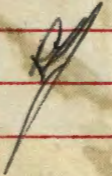
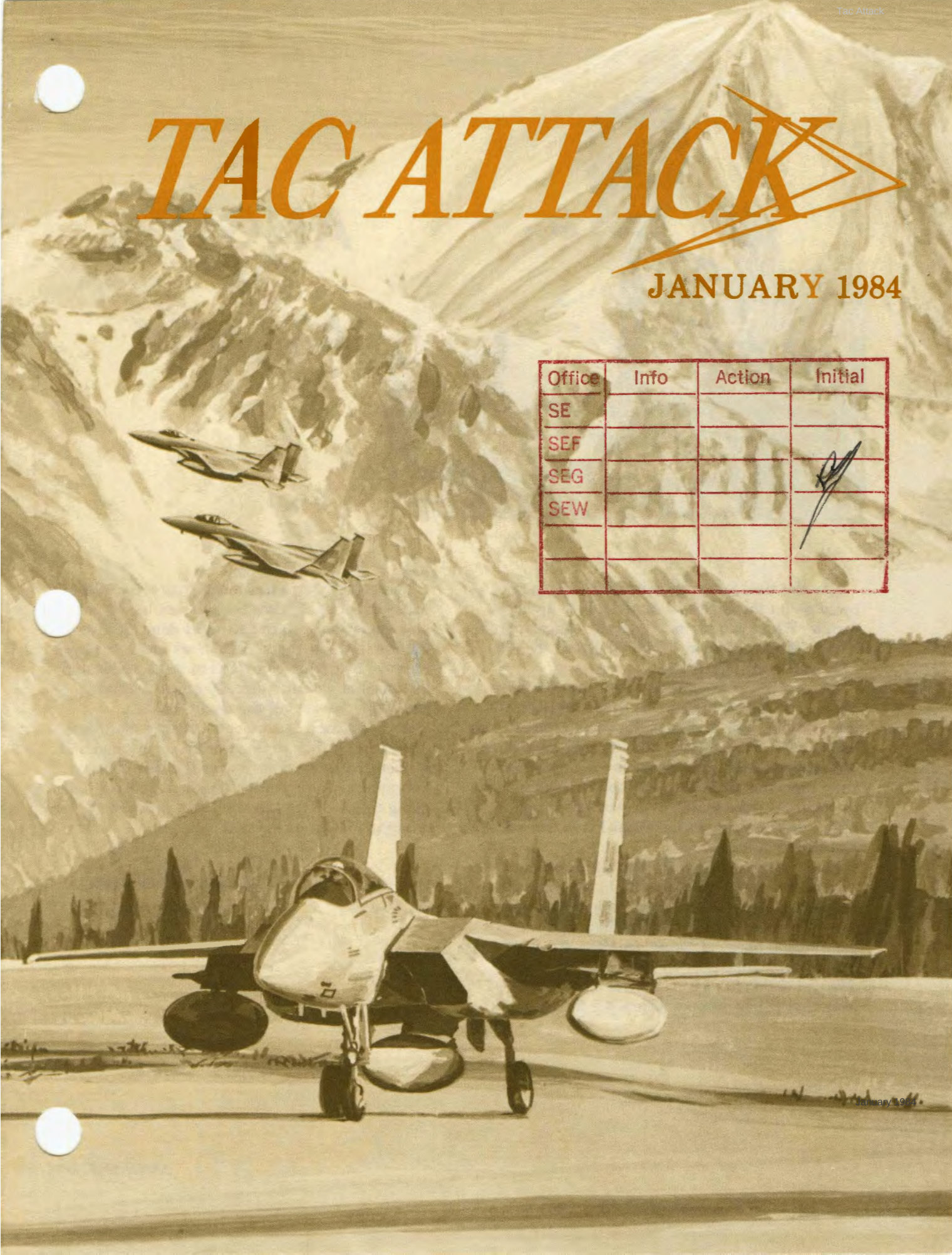


TAC ATTACK

JANUARY 1984

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ANGLE OF ATTACK

By the time you read this, I'll be so short I could sit on the edge of a dime and let my legs dangle. When you see next month's magazine, I'll be Jim Mackin, Major, USAF (Retired). That'll take some getting used to.

