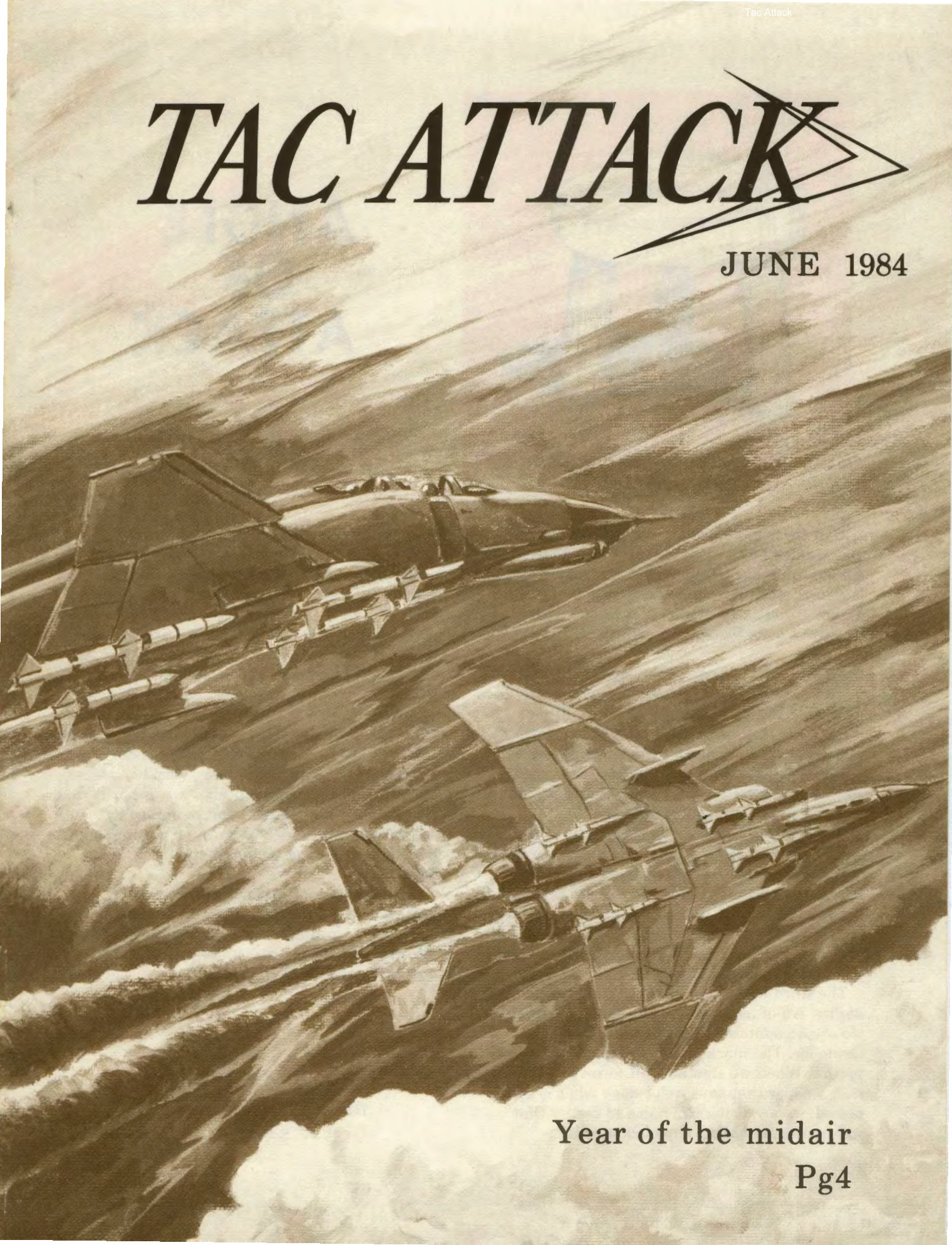


TAC ATTACK

JUNE 1984



Year of the midair

Pg4



ANGLE OF ATTACK

For those of you who are city folks (and for you country folks who grew up since modern machines entered the farm scene), the above graphic is a milk stool. For many years it was the foundation of the dairy industry. It can also serve to illustrate some foundation principles of our business.

Responsibility is one of the legs of successful mission accomplishment. As supervisors, we assign our team members the responsibility of completing tasks. We retain the responsibility to insure they are properly trained, equipped, and supervised. The team must accept the responsibility for following the tech data and procedures in order to accomplish the mission.

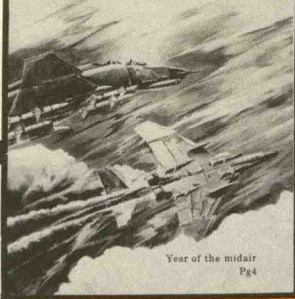
A second leg is *authority*. Assigning responsibility without delegating adequate authority to do the job creates frustration and inhibits mission accomplishment. While there are practical limits to authority, we do have considerable latitude in being innovative, capitalizing on the talents of our team (as well as our own), and we can go to our supervisors for help.

The third leg, that adds stability, is *accountability*. All of us must recognize and accept that we are accountable for our actions and performance. The mark of a craftsman is the signature. When we sign aircraft forms or even initial a paper that says we've done what is expected, we are using our name to certify that we've professionally completed our task.

There are two aspects to accountability. The first is the positive side of rewarding superior performance. In TAC we have many ways to recognize our people—evaluations, reports, awards, even Fleagle T-shirts. We also need to recognize poor performance. Often poor performance is a result of poor training, tech data, tools, etc. Accountability helps identify those deficiencies so we can fix them. It also helps identify those individuals who choose to intentionally violate basic rules and procedures. In investigating discipline-related mishaps, we find that the offender thought that he could get away with his actions. His abuse of his responsibility and authority, and indeed of his name, was often prompted by supervisors who failed to insist on making accountability part of the foundation of their business.

Superior mission accomplishment is not achieved by shutting off the electricity and dragging out the milkstool; it is a result of employing all three foundation principles—*responsibility, authority, and accountability*.

Harold E. Watson, Colonel USAF
Chief of Safety



ON THE COVER:
F-4E PHANTOM

JUNE 1984

DEPARTMENT OF THE AIR FORCE

HON VERNE ORR
SECRETARY OF THE
AIR FORCE

GEN W. L. CREECH
COMMANDER



COL HAL WATSON
CHIEF OF SAFETY

MAJ LEW WITT
EDITOR

STAN HARDISON
ART EDITOR

MARTY DILLER
WRITER-EDITOR

A1C KELVIN TAYLOR
STAFF ARTIST

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TACRP 127-1

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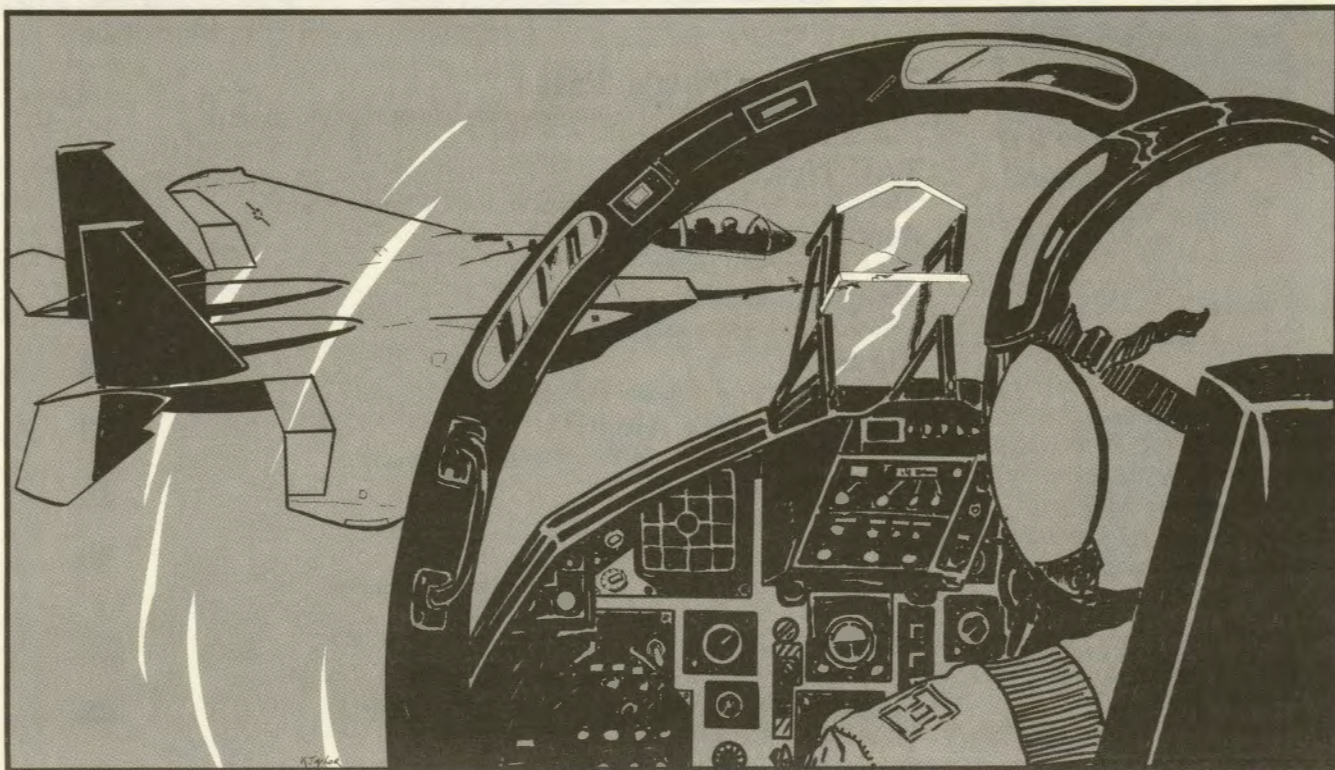
Distribution (FX) is controlled by TAC/SEP through the PDO, based on a ratio of 1 copy per 10 persons assigned. DOD units other than USAF have no fixed ratio; requests will be considered individually.

Subscriptions for readers outside of DOD are available from the Superintendent of Documents, Government Printing Office Washington, D.C. 20402. All correspondence on subscription service should be directed to the superintendent, not to TAC/SEP.

TAC Attack (ISSN 0494-3880) is published monthly by HQ TAC/SEP, Langley AFB, VA.

POSTMASTER: Send address changes to TAC Attack, TAC/SEP, Langley, AFB, VA 23665.

THE YEAR OF THE MIDAIR



By Capt Thomas K. Mascot
57 FWW
Nellis AFB, Nevada

Since Wilbur and Orville cracked up their first airplane, the number of ways to wreck an aircraft has been relatively limited. Mishaps usually fall into one of several categories: collision with the ground, collision with another aircraft, loss of control, mechanical failure, or pilot disorientation or incapacitation. There really are not any new ways to Class 26 airplanes. Nevertheless, mishap statistics can be useful because they point out adverse trends and help us relearn

some old lessons. Let's look at an adverse trend. We might characterize 1983 as the year of the midair. From 1975 through 1982 the Air Force averages 4.1 midairs per year, with a low of 1 in 1977, and a high of 8 in 1976. By comparison, in 1983 we had 10 midair collisions involving tactical aircraft.

What can we relearn about avoiding midairs? To start with, the big sky theory does not protect us as often as we would like it to. It is startling to realize that a majority of the midair collisions over the last 10 years have been between aircraft flying in the same formation with one another. It seems pretty incredible that line fighter pilots are running

into their own flight members at such a rate. Why do mishaps occur in a phase of flight that would seem to be routine? I can think of three possible reasons: proficiency, distraction, and complacency.

Proficiency. Today's fighter training regimen puts a great deal of emphasis on tactical awareness and realistic combat training. That is only as it should be. But one by-product of this tactical approach is a scant amount of close formation flying. Why? Because of a great deal of time flying visual look-out formations, tactical formations, and route formation to accomplish systems checks. And because we routinely practice gun, missile, or ranging ex-

ercises going to and from the working area. Consequently, basic formation skills erode, pilots get rusty, crosschecks get slower, and more errors are made when basic fingertip formation is required. Does this mean that we should go overboard and restrict flights to and from the areas to fingertip? Of course not. What it does mean is that flight leaders have to take into account their wingman's experience level and provide him enough time on the wing to stay proficient. Basic formation skills (just like basic instrument skills, BFM, radar sorting, or gunnery) are perishable, and they need to be practiced.

