1.9	5.1	5.0			
AFR	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.4			
	1980	0.0	0.0	0.0	0.0	0.0	4.3	3.7	6.5	8.9			

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

FLEAGLE

ALWAYS FLY
AS IF THE D.O.



WAS ON YOUR WING

Always fly as if the d.o. was on your wing.

HARRISON