All in all, this assignment has been a satisfying way to top off my career. It wasn't as thrilling as flying, but it offered the same kind of challenge. After every flight, I felt I could have done something better; after every issue of the magazine, I felt the same way. Of course, in both cases the feelings were true: I've never flown a perfect flight, and you can witness that I've never edited a perfect magazine.

But I'm pleased with the way things have turned out. Every year, our flight mishap rate has fallen. Many of you might remember that five years ago, in 1978, our mishap rate was 6.8 per 100,000 hours of flying. In 1979, the rate was 6.3. When I came here in 1980, the rate had dropped to 5.0. Today, as I write this, it is 3.8. I pray that it has dropped below 4.0 for good.

Those declining rates mean that you are doing your job better. I know the mission hasn't gotten any easier, but you're getting it done more safely. I'd like to think that *TAC Attack* has helped you improve by giving you ideas to think about and discuss, but we can't directly affect the flying rate. You deserve all the credit for that.

As I approach retirement, I realize more and more what a fine group of professional men and women I've worked with over the last 20 years. I'm going to miss writing for the magazine; I'm going to miss flying fighters; but, most of all, I'm going to miss working with you.

Adios

Jim Mackin

Jim Mackin, Major, USAF
Editor



On the cover:
F-15s in the high country
By SSgt John Steele

JANUARY 1984

DEPARTMENT OF THE AIR FORCE

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TACRP 127-1

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What's A Flight Leader ?

By Lt Col Alan T. Reid
104 TFG
Barnes MAP, Massachusetts

What's a flight leader? The guy out front—right? Unfortunately, at times he may be only that. Look back on your career and think of the instances of good flight leadership. I daresay those that stick in your mind were ones where that leader put himself in your cockpit and made some decisions or moves that made a potentially nasty situation easier. The best flight leaders that I can recall in my opinion embodied the following qualities:

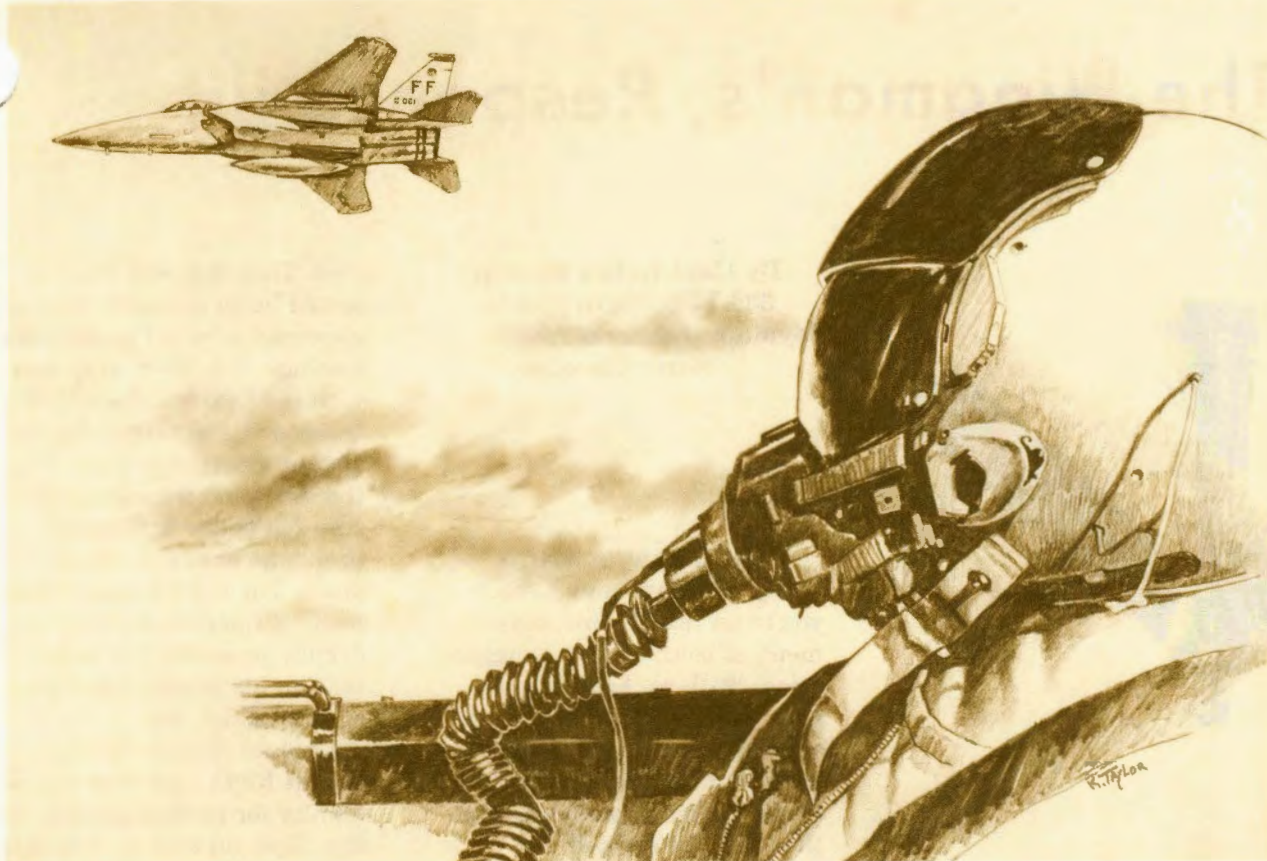
- They knew their own limits. They knew what they did well and not so well, and what their weaknesses were likely to be on a given day, in any state of fatigue or proficiency. So they rarely led a wingman into their own weak areas, where both were likely to be maxed out.
- They had an uncanny ability to assess their wingman's limitations at any given moment. They knew almost instinctively when to back off and call "Knock it off," "Go through dry," or "Go

around." Without the wingman even knowing it, perhaps, the flight became less demanding; a decision was made that eliminated some uncomfortable choices and allowed the wingman to concentrate only on the job at hand.

- They thought ahead—way, way ahead. You notice I said "thought" instead of the more popular "planned" ahead. Plans are dogmatic, in a sense, and are frequently shot to pieces. By *thinking* ahead, a leader saves several options so that he may then form a *plan*. The good leaders conserved fuel so that a *no sweat* choice could be made between diverting, shooting a formation approach, shooting single-ship approaches, or holding. They configured early, on top, so a tired wingman could hang in easier and avoid going lost wingman with its associated hassles.
- When the mission got complicated, they worried a lot—checking fuel, checking weather, checking alternates, assigning rejoin points and altitude blocks, ver-

ifying headings and altitudes, bugging center for lower, searching for traffic, and on and on. As a wingman, you put up with it all, at first thinking him a bit of an old hen; then later, after participating in numerous horror shows, you understood.

- They had been there before. They had witnessed or made the mistakes before. They had seen their fragile ego threatened. They had felt the icy fingers of the you-fouled-up witch creeping under their sweaty flight suits.
- They had been there before, through a hundred stories overheard. They had filed all these situations away, after a lot of soul searching and it-could-have-been-me's. Very likely they had tossed and turned for more than a few nights over some incidents of the day. They had been there before—and were not interested in going back.
- They made decisions. They made good decisions, lucky decisions, conservative decisions—and some bad decisions. But they made them



easily and decisively. (Decisive decisions—that's a beauty, even for me.) They were more than willing to make a conservative decision based on the wingman's lack of capability. They took the heat so that wingie could save face, and they even endured a few I-was-ready-but-Lead-was-nervous comments later, on the ground.

- They knew the rules well. But they could discriminate between the rules that existed just for the sake of having rules or to honor the most recent "trend" and the rules that were really based on long-term experience. Regardless of which rule prevailed, those leaders

generally followed them. But if the situation warranted non-compliance with the rules, they took responsibility for their actions and pressed on independently. They recognized that rules are not ends in themselves but serve a greater goal that, on occasions, must be served in other manners. On the other hand, they never excused their mistakes by claiming knowledge of the rules but non-compliance due to "superior judgment."