Distraction. Several related areas that may create the potential for formation midairs are pilot distraction, channeled attention, misplaced priorities, and poor cockpit management. Today's fighters have a great many gadgets that magnify their lethality. But the price for this increased ability is increased cockpit workloads. Airborne radars, target identifying systems, threat warning receivers, electronic countermeasures equipment, inertial navigation sets, multiple radios, and other avionics wonders all compete for the pilot's attention. Outside the cockpit, high density air traffic and crowded working areas require a constant visual lookout. Proper cockpit management is a sliding scale of priorities based on the particular phase of flight that the pilot is currently engaged in. The workload in the cockpit is certainly manageable and not overwhelming. It is, however, all too easy to become distracted, or to concentrate atten-

tion on something that should be a low priority item. The classic example is the pilot who tried to lock on to radar traffic while flying close formation. Focusing on the radar, he collided with his leader because he failed to keep flying formation. It boils down to proper priorities. I am not saying that a pilot cannot use his radar, or follow along with the navigation, or help clear the flight visually when in formation, but the number one priority is to not hit your leader. It is extremely difficult to engage and kill a couple of FLOGGERS if your flight runs into each other during the turn out of traffic.

Complacency. Pilot complacency is particularly dangerous because it is insidious. Formation takeoffs, rejoins out of traffic, close formation, weather formation, tactical formation, air refueling, formation landings—no sweat, piece of cake, that's just how we get to and from work. True enough, it should be a piece of cake for any fighter pilot worth his salt. But since that is the attitude, instead of concentrating on the present formation activity, the pilot's mind may be busy planning future events like the upcoming air-to-air engagement, pop-up pattern and ordnance parameters, low level route, or whatever the meat (tactical portion) of the mission is. Add a little lack of proficiency and throw in a little distraction to this normal measure of complacency, and you can figure out why two experienced pilots run into each other doing a cross turn setting up for the next engagement. It sounds incredible, but it happens.

One last element fits into the midair equation. *Trust.* In nine

years, and 1,800 hours of flying fighters, I have had the opportunity to fly with a great many outstanding leaders and wingmen. The trust I placed in them was almost implicit, but it was never absolute. To a man these men are skilled, aggressive, and highly competent fighter pilots. They are also, however, human beings, just like me. We all make mistakes, errors, or misjudgments from time to time. When I fly with someone, I maintain that little edge of caution, a check and balance of what we are doing as a flight. There can, of course, only be one leader of a formation, and his authority is unquestioned. But throughout my flying career, I have held the belief that while killing yourself because of a mistake is undesirable, letting someone else kill you because of his mistake is absolutely and unequivocally idiotic. ➤

Next month Capt Mascot will conclude by taking a look at lessons we can relearn from midairs that take place in the multi-bogey air-to-air arena.

Captain Mascot graduated from Virginia Military Institute in 1974 with a Bachelor's Degree in History (he has since earned his Masters in Management from Troy State). He graduated from pilot training at Webb AFB, Texas in 1975. Captain Mascot has flown over 1,800 hours in the F-4C/D and the F-15 at Luke AFB, Arizona, and Spangdahlem and Bitburg ABs, Germany. He is a graduate of the F-15 Fighter Weapons School, flies for the 422d Test and Evaluation Squadron as a test project officer, and is the F-15 Flight Safety Officer for the 57th Fighter Weapons Wing, Nellis AFB, Nevada.

TAG

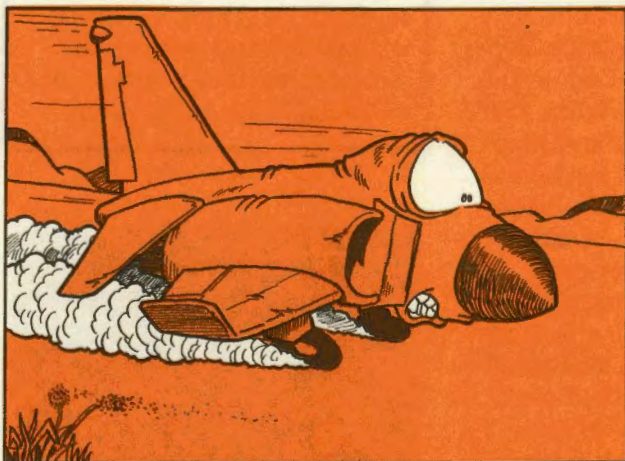
tips

INTEREST ITEMS,

Ready or not, here comes three

Picture a clear blue sky above a four-ship of Phantoms in a crisp echelon formation flying down initial for individual full stop landings. See lead and two land normally. Look how fast three catches up to two when his drag chute handle won't come up and his brakes don't seem to work.

At 130 knots, the pilot of number three squeezes the paddle switch and tries braking without antiskid, but still feels no deceleration. So he puts the hook down, hoping to snag the departure-end cable.



At 110 knots with 5,000 feet of runway remaining, the WSO, who was becoming concerned about how rapidly they were closing on number two, asked the pilot if he couldn't pull the emergency brake handle for him. The pilot, with an even better view of the backside of number two, took his feet off the rudder pedals and told him to

pull the handle. Now with 100 knots, passing the 4,000 feet remaining marker, the pilot tried emergency brakes. Kapow. The right main tire blew almost immediately. The pilot accomplished the boldface emergency procedures and steered the Rhino to the departure-end cable which they engaged at 50–60 knots.

Troubleshooters found the drag chute over-center handle mechanically binding with the aircraft tail cone/blast panel. But they couldn't turn up any malfunctions in the antiskid or braking systems despite extensive testing and MDR analysis of the components. Apparently, the brakes were working, but not well enough to satisfy the crew who was concerned about running into the preceding aircraft whose drag chute worked.

Usually our drag chutes work, and usually we aren't very concerned about closing on the aircraft that lands ahead of us. But there is potential for someone to repeat this scenario each time we bring a formation back to land together. We can also have the problem of a wingman getting in our way if someone aborts the takeoff.

Our 55-series regs contain some helpful words about what to do in situations like this. And a flight lead worth his salt should cover them in his briefing. What could you do if you see a similar situation developing in your windscreen? A radio call to the one you're closing on would alert him to your problem, the need for him to maintain his side of the runway, and the possibility that you may pass him and take the cable in front of him.

MISHAPS WITH MORALS, FOR THE TAC AIRCREWMAN

Doing it with flare

The runway supervisory officer (RSO) was closing down the mobile unit (RSU) after several hours of observing his squadron mates' takeoffs and landings. After a full day that also included a flight, he was anxious to depart the fix. He'd earned it—nobody had landed gear-up all day. He unloaded the first flare pistol, put the flare away in the ammo box, then removed the flare pistol from its mount in the ceiling of the unit.

Next he removed the second flare pistol—only this one was still loaded. As the pistol came out of its mount, it slipped from the RSO's grasp. It dropped into an open briefcase on the console below and fired. The RSO grabbed the briefcase and threw it outside. Good thinking.

Flare pistols have been used in RSUs for years and they've been known to discharge when they're dropped. That's why the mobile shutdown checklist told him to unload the flares before removing the pistols.

This fellow was lucky that the flare pistol landed in the briefcase. Can you imagine being chased around the small confines of a mobile unit by a flare that keeps ricocheting off the floor, ceiling, and walls?

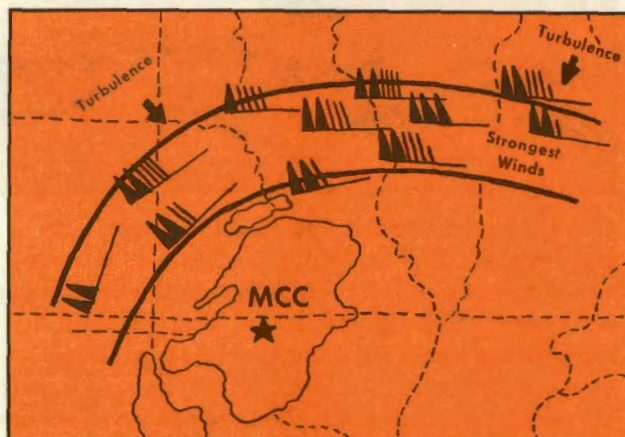
Weather words

Last month we talked about a new weather buzz word, MCCs. We said that mesoscale convective complexes were different from your aver-

age isolated air mass anvil and thunderstorms tied to squall lines, because MCCs move very slowly and cover fairly vast areas. While that presents obvious problems with destination weather, MCCs can also be sporty to get around en route because they can dramatically affect the upper airflow up to FL400.

An MCC acts like a huge boulder dropped into a flowing stream—the water is diverted around the boulder, flowing faster in some areas and slower in others. In the case of a large MCC, jet stream wind speeds southwest of the storm will be considerably slower than the rest of the flow; northwest of the center of the storm the wind velocity will increase significantly. A pronounced jet stream forms along and downwind of the northern portion of the MCC.

Figure 1 shows the wind pattern around an MCC that occurred in the midwest last summer.



TAC TIPS

The forecast wind at 39,000 feet in the general area was from 280 degrees at 65 knots. As thunderstorms developed, the forecast velocities in the general area were revised upward to 80 to 90 knots. On the north side of the MCC actual wind readings reached as high as 150 knots—not a nice thing to see on the groundspeed indicator on your way to the west coast.

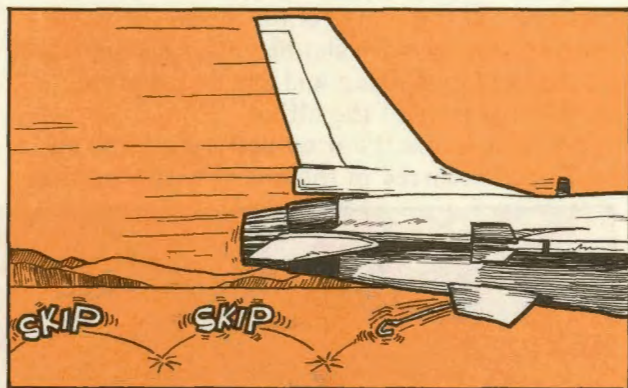
It's the season. Keep up with the forecasts. And check in with metros along the way for more current en route as well as destination weather.

Adapted from *Flight Ops*

Hook skip

Ever wonder how you can fly your jet all the way down final within a knot of the checklist airspeed, touch down in the center of the runway not ten feet either side of your aimpoint (300 feet short of the cable)—and still miss the engagement? Here are a few possible causes:

- * Some airfields have lights imbedded in the centerline stripes painted on their runways. When the tail hook hits the flat, rounded light fixture, it bounces. At 150 knots (250 feet per second) or so, even a short time off the concrete may mean missing a cable.



- * Because the word is out about the hook skip hazard presented by centerline lights, some airfields have modified their lights so they no longer coincide with the center stripe. But if the pilot anticipates lights on the centerline and compensates a foot or two right or left, he may create the same problem. It's a good idea to know where

the lights are *before* the engagement.

- * If the hook vertical damper is low on hydraulic fluid or air pressure, the hook-down force may be insufficient to keep the hook pressed firmly against the runway surface during the engagement attempt.

- * Even minor irregularities in the runway surface, like seams in the concrete, have caused hook skip. We've learned that a BAK-14 imbedded in an asphalt runway has the greatest potential for an edge to develop at the point the concrete and asphalt come together. As little as 1/8-inch irregularity can cause the hook to skip.

- * If the little rubber donuts (pendants that suspend the cable above the runway surface) aren't properly spaced, or the cable tension is less than required, the cable can sag. If it sags in the area that the hook is aiming for, when the aircraft tires roll over the cable, the wire may not bounce back up to meet the hook.

These pearls aren't meant to imply that we're always going to miss the engagement, even when we do everything right. Au contraire, our arresting systems are quite reliable. But hooks *do* skip. Wise pilots *plan* for such occasions. And wise airfield managers and civil engineers are alert to find and fix potential hazards before a mishap results.

Birds don't always feather the engine

One of the members of a 2-v-2 air combat maneuvering mission was flying his A-7 at 15,000 feet at about 500 knots when he noticed a heavy vibration. He thought it was probably just airframe buffet from high Mach flight because it stopped when he slowed down. When he accelerated to around 500 knots again, the vibration returned, this time even more pronounced. The pilot suspected malfunctioning flight controls and knocked off the engagement. The Sluf showed no irregular flying qualities at slow speed and the pilot landed normally.

Maintenance troubleshooters found the remains of a bird on the A-7's right leading edge flap. Evidently shortly after takeoff, when the leading edge flaps were extended, an errant bird attacked the aircraft. The pilot never heard, saw, nor suspected a birdstrike during any part of the sortie.

AIRCREW OF DISTINCTION



On 21 September 1983, CAPTAIN JAMES B. CAVANAGH, an F-15 instructor pilot, was flying a single-seat Eagle in a warning area over the Atlantic as an adversary for a mission qualification sortie. Following the first attack, as he advanced the throttles to accelerate, he heard and felt pops and bangs normally associated with compressor stalls. Capt Cavanagh called "knock-it-off," pulled the throttles to idle, and checked the caution panel to find the reason for the Master Caution light; the Left Bleed Air and Oil Pressure warning lights were illuminated. Then the left engine's temperature began rapidly rising and the left Fire/Overheat warning light came on. One of the other F-15 pilots told Capt Cavanagh that his aircraft was trailing smoke and fuel vapor—then flames and black smoke coming from the top of the aircraft just above the compressor section. As Capt Cavanagh shut down the left engine and discharged the extinguishing agent, he looked over his left shoulder to see the smoke dissipating and parts of the compressor sticking up through the top of the aircraft. What he couldn't see and didn't know was that pieces of the compressor had severed major fuel and oil lines as well as destroying the engine and gutting the engine bay.

Capt Cavanagh turned his crippled Eagle toward the nearest emergency field 55 miles away. He used dead reckoning for navigation since this field has no navigation aids. En route, his radios became intermittent and were only reliable on Guard channel. Closer in, he received a rough vector to the field (the active runway was not displayed on the sector controller's radar scope) and found out the weather—scattered clouds at 2,500 feet and 4 miles visibility.

As he approached the emergency field, he slowed the aircraft and confirmed its slow speed flyability. When the field was in sight, he maneuvered the now-single-engine aircraft to line



Capt James B. Cavanagh
48 FIS
Langley AFB, VA



up with the runway and landed uneventfully.

Previously an F-15 with similar catastrophic engine failure and disintegration was destroyed when the pilot was no longer able to control the aircraft. Although pieces of the compressor also penetrated the main flight control casing of Capt Cavanagh's aircraft, they did not render the aircraft uncontrollable.

Capt Cavanagh's expeditious, professional recovery of the aircraft has earned him the Tactical Air Command Aircrew of Distinction Award. ➤

WEAPONS WORDS

On roof repair

When a law enforcement specialist returned from traffic control duty, the desk sergeant asked him to clean an M-16 rifle because its six day cleaning was due. Weapon cleaning is usually done in this unit by the armorer, but since the unit recently returned from a deployment, there were too many weapons for him to handle. So several individual "volunteers" pitched in to help.

The cleaning equipment was left on a counter in the corridor of the building, and that's where the airman decided to clean the M-16.

After he cleaned the weapon, he put it all back together. Then he pulled back the charging handle, locked the bolt back to the rear, and loaded a 30-round magazine of 5.56-mm ball ammunition.

Oops. Forgot to perform a functional check after the cleaning. So the specialist pointed the rifle towards the ceiling and tried to dry fire. When nothing happened, he remembered the bolt was still locked; so he released it—and chambered a live round. Crack! This time when he pulled the trigger, the rifle fired a bullet through the ceiling.

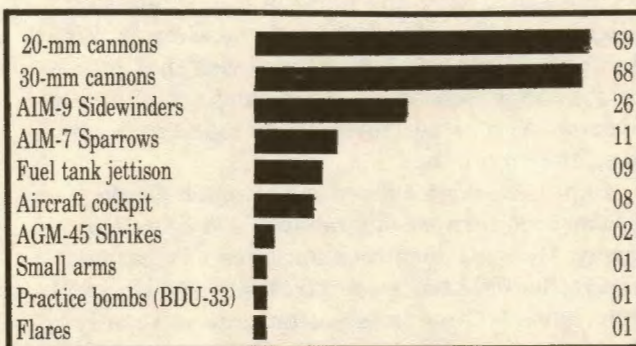


Good thing it was only a one story building. Although the SP was qualified and had cleaned a weapon in the SP building once before, for some reason, this time he didn't follow the unit's procedures. Specifically, he didn't clear the rifle in a clearing barrel under the watchful eye of a supervisor *before* loading the ammo magazine.

Good procedures only work when we follow them. Otherwise, we may be doing the right actions at the wrong time. Kinda like a baseball player who steps into the batter's box without first stopping by the bat rack to choose his weapon.

Guns lead mishaps

1983 CLASS C WEAPONS MISHAPS:



The bar graph shown here indicates the ten weapons most and least frequently involved in Class C mishaps in TAC during 1983. The number of Sparrow mishaps decreased considerably (from 28 in 1982). Likewise, Maverick Class C mishaps decreased from 13 during 1982 to off the chart (zero) in 1983. That's good work. On the

other hand, the number of GAU-8, 30-mm mishaps more than quadrupled (13 in 1982). But since reporting criteria changed during 1983, the number of gun mishaps may be misleading. TAC/SEW reports that the majority of gun mishaps resulted from materiel failure.

TENSION

After the weapons load crew uploaded a GBU-10 glide bomb on an F-4E, the load crew chief inspected their work. When he checked the tension on the arming wire, he inadvertently pulled too hard, and the wire came loose from the firing pin of the thermal battery. When the firing device did its job, the computer control group (CCG) activated like it's supposed to.

The now-useless CCG received an all expense paid trip back to depot for repair. The crew chief learned a \$2,500 lesson about electrical gear not taking kindly to manhandling—an expensive way to be taught how taut.

When we work around bombs all the time, we have a tendency to treat them pretty casually. Let's not forget what they're designed to do.

Put me in coach, I don't smoke

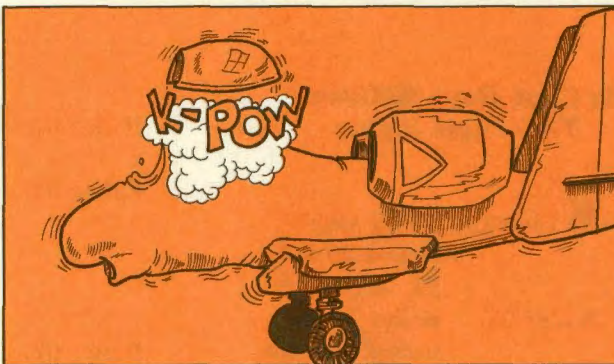
When the tow team arrived at the trim pad to pull an A-10 back to the ramp, they were one person short. So the engine mechanic, who had just completed the engine run, volunteered to stick around and help. Since he had just climbed



out of the cockpit, the tow team figured he must be qualified to sit in the cockpit, prepared to apply emergency braking, if required, during the towing operation.

After the tow bar was connected, the engine man took his place in the aircraft cockpit. Just as the aircraft began to move forward, the mechanic remembered he had to pull the emergency brake handle before the brake pedals would work. Since the aircraft was already rolling, he probably felt that he was late and urgently needed to pull that handle.

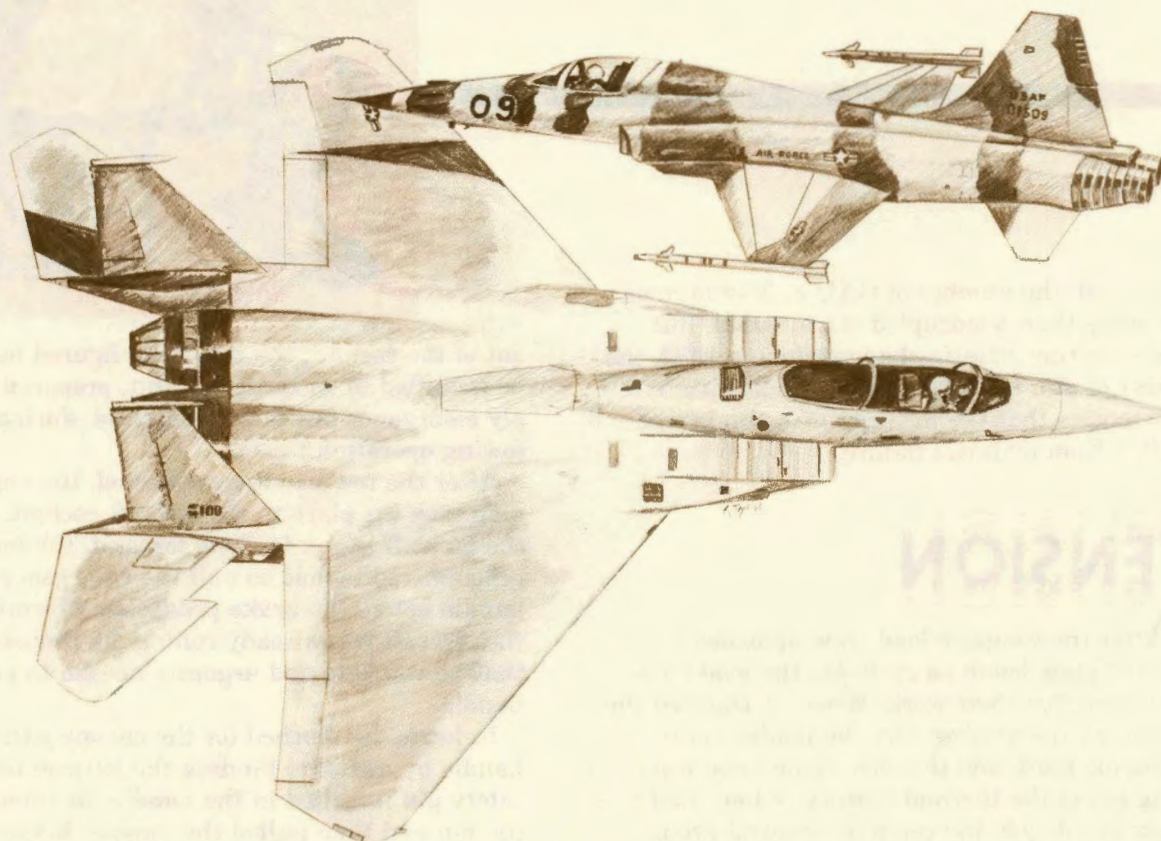
In haste, he reached for the canopy jettison handle by mistake. Finding the jettison handle safety pin installed in the handle, he removed the pin and then pulled the handle. It worked.



K-POW. The M-4 canopy remover fired, penetrated the canopy, and landed about 200 feet behind the aircraft.

Fortunately no one was hurt. The mechanic's intentions were good, but his help turned out to be costly. Don't you suppose things would have gone more smoothly if a few more questions had been asked and a few less assumptions made?

BIG SKY



By Capt. Dave McGraw
TAC Flight Safety

Killer 01: Killer One's locked 20 left, 22, angels 18.

Killer 02: Killer Two's locked trailers, 10 left, 25, angels 14.

Killer 01: Leaders are 15 miles, angels 15, dragging south.

Killer 02: Killer Two, copy

Killer 01: Killer One's bandits are out

Killer 02: south, no factor. Killer Two's tally two trailers.

Killer 01: Killer One's visual, tally 2. Killer Two, you're cleared to engage.

Killer 02: Killer Two, Lima kill brown F-5, heading 090, 14,000 feet.

Killer 01: Killer Two, your visual's 9 high.

Killer 02: Killer Two is visual.

Killer 01: Killer One is

lead left, engaged on the trailer . . . Lima kill blue F-5, heading 120, 13,000 feet.

Detect. Sort. Target. Kill! That's air-to-air training vintage 1984. This mission went well—good comm, operable radar systems, and excellent results. Today it was only a 2 versus 4 dissimilar air combat training hop; tomorrow it may well be a merge involving 20 or 30 aircraft employing lethal weapons instead of UHF

heaters.

Within the past few years we have experienced a number of midair collisions within the TAF. Circumstances surrounding these collisions have varied, and the impacts have occurred in nearly all realms of flight. In almost all midairs between fighters, a comrade is killed and two aircraft are destroyed. Statistics show us that 61 percent of all midair collisions involving USAF pilots occur as a result of *failing to see and avoid*.