How do you acquire, learn, or relearn these qualities? "Life is a desperate struggle to succeed in being in fact that which we are in design," said someone whose name I can't pronounce. You don't learn to be a flight

leader. Rather you commit yourself to succeed, with the full knowledge that the process never ends. You gain experience, and you make sure you gain from your experience. You accept responsibility for a flight; and you use all the rules, all the experiences, all the facets of your knowledge to date to *make sure it's done to the best of your ability.*

That's about the essence of it. You take charge, plan, brief, and lead with a determination that it will be done to the best of your ability. If you come through as a "tiger," that's fine. If you come through as an "old hen" sometimes, that's OK too, because along with the acceptance of responsibility comes a total realignment of priorities. And I don't need to define that further—either you understand, or you don't. ➔

The Wingman's Responsibility

By Capt Kelley Bishop
336 TFS Flight Safety
Seymour Johnson AFB,
North Carolina

"All I want to hear is 'Two,' 'Mayday!' and 'Lead, you're on fire!' " This statement, of course, is an exaggeration. Still, we hear it wherever fighter pilots gather. So, what do we really expect of a wingman? Whatever the situation demands, probably, and that can't be defined. But maybe it can be illustrated. Here's one story about what an aircrew did for their leader in a dire emergency. The aircrew members were Capt Jeff Shields, aircraft commander, and 1st Lt Pete Raffa, weapon systems officer, both of the 336th Tactical Fighter Squadron at Seymour Johnson AFB, North Carolina.

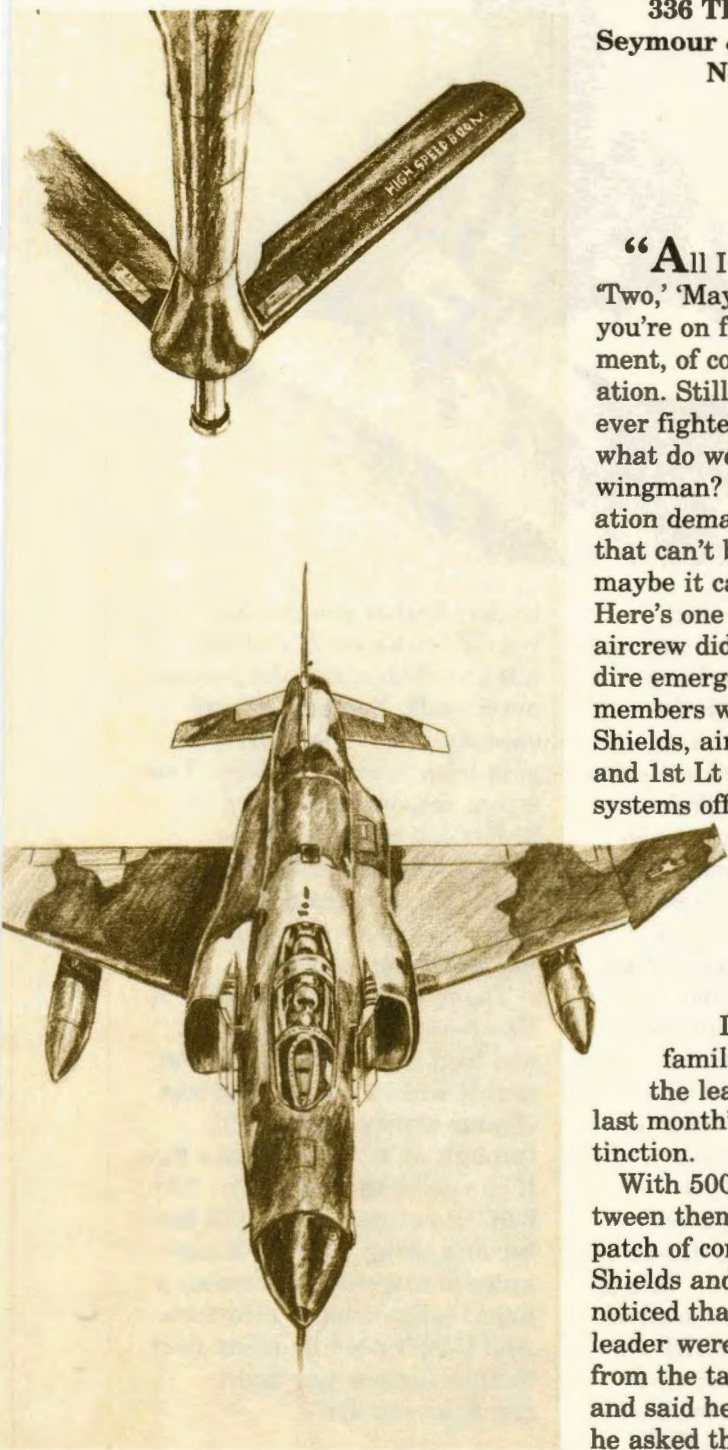
If the story seems familiar, that's because the lead aircrew were last month's Aircrew of Distinction.