The forte of many TAC units is seeking out and engaging enemy air forces. Training for that mission is inherently risky and routinely brings aircraft close to one another. However, the importance of succeeding at that mission in war far outweighs reasonable peacetime risks that prevail despite a sound training program.

Maintaining aircraft separation during air battles is highly dependent on the situational awareness (SA) of all the players. Total SA can be defined as an accurate accounting of all aircraft affecting an engagement, a proper assessment of each aircraft's maneuvering potential, and an understanding of the dynamics of the fight. Current regulations provide rules of engagement that are designed to prevent collisions from occurring. But some safeguards, like assigned altitude blocks, dissolve at the merge when the fight begins to turn. Normally, continuously turning engagements result in progressively *lower SA* the longer they continue. Reduced SA results in decreasing the size of the big sky and increasing the chances of a midair.

Midair collisions are not in-

evitable. We can consider a number of facts to help *increase* our SA while decreasing the potential for a midair. First, our higher performance fighters with advanced ordnances often lead to point-shoot engagements. That is, no longer must we BFM our aircraft to the bandit's six o'clock. Rather, we simply point and shoot. This capability can reduce the requirement for a lengthy turning fight but has its own dangers—like some impressive closure rates as aircraft point their noses at one another to acquire the bandit on radar, for radar illumination, and for missile launch. Also, if you are lazy, out of shape, or ill-prepared, during the heat of the battle you may find yourself taking a short nap (graying out) because of the increased G-capability designed into today's fighters.

Second, in larger scenarios the slow bandit generally draws a crowd as each member of the pack anxiously tries to smoke the easier prey. We must remind ourselves again and again that the longer and slower a fight turns, the more anchored (predictable) it becomes. The participants in the melee all have their minds occupied with exact BFM, weapons employment, aircraft performance, reentry opportunities, radio transmissions, and the like. Task saturation will eventually take its toll on these individuals while inbound bandits have an easy time visually and mentally tracking the fight.

Third, it's important to establish prebriefed contracts within elements if you want to win. Of all the necessary tactical considerations to brief, one of the

most important is the size of the envelope behind a bandit that the engaged fighter owns. A clear example might be a 45 to 60 degree cone from 1,000 to 9,000 feet behind the bandit. Clearance in or out of this area would be at the discretion of the flight lead using his judgment and experience, appropriate air combat maneuvers, and concise communication.

Fourth, consider belly checks and the process of sanitizing your flight path to a bandit. When locked to a bandit, information about the rest of his formation is often lost. If your wingman has a different lock, your SA may double but still not be ultimate. When you get a tally, look for wingmen and trailers. Sanitize and sort, even during the merge. In training, the midair threat is from an unseen trailer; in war, the unobserved trailer's Atoll may mean your life. You can't afford to padlock on one bandit. Look around and be alert. Belly check and clear your attack avenue. Padlocking on the first thing you see, or staring through the TD (target designator) container of the HUD, in a multibogey arena leaves your SA at the low end of the spectrum. Remember, the more tallyhos you have, the greater your SA.

Fifth, what if it isn't a turning fight but just a beak-to-beak exchange of missiles during the merge? The awesome closure rates between two merging fighters do not allow a lot of room for error. And just like meeting someone in a hurry in a narrow hallway, fighter pilots will simply match one another's control inputs as they try to get out of the way. Push, pull, push! The ROE

BIG SKY

specifies “nose high goes high and clear to the right without crossing noses to do so”; but if you have ever been there, you know the instinctive reaction is to pull, not to clear right. So brief and plan for it in peacetime. Break off front quarter missile attacks in time to satisfy ROE constraints. In combat, hopefully, the last task of the engagement will be to clear the target’s fireball.

Finally, at the Joker call, when it’s time to RTB, don’t relax—even if the furball is behind you, you’re headed in the proper direction, and your element is in great formation.

What about the players who may be regenerating or who are committed to your fight from other areas? Listen to what GCI information you have. Stay alert. Clear your exit both aft and forward. During training flights, fight the tendency to relax when you hear “Knock-it-off,” because collision potential may actually be greater at that moment as flight leads are gathering in wingmen, everyone’s checking fuel and instruments, and nobody is in his former altitude block. Accelerating, climbing, and arriving at the prebriefed safe area takes even longer

when some of the participants are on separate frequencies.

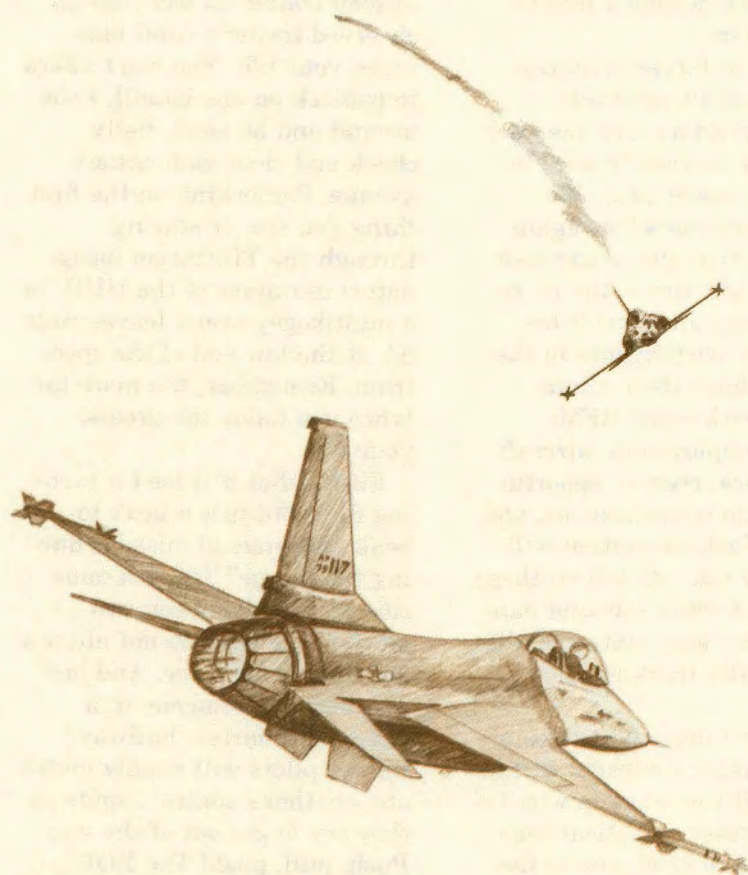
The point? I’ve covered six considerations that can make midairs less likely during ACM. The next time you step, consider:

- * The all-aspect capability of modern fighters
- * The magnetic effect of slow-speed engagements
- * The importance of a tactical briefing within elements
- * The appropriate occasions to sanitize and belly check
- * The factors involved in beak-to-beak passes
- * The SA required during separations and knock-it-offs

Before we enter, separate from, or reenter an engagement, we must make a conscious effort to build SA—to use GCI/AWACS control, onboard radar, air-to-air TACAN, RWR, dead reckoning, and visual contacts to clear the entire battle arena.

Even though he flew in a guns-only environment, Eric “Bubi” Hartmann operated with an outstanding plan that still applies: “See—Decide—Attack—Coffee Break.” Once you acquire a tallyho in a VID environment, decide if/how you will engage, then execute that decision. If you choose to engage, use the weapon that will achieve the quickest kill while leaving you predictable for the least amount of time. Then, coffee break; that is, build your SA back up, insure flight organization, and scan with your eyes where it will do some good. Some pilots say that speed is life. That’s not true. *Sight* is life, speed is simply a luxury.

Good hunting!



SAFETY AWARDS

CREW CHIEF SAFETY AWARD

As crew chief for the squadron commander's aircraft, SSgt Michael C. Briles is expected to set the standards for the other crew chiefs in his AMU. And he does: his F-4E is consistently one of his AMU's high flyers. Besides his exceptional efficiency, Sergeant Briles is also very safety conscious, and has made several contributions to a safer operation.

On one occasion he discovered that wing tip clearance wouldn't be wide enough if an existing tow line were used; the tow line was relocated. On another occasion he found door tracks on a hangar that were not level with the pavement which caused excessive stress on F-4 nose struts when aircraft were towed across the tracks; the hangar is now used as a parts store. As hot pit instructor for upgrading hot pit crews, Sergeant Briles extends his attitude by ensuring that all procedures are understood, followed correctly, and that no short cuts are taken. He refuses to



SSgt Michael C. Briles
335 AMU, 4404 AGS, 4 TFW
Seymour Johnson AFB, NC

compromise safety.

The wing commander is impressed with Sergeant Briles' efficiency and attitude; he often uses Sergeant Briles as an example of excellence at his standup meetings.

INDIVIDUAL SAFETY AWARD

MSgt Edward A. Hartman, Chief of Weapons Safety, uses his ability to recognize and solve problems to increase the effectiveness of his safety program. Sergeant Hartman knew there was a lack of standardization in integrated combat turn (ICT) procedures, so he wrote an ICT guide for the wing which combined all maintenance, munitions, and operations requirements. He also discovered a problem with the storage of a newly developed flare gun testing cartridge.

After determining that no specific storage criteria existed for the new cartridge, he developed an appropriate solution. And when he learned that Security Police were scheduled to receive explosive detection dogs, Sergeant Hartman took the initiative and resolved storage and handling requirements for commercial explosives so that training of the dogs could begin as soon as they arrived.

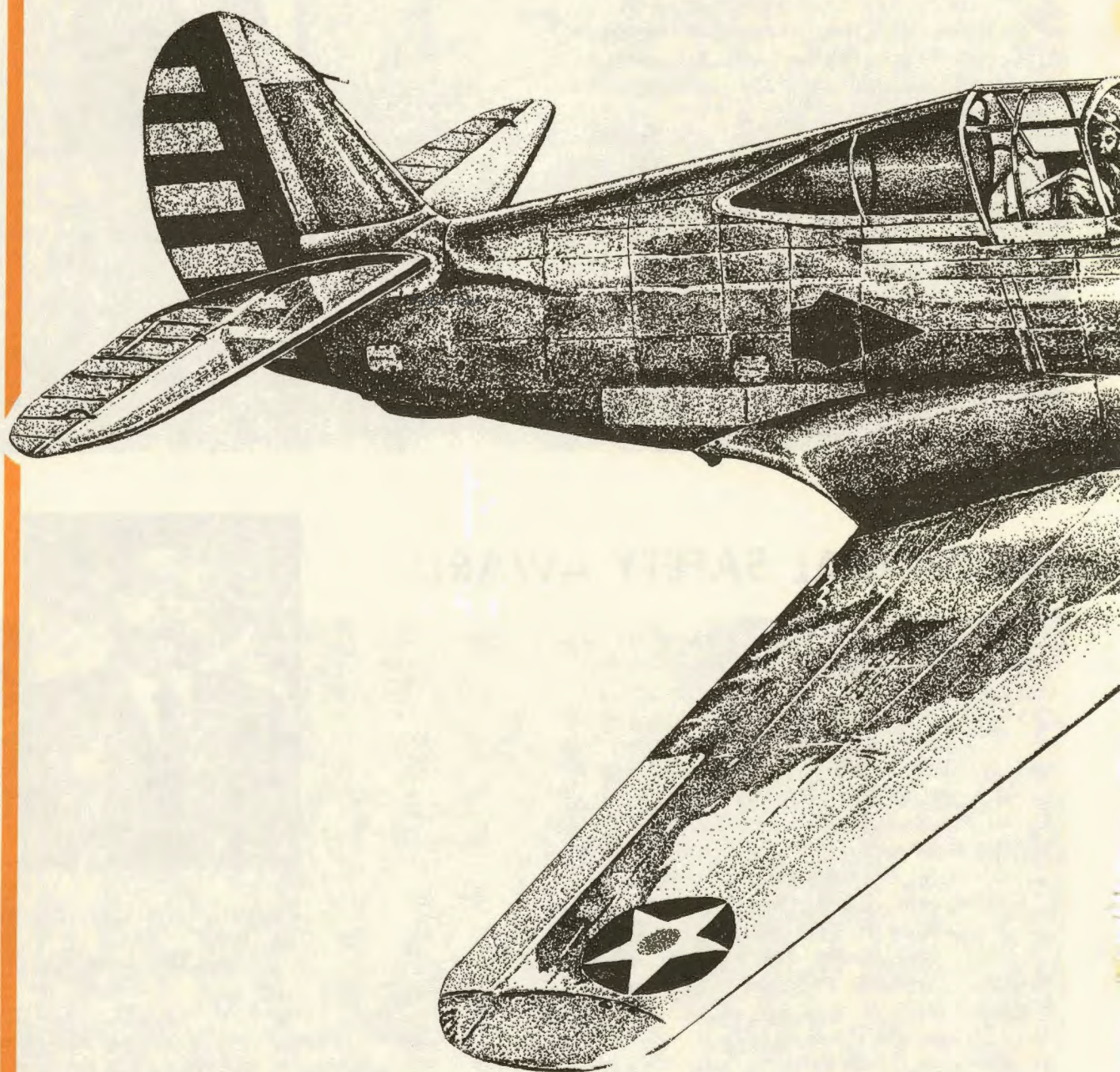
Sergeant Hartman's expertise and the quality

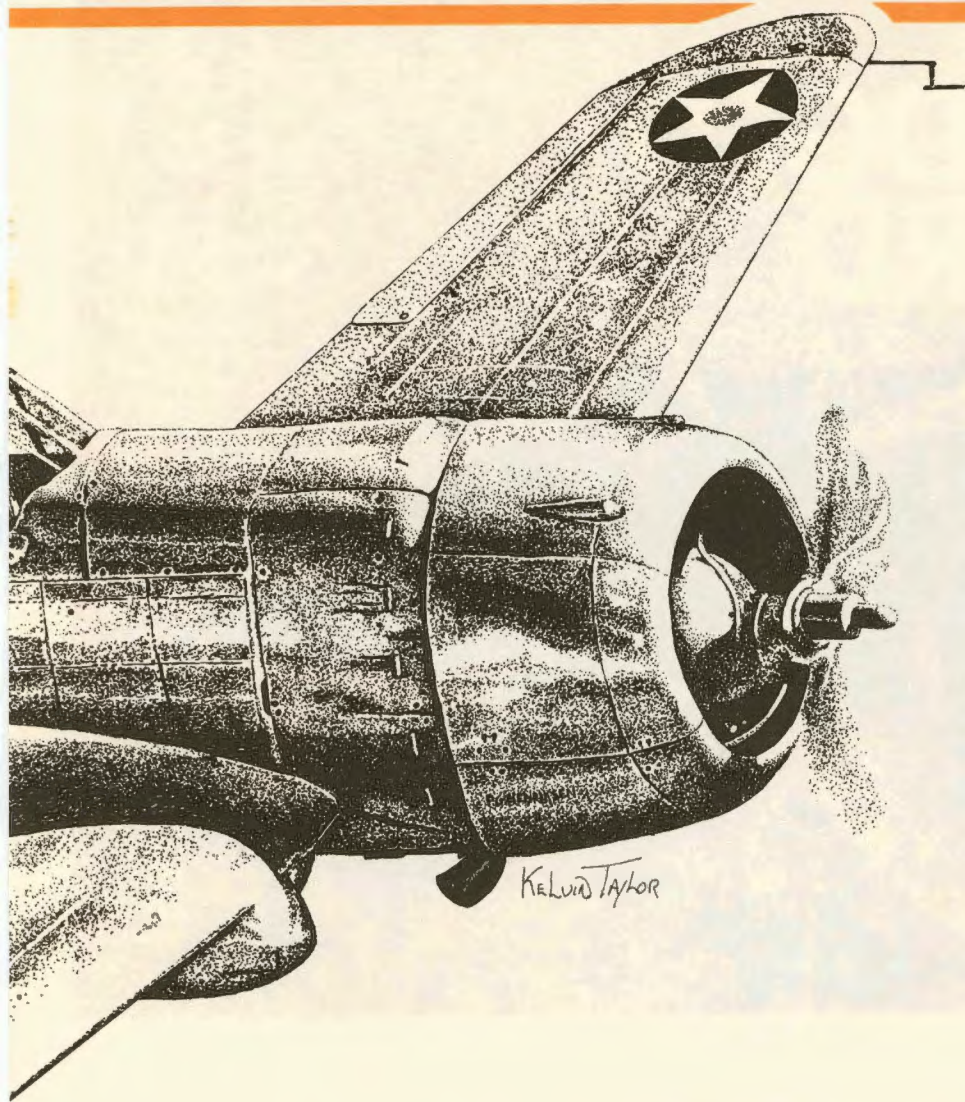


MSgt Edward A. Hartman
366 TFW
Mountain Home AFB, ID

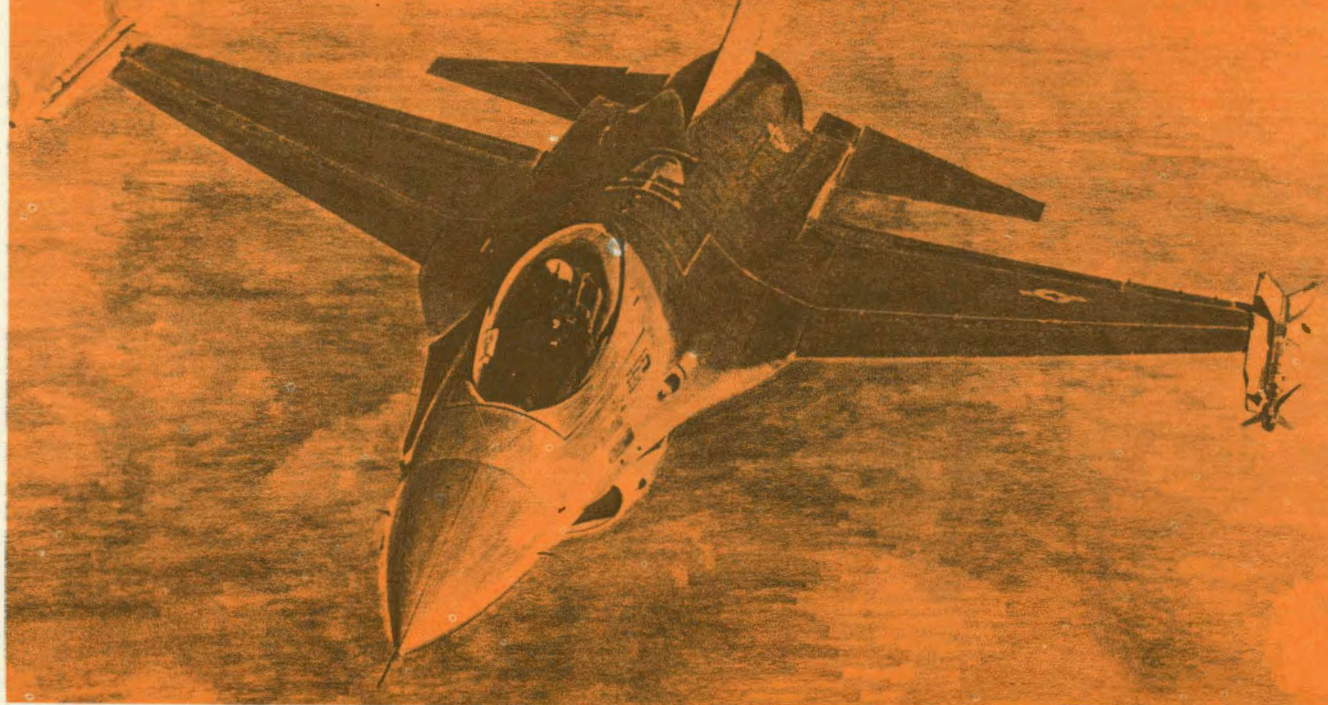
of his safety programs are well recognized. His mobility checklists are being used as a model for all 12th Air Force unit weapons safety mobility training, and his explosives site survey procedures have been rated "best in TAC."

P-36A HAWK





A TWO-EDGED SWORD



By Capt Dan Eagle
16 TFS, 388 TFW
Hill AFB, Utah

Forty-five seconds before impact, the mishap pilot, flying a night range mission, switches his radar from search mode to 20-mile ground map. Ten seconds later, the last ATC radar plot shows his aircraft passing 2,000 feet AGL in a 4,000-to-5,000 feet-per-minute descent with 45 degrees left to turn to the run-in heading. Twenty-five seconds before impact, the pilot switches INS destinations from the IP to the target and selects offset aimpoint 1. Six-

teen seconds before impact he selects the expanded mode of radar ground map. Eight seconds later he calls final, and seven seconds later the aircraft impacts the ground.

The absence of even a cursory crosscheck of instruments in this accident sequence relates very closely with several other accidents we've experienced recently in the F-16 community. Now, don't get me wrong—this article isn't any kind of indictment against the F-16 or its instruments. The Falcon is a super weapons sys-

tem and a real joy to fly as any Falcon flyer will gladly tell you. But there are some special considerations that F-16 pilots need to understand. The F-16 is a multirole combat fighter, and in my admittedly biased opinion, it does several missions better than any air machine ever built. Its fly-by-wire flight control system, reclined seat, head-up-display, and bubble canopy were all designed with us—the fighter pilots—in mind. However, some of the same design features that are responsible for excellence in mission

accomplishment can also complicate other pilot tasks.

Regardless of whether or not the Falcon was the first fighter you strapped on, or one of several, I'm sure none of us will ever forget our first ride in the F-16: Leaning back, hand gripping the sidestick, with more visibility than we ever thought possible. And as we progressed in our relationship with the jet, we came to realize how awesome a machine we were piloting—a single man had the means to deliver a night radar bomb with staggering accuracy. This same man could also make life extremely interesting for a MiG-21 in the air-to-air arena. But wait a minute, where'd they put the ADI? Well, as the poet said, "There's the rub." To enable this single man to do all these things requires outstanding visibility coupled with a lot of information (radar, threat, and weapons) in a relatively small area. Add to this environment your basic control, performance, and navigation instrumentation, and we have a busy cockpit.

There are a few other problems inherent in the F-16's design. The slope of the seat, coupled with differing angles of display on the instruments, requires several different focal lengths in your instrument crosscheck. The altimeter and airspeed indicator are located conveniently close to the ADI, but the VVI is a little north and somewhat difficult to incorporate in your scan pattern without a lot of practice. The radar/electro-optical (REO) display

is located below the altimeter and HSI and requires the pilot to lean forward and down from his reclined sitting position. At night it's difficult to turn down the display lighting sufficiently low to avoid having the REO become a distraction. Along with this is the characteristic F-16 canopy—great for visibility but highly reflective of inside lights at night. And the visibility that the canopy affords can be a real distraction at night or in IMC, tending to compete with the attention that you're giving the instruments. Spatial disorientation is particularly easy to get sitting way up sur-

rounded by all that visibility in night/instrument conditions.

Another F-16 characteristic that requires special attention on the gauges is the flight control system. In most jets, as the nose falls and airspeed increases, the nose will tend to rise again rather quickly. Not so with the Falcon. The jet flies so smoothly that the pilot can often find himself in a bank or a climb without consciously making a control input. Many Falcon flyers find this particularly insidious when flying in IMC.

Tactical missions flown at night or in IMC can be very task-saturating, especially for



A TWO-EDGED SWORD

the new guy. That's the environment where the features designed for the mission's sake conflict with the pilot's primary job, flying the aircraft. How can we whip this problem? The answer is really fundamental—way back before we were fighter pilots, we were something much more basic, we were *instrument* pilots.

In UPT, we learned a basic instrument crosscheck much like that described in AFM 51-37. Just when we were getting the hang of it, our Tweet instructors were hollering for us to get our eyes back outside and to split our attention between outside references and what was going on inside on the instruments. The percentage of time that we spent outside versus inside varied according to the type of mission—I seem to recall that the average “contact” ride was supposed to be about 80 percent outside and 20 percent inside. Obviously the mix would change as weather or other external factors dictated, but you *never* let the instrument part of the

crosscheck go to zero—that was inviting trouble.

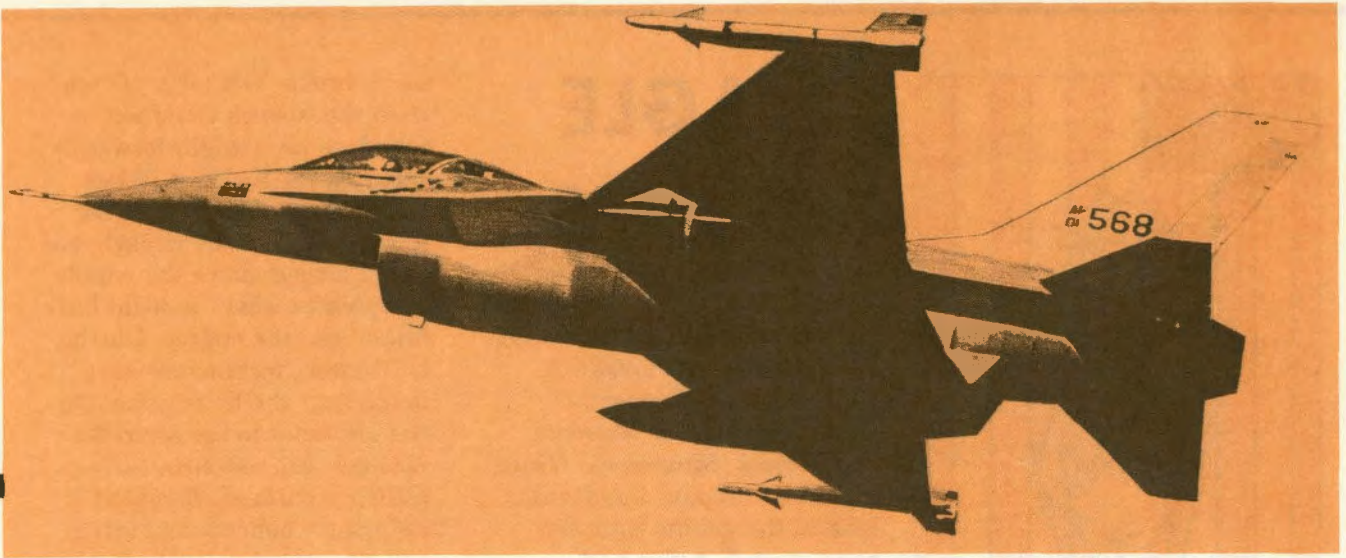
After UPT, when we began our careers as fighter pilots, instrument training was usually limited to departure and recovery, while the main focus of our training was outside—getting to the fight with a tallyho or winning quarters from our buddies for our bomb scores on the range. Neither task requires great concentration on the gauges.

Operationally speaking, our instrument proficiency is usually assumed—instruments are a way of getting our jets out to the proper area so we can do the real mission—shooting MiGs or moving mud. Accident reports, however, seem to be saying that relegating instruments to this secondary or tertiary role in F-16 flying is a deadly mistake.

Running the Instrument Refresher Course gives me the opportunity to hear a lot of good techniques for avoiding distraction and disorientation in the Falcon. These techniques have been helpful to me, and

I'm going to share a few of them now.

First of all, I believe that anyone who has flown an airplane at night in IMC has been spatially disoriented at one time or the other. Many of us Falcon fliers find it to be a real problem requiring constant vigilance. The first step is recognizing the potential enemy; the second is acting accordingly. The flight doctors tell me that most accidents that involve spatial disorientation happen to pilots who have 500 to 1,000 hours total flying time. This category may include you or the man on your wing. Never slight spatial disorientation during the briefing when flying at night and/or in weather is anticipated. Flight leads and old heads can help a lot by discussing techniques for reducing workload. While briefing, I always spend a good deal of time talking about cockpit setup and management. For instance, the night range pattern can be simplified a lot by setting up the proper headings on the HSI (final, base, etc.). I also stress



the importance of making heading and altitude changes independently of radar or other heads-down work, and making these changes on the instruments. Above all, I always let my wingman know that it's OK to go through dry because he was too busy, a little disoriented, or whatever. These same principles apply to night intercept rides—keep it as simple as possible. Briefings for these rides should stress the incorporation of instruments into radar work.

Second, whenever the occasion is right, encourage discussion of ways to fight spatial disorientation, and by all means, share your night/weather war stories with the new guys—it gives them a clue about what to expect on that dark, moonless night when they're in and out of the clouds.

Third, because of his experience, the guy with a lot of time in the Falcon *knows where all the switches are* and is a lot less prone to going heads down when things get busy. Improving our knowledge of cockpit

switchology is something we don't have to wait for; with practice we can improve now. Equally importantly, the old head's the guy who'll get the instruments into his crosscheck early because he knows how Tango Uniform he can get in that bubble canopy.

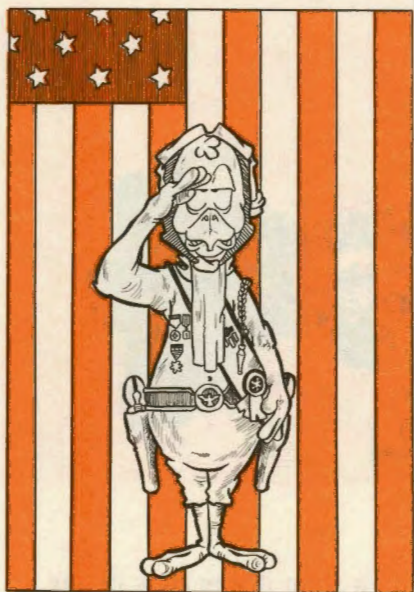
Fourth, the F-16's HUD contains a lot of neat information and is good to crosscheck when flying "outside." But taller guys must lean forward and down to see the whole picture. Because of my time in more archaic aircraft, I have an aversion to flying totally off the HUD, but I do use it as part of my crosscheck. It works well for transitioning to landing out of approaches and is super to use as part of an outside-inside composite crosscheck.

Fifth, while flying, be alert for signs of disorientation or confusion on the part of your wingmate—a few well-placed words on heading, altitude, and attitude can instill a lot of warm fuzzies.

Finally, the composite crosscheck is even more important

now than it was back in our UPT days. I've lost too many friends in recent years who have allowed the instrument part of their composite crosscheck ratio go to zero. What I recommend for us single-seaters is a "tactical crosscheck," i.e., incorporating instruments as a percentage of what we do in the cockpit, be it bombing, intercepting, or fighting. The percentage of time that you spend on the gauges will depend on weather and other external factors. Exercise vigilance when you find the instrument part of your crosscheck going to zero—that may be the time your eyes most need to be on the dials. ➤

Capt Eagle graduated from the University of Portland, Oregon, in 1977 with a degree in Electrical Engineering and earned a Masters Degree in Business in 1978. He graduated from UPT at Vance AFB, Oklahoma, and stayed there as a T-37 IP until 1982. He went to F-16 RTU at Hill AFB, Utah, where he is the 16 TFS Stan/Eval officer and Chief of the wing's Instrument Refresher Course.



FLEAGLE SALUTES-

TSgt Kenneth E. Peterson, 148th CAMRON Squadron, 148th Fighter Interceptor Group, Duluth Air National Guard Base, Minnesota. While working to repair a hydraulic leak in the engine compartment of an F-4 that had recently returned from a major overhaul, the jaw of the wrench that Sergeant Peterson was

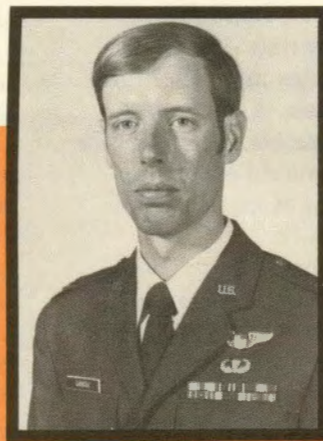
using broke. The piece of steel from the wrench could not be found, so he straight-forwardly reported the incident. When the engine was removed, the missing part of the wrench was found lodged above the engine compressor where it could have fallen into the engine. During the search, technicians also found that the bolts attaching the left wing to the aircraft's fuselage had not been sufficiently tightened. Sergeant Peterson's honesty and integrity prevented not only foreign object damage to the engine but also the possible loss of the aircraft.

FLIGHT SAFETY AWARD OF THE QUARTER

CAPT ROBERT R. SARNOSKI is the winner of the Tactical Air Command Flight Safety Award of the Quarter in recognition for his outstanding contributions to safety as the 436th Tactical Fighter Training Squadron's Flight Safety Officer at the 479th Tactical Training Wing, Holloman AFB, New Mexico.

Capt Sarnoski developed a continuity folder and development guide which help ensure that squadron safety programs are effectively managed during periods of personnel turbulence and unit deployments. The guides have become standards for the wing. Capt Sarnoski personally inbriefs each new student and instructor pilot on the local flying environment. He recognized the need for and helped develop a safety program in the 436 AMU. He created a continuity folder of responsibilities and documentation.

As a result of his programs and personal interest in the people of the AMU, safety and morale in the AMU are measurably better. Within the



Capt Robert R. Sarnoski

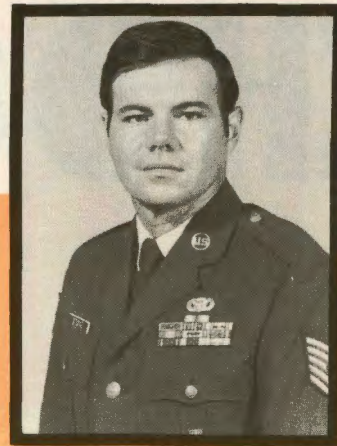
wing, Capt Sarnoski directed the midair collision avoidance program and has given several briefings to the civilian flying community. He was the first instructor pilot to receive the wing's monthly FOD prevention award. Capt Sarnoski's consistent, dedicated efforts have earned him recognition as a TAC outstanding Flight Safety Officer.

WEAPONS SAFETY AWARD OF THE QUARTER

The winner of the Weapons Safety Award of the Quarter is TSgt CARROLL M. STONE, JR. He is the NCOIC of Conventional Maintenance, 355th Equipment Maintenance Squadron, 355th Tactical Training Wing, Davis-Monthan Air Force Base, Arizona.

When Sergeant Stone assumed responsibility for his work center, the people in the center were working 60 hours a week. Sergeant Stone recognized that the long duty hours would eventually affect morale and degrade safety practices, so he made some procedural changes that have enhanced the operation.

Sergeant Stone procured some needed equipment (helmets, goggles, and ear protectors) and made sure they were available in every work area. He reviewed his maintenance operating instructions (MOIs) and technical orders (TOs) to ensure they were accurate and current. Work re-



TSgt Carroll M. Stone, Jr.

quirements were evaluated, crews were formed, work was scheduled for the coolest part of the day to alleviate heat stress, and overtime has been minimized.

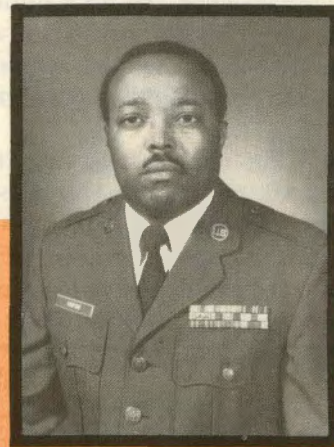
Sergeant Stone is an effective, firm, and extremely reliable supervisor. He has earned the Tactical Air Command Weapons Safety Award of the Quarter.

GROUND SAFETY AWARD OF THE QUARTER

SSgt DONNIE L. ASHFORD, 37th Equipment Maintenance Squadron, 37th Tactical Fighter Wing, George Air Force Base, California, is the winner of the Tactical Air Command Ground Safety Award of the Quarter.

Sergeant Ashford has served as the squadron ground safety NCO for nearly three years. During this period he developed a safety program that was recognized as the best in the 831st Air Division, and effectively administered it to identify and correct deficiencies. He established written safety directives, developed educational materials and self-inspection checklists, and actively visited all work centers to resolve problems.

In an effort to improve the safety consciousness of motorcycle drivers, Sergeant Ashford established a motorcycle read file which contains mishap briefs, the California vehicle code, main-



SSgt Donnie L. Ashford

tenance and driving tips, and a listing of senior riders in each section. He also developed a study guide and test which all new drivers must complete prior to receiving an on-base permit.

Sergeant Ashford's "in-the-shop" philosophy of safety management has reduced the potential for mishaps and has earned him the Ground Safety Award of the Quarter.

CHOCK TALK

incidents and

INCIDENTS AND

Tyin' up loose ends

When an F-106 pilot aborted his assigned single-seat A-model before takeoff for a local training mission, he went to the spare which happened to be a two-seat B-model. The pilot was walking around the aircraft doing his preflight inspection while the crew chief was configuring the rear cockpit for the solo flight.

Start and taxi were normal. But at 120 knots during the takeoff when the pilot pulled back on the control stick to lift the nosewheel off the concrete and get airborne, the stick wouldn't move aft. So he had to abort the heavyweight, high-speed Dart.

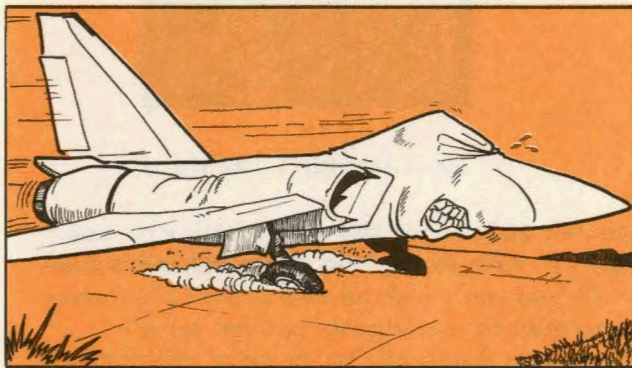
Even though the runway was dry, it was an exciting stop. After retarding the throttle to idle, deploying the drag chute, and using heavy braking, the aircraft was still travelling at about 30 knots as it neared the departure end of the runway. The pilot had to choose between colliding

onto the hot, gummy asphalt, it skidded sideways and spun 180 degrees around before coming to rest. Except for hot brakes, the Dart was not damaged. Don't know why the pilot didn't use the hook.

We do know why the stick wouldn't move aft. When he was tying up the loose ends in the rear cockpit for the solo flight, the crew chief had improperly installed the aft seat survival retainer. And the pilot missed it because he didn't check the rear seat during his preflight. During taxi and takeoff, the retainer rotated 90 degrees and shifted forward where it interfered with the stick in the rear cockpit.

Most of this unit's aircraft are single-seat A-models. The crew chief hadn't been trained and wasn't qualified to perform the rear seat configuration task on the B-model.

A number of tactical fighter units (A-7, F-15, F-16, etc.) also own an abundance of single-seaters and one or two with tubs. If we don't keep good track of training our crew chiefs on *both* models, this kind of problem could happen again.



with the approach lights in the overrun or making a high-speed 90 degree turnoff at the last taxiway; he chose the turn. As the F-106 turned

On alert, Be alert

When the buzzer sounded for an active air defense scramble, the F-106 pilots hustled out to their aircraft and lifted off in a scant few minutes—just like we all count on them doing. But when the mission was over, one of the aircraft returned without the door that covers the

INCIDENTALS WITH A MAINTENANCE SLANT

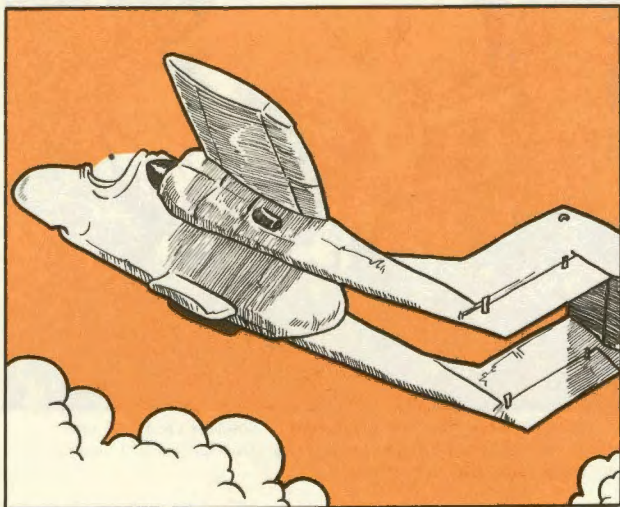
single-point refueling connection.

Long before the launch, the alert crew chief noticed the aircraft venting fuel when the door was closed, so he opened it, and the venting stopped. During the scurrying to launch for the scramble, no one remembered or noticed the open door. So it was lost somewhere in flight.

Granted, we can't have fuel dripping on the floor of the alert barn—but a can for catching the dripping fuel would have been a better solution.

It's not beef, it's torque

An OV-10 took off in some lousy weather. Just as the Bronco was climbing through 600 feet, the aircraft yawed violently and rolled right



TAC ATTACK

into about 120 degrees of bank. The pilot had no intention of doing that kind of maneuver, it was his right engine's idea—the torque indicated 600 pounds (like it normally reads in idle, not military power). With a little skill, cunning, and aileron, the pilot was able to level the wings. But the power lever had no effect, so he feathered the sick engine. He was only able to climb to 2,500 feet, and 125 knots was all the airspeed the single-engine could muster. Because of the aircraft's sluggishness, the pilot flew vectors to a clear area and jettisoned the full centerline tank and a couple of empty rocket pods. Then, when the Bronco flew more like an airplane than a rock, the pilot flew back down through the weather and landed.

Troubleshooters found that a B-nut on the bleed air line had vibrated loose allowing hot air to melt insulation on the main bundle of wires in the right engine's nacelle. The wires to the engine's fuel shut off valve had shorted and caused the engine to misbehave. The B-nut fastener doesn't have a history of vibrating loose. Matter of fact, it's designed not to vibrate loose *when properly torqued*.

Sometimes maybe we lack a torque-wrench, and we think we can get by without one. Or other times maybe we don't have tech data to tell us how much force is required to properly tighten a nut, fastener, or fitting. Doing the job right sometimes means personal inconvenience.

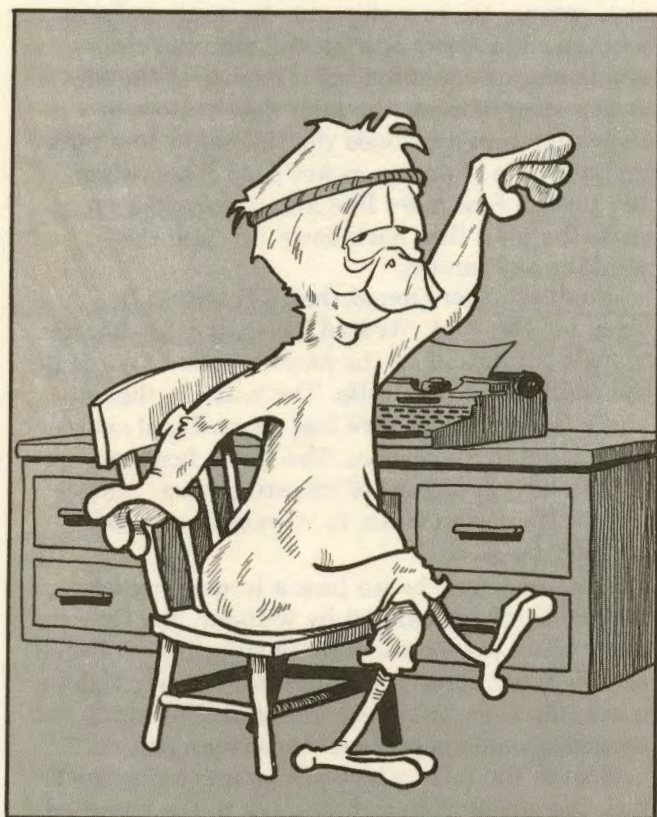
Most of the folks who work on airplanes don't lack the strength to tighten nuts to the specified degree (or even tighter); it's not a matter of beef. It's more a matter of using the head than the wrist.

DOWN TO EARTH

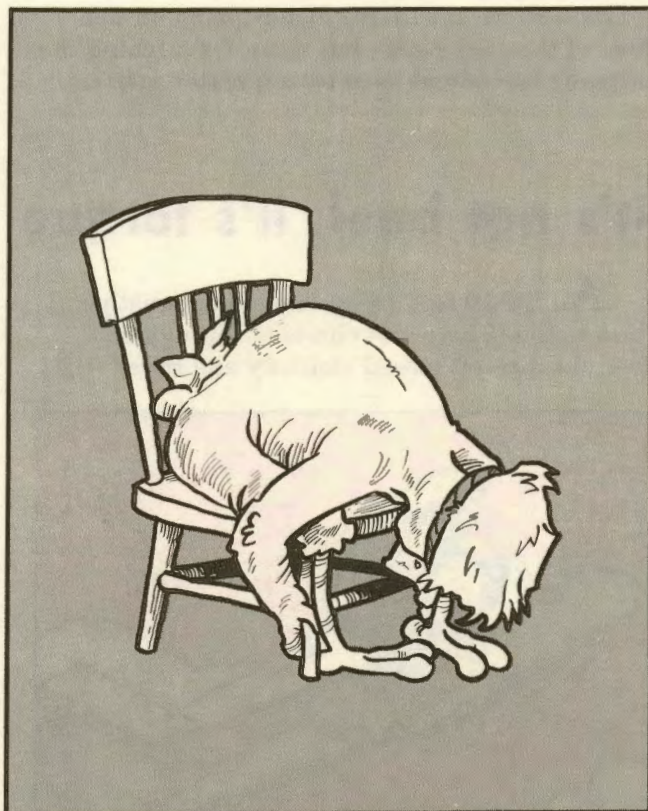
Do something for that backache

Did you know that sitting all day weakens your back and abdominal muscles and forces your *iliopsoas* (hip flexor) muscles to remain con-

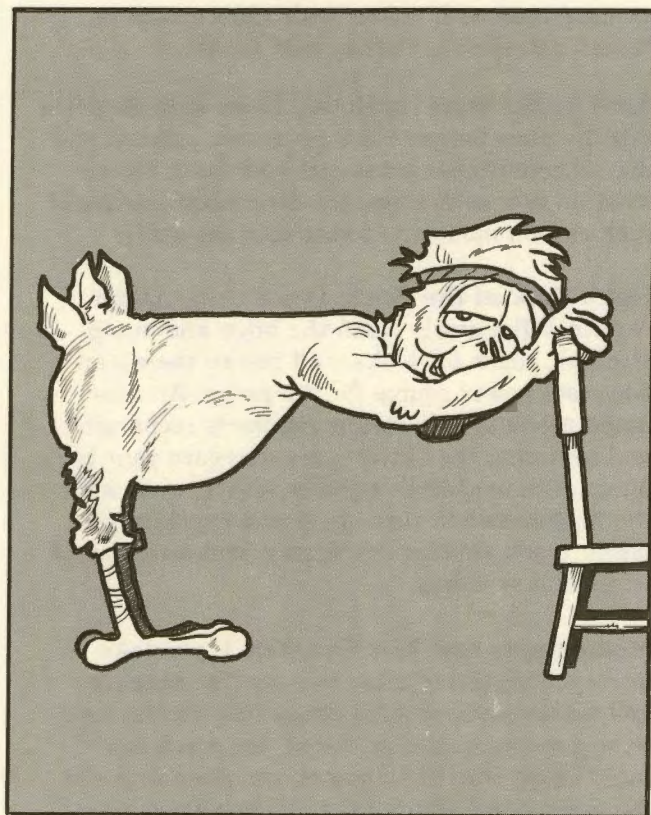
tracted? This contraction makes them tight, which could be a cause for back pain. If you go home with a backache, try these exercises. They can be done at the office right before you go home or periodically during the day. (If you have a history of back trouble, check with your doctor first.)



Remove shoes. Cross one thigh over the other. Reach down and touch the foot on the floor with the arm opposite to the foot on the floor. Extend the other arm over the back of the chair and look away from your feet. Inhale/exhale. Change legs.



Remove shoes. Feet apart and parallel. Bend forward and rest chest between your thighs, head down. Breathe evenly. Come up by using your abdominal muscles.



Remove shoes. Stand behind a chair (or behind a desk with arms over the edge) far enough away so you can bend forward without hitting your head. Bend forward at the hip joint, legs straight, then bend knees, feet together. Come up slowly.

Wear them...they work

By A1C Glenn J. Luben
325th Security Police Squadron
Tyndall AFB, Florida

I was involved in an accident that I am lucky enough to be around to tell about. I was driving down a highway, doing about 65 miles an hour

(that's not a typo, Ed), when the pinion bearing in the rear end of the truck I was driving locked up. My vehicle started to skid, then spun across into the oncoming lane, then finally overturned and landed on the top.

The one thing that saved my life was my seat belt. It's hard to explain the feeling of sliding upside down with glass from the windows and windshield flying into my face, and the sound and sight of metal crushing toward my head. After coming to a stop, still upside down, all I had to do was push the button to release my seat belt and climb out of the severely damaged vehicle. I walked away with only cuts and bruises instead of massive injuries.

I have always worn my seat belt, whether in my own vehicle or a government vehicle, not just because it's an Air Force regulation, but because I choose to live.





New Windshields. Most cars have windshields made of "safety" glass which consists of a layer of plastic between two sheets of glass, and serves as a soft barrier that keeps the occupant's head from going through the windshield. A new federal standard will now allow, but not require, manufacturers to bond an additional layer of plastic to the inside of the windshield. The extra layer of plastic will keep the occupant's face from contacting sharp edges of broken glass and reduce the number of facial injuries.

Seat Belts and Expectant Mothers. Expecting a baby is no excuse for not wearing your seat belt. Sit tall and place the lap belt as low as possible on your hips under the baby. And wear the shoulder harness. It gives you and the baby added protection.

Charcoal. Serious fires have started by spontaneous combustion of charcoal (especially the new, no-starter kind). Store it in a ventilated, dry place, away from the house. If it gets wet, don't bring it inside, use it outside or get rid of it.

Boating Rules of the Road. When two boats approach head-on, each must go to the right and pass left side to left side. When boats cross at right angles, the boat on the right has the right-of-way. When overtaking or passing, the boat being overtaken has the right-of-way. Rowboats and sailboats have the right-of-way over powerboats unless they are overtaking a powerboat.

Diving Boards. Check that they are level. If a board is tilted up, a diver could hit it coming down. If the board is tilted down, a diver could be thrown out beyond the diving area.

Who's the Fish? If you get snagged with a fish hook past the barb, the Red Cross recommends that you cut the line, bandage the wound, and go to a hospital to have it removed. Don't remove it yourself.

Swimming Pools. Don't let anyone dive into an above-ground swimming pool, warns the National Swimming Foundation. A swimmer won't be able to glide out and up safely. One out of eight serious spinal-cord injuries is from a diving accident. And be careful when handling swimming pool chemicals, especially powdered chlorine. When it's combined with water, hydrochloric acid is formed and serious burns could follow.

Air Conditioners on Boats. Make sure there's a safe distance between the generator exhaust and the air conditioner intake on your boat. Otherwise, on hot, calm days, the air conditioner could suck carbon monoxide fumes into the cabin.

Don't Sink at the Dock. Is your bilge pump working? Regularly clean the bilge and pump strainer, check for leaks, and insure there's an adequate power source for the pump. An adequate power source means regularly recharging and servicing the battery, making sure your bilge pump is connected to a power source, even with the master switch turned off; and checking for blown fuses, shorted out wiring, and corrosion of wires and switches.

Medications and Hot Weather. If you take tetracycline, tetracycline cousins like minocin and vibramycin, or sulfa drugs like septra, bactrim, gantrisin, and gantanol, too much sun could cause skin blotching or sun poisoning. On the other hand, if you take diuretic drugs like hydrochlorothiazide (hclz), lasix, dyazide, or nyltrotin, activities in high or intense heat could cause electrolyte imbalance. If you're taking any drugs, check with your doctor about the effect of those drugs in sun and heat.

Home Escape Ladders. How would your family escape a fire if they were on the second or third floor? Escape ladders, of course. But not all of them make for a quick and easy escape. Look for a ladder with standoffs at every rung. You can't get a good toehold if the escape ladder has none or too few standoffs because the ladder will be flush against the house.

LETTERS



Dear Editor

I am a Navy A-7 pilot. As such I've trapped my aircraft hundreds of times, almost as often on land, as afloat. Coming from a community that routinely makes arrested landings (including on wet runways), I would like to add my nickle's worth to Capt Kohn's article in the Mar 84 issue of *TAC Attack*, "Spit It Out." Let me be brief:

(1) Capt Kohn is correct in criticizing the flight lead's communication concerning arresting gear. The correct call should be, "Tower, confirm that the short field (long field) arresting gear is rigged and in battery." Phrase your question so that the answer resolves all doubt.

(2) I take exception with Capt Kohn's statement that "the pilot executed a normal landing 1,500 feet down the runway." Even on a 10,000-foot runway, putting 15 percent of the landing area behind you is poor headwork. On a wet runway, the results can be (and were) disastrous. Additionally, landing at 1,500 feet when the short field gear is at 1,200 feet immediately removes one of the pilot's options.

(3) Concerning short field arrestments, I strongly believe that a short field trap is preferable to a long field trap. Short field arrestments are planned; long field arrestments seldom are. The short field arrestment keeps the go-around/bolter option available in the event of hook skip/failure. Whenever a pilot determines an arrested landing is desirable, commit yourself to take the short field gear. If you miss, go around and try again. Keep trying until fuel, etc., dictates otherwise. Never change your mind about taking an arrested landing after you skip the short field gear.

(4) Don't resolve brake/hook failure problems while on the rollout. Take the aircraft around and then determine a plan of action. Capt Kohn's recommendation is "Give the antiskid a chance." My advice is at the first sign of antiskid failure, execute a go-around and subsequent short field arrestment (situation permitting). I am not intimate with the F-16's go-around capabilities,

but the A-7 can easily execute a safe go-around at 100 knots with 4,000 feet of runway remaining (NATOPS limit is 80 knots at 3,000 feet). We practice this go-around procedure when training new A-7 pilots. I'll wager the F-16 can beat those figures easily. When in doubt, take it around.

(5) The big lesson to learn here has nothing to do with radio transmissions or antiskid or hook failure. The real lesson is that landing on a wet runway is hazardous business. Seriously consider taking a short field arrestment, and above all be prepared to go around whenever you miss the short field gear or have braking problems. Justifying a late go-around is much easier than convening an accident board.

Comments are solicited.

LCDR David A. Tussey, USN
A-7E IP, VA-174
NAS Cecil Field, FL

Dear LCDR Tussey

Thanks for sharing your experience at snagging cables and your fresh ideas. Some points in your letter may still be confusing to some folks though:

(1) Your point is well-taken, but we certainly wouldn't say anything like that to the folks in tower at an AFB—they wouldn't know what we wanted. Your salty terms do serve well to teach us blue suiters a thing or two about ordering up an approach-end (short field) or departure-end (long field) arrestment at a Navy base.

(2) Because of their low ground clearance, F-16s

LETTERS

normally land beyond cables that they don't intend to engage. This avoids damage to the aircraft's speed brakes, centerline tank, and ventral fins (stingers) when the cable recoils after the tires compress it. So an F-16 landing 1,500 feet down the runway with a BAK-12 cable at 1,200 feet is normal.

(3) Concur with your preference for calculated approach-end arrestments and keeping the go-around option open.

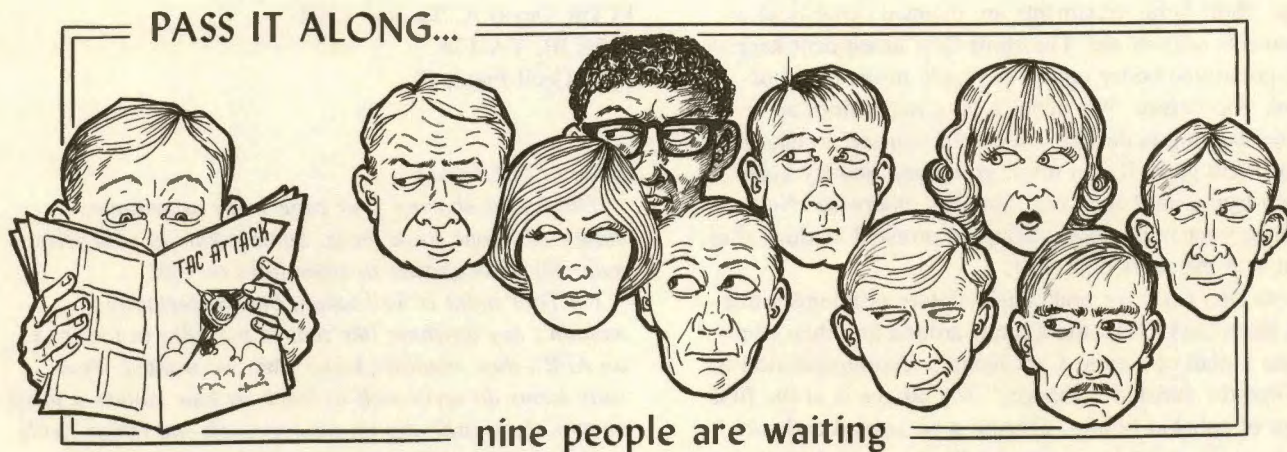
(4) Having a plan for a missed engagement is a must. But there are situations where a go-around because of a missed engagement is not an option. Likewise, if the pilot falsely assumes that he's missed the cable (when in fact the hook is firmly grasping the wire, but so far there's little deceleration), the results may be disastrous—unless the hook breaks, the cable will win this tug of war and possibly pull the airborne aircraft back down to the concrete where it may not land on the wheels. Yes, the decision to go-around is warranted and welcome in cases where the pilot can't stop on the prepared surface, and the Falcon's thrust-to-weight ratio welcomes the challenge. However, during a high-speed,

time-compressed landing emergency, the pilot may not have time to calculate all the variables (gross weight, fuel and runway remaining, and the nature of the aircraft malfunctions) before he suddenly becomes aware that he has lost his option to stop on the remaining runway. The pilot must decide before the engagement.

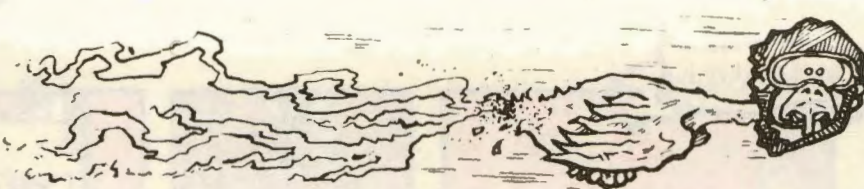
(5) Initiating a go-around for brake problems on a wet runway requires careful analysis. Just as Capt Kohn mentioned in his article, the pilot may not notice if the antiskid is working until the aircraft slows below 70 knots. Depending on how far down the runway that occurs, the go-around option may no longer exist—particularly in airplanes with less thrust than the F-16. Your NATOPS criteria for the A-7 of 80 knots minimum with 3,000 feet remaining would certainly be helpful in making the decision. Until we blue suiters can get similar decision criteria into our flight manuals, aircrews would do well to visit the performance charts. A few extra minutes mission planning similar go/no-go data could pay dividends on a rainy day.

Ed

pass it along... nine people are waiting



TAC TALLY



CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
APR	THRU APR	
	1984	1983
0	5	9
0	7	4
0	1	4
0	0	3

ANG		
APR	THRU APR	
	1984	1983
1	2	4
1	1	3
0	1	3
0	1	1

AFR		
APR	THRU APR	
	1984	1983
0	0	0
0	0	0
0	0	0
0	0	0

TAC'S TOP 5 thru APR 84



TAC FTR/RECCE	
class A mishap-free months	
53	355 TTW
32	58 TTW
25	4 TFW
22	37 TFW
19	27 TFW

TAC AIR DEFENSE	
class A mishap-free months	
135	57 FIS
88	5 FIS
85	48 FIS
44	318 FIS
35	87 FIS

TAC-GAINED FTR/RECCE	
class A mishap-free months	
144	188 TFG (ANG)
136	138 TFG (ANG)
135	917 TFG (AFR)
113	114 TFG & 174 TFW (ANG)
108	112 TFG (ANG)

TAC-GAINED AIR DEFENSE	
class A mishap-free months	
118	177 FIG
84	125 FIG
67	119 FIG
51	107 FIG
42	147 FIG

TAC/GAINED Other Units	
class A mishap-free months	
177	182 TASG (ANG)
161	110 TASG (ANG)
157	USAF TAWC
149	84 FITS
145	105 TASG (ANG)

CLASS A MISHAP COMPARISON RATE

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

TAC	1984	3.4	3.4	2.8	2.0								
	1983	6.9	5.3	3.4	3.8								
ANG	1984	0.0	2.3	1.5	2.2								
	1983	9.1	7.0	4.4	4.3								
AFR	1984	0.0	0.0	0.0	2.0								
	1983	0.0	0.0	0.0	0.0								

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