With 500 miles of water between them and the nearest patch of concrete, Captain Shields and Lieutenant Raffa noticed that they and their leader were dropping away from the tanker. Lead called and said he had a failed nozzle; he asked them to check him

over. They did, and they reported large amounts of what appeared to be oil under the aft fuselage. Unable to stay up with the tankers, their leader descended and turned for the distant emergency field. When the stricken aircraft's oil pressure fell below acceptable limits, he shut the engine down. The engine seized, and lead's airplane lost PC-2 hydraulic pressure. For some reason, his inertial navigation system failed, too.

Captain Shields and Lieutenant Raffa took over responsibility for navigation and kept the flight on course. A tanker had turned to follow them because they all needed fuel to make it the 500 miles to the emergency field. The wing aircrew tuned their TACAN to air-to-air mode and gave the tanker some guidance for re-joining. The tanker ended up well in front of them, where Lieutenant Raffa picked him up on radar (leader's radar was out). Lieutenant Raffa directed the tanker to weave in front of the flight. When they broke out of the overcast at 4,000 feet, the tanker was 1 1/2 miles in front of them. They joined up, and with the tanker's help the whole flight made it safely to the emergency field.

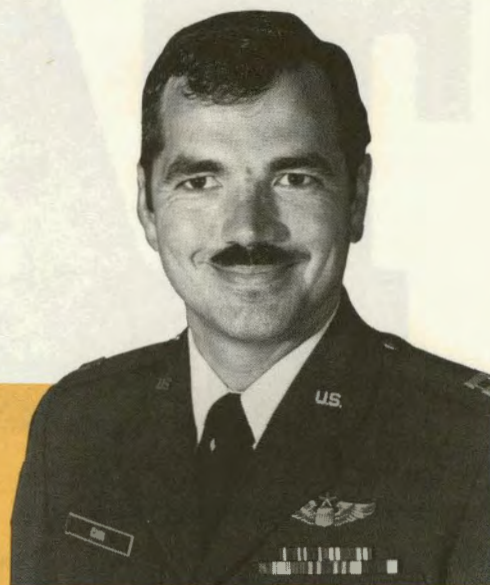
So, what is a wingman's job? Mutual support, backup navigation, doing what needs to be done—even under pressure. Captain Shields and Lieutenant Raffa have shown that a good wingman does a lot more than keep the light in the s



AIRCREW OF DISTINCTION

On 13 September 1983, CAPT RICHARD S. CAIN, an F-16 transition course student, was flying a surface attack mission in a single-seat F-16A. He and his instructor pilot, who was flying a B model, entered the range and finished the planned radar bombing events. When Captain Cain pushed the throttle forward to climb after his first strafing pass, he noticed that it moved more freely than usual. Then he discovered his one and only engine was stuck at full military power regardless of his throttle inputs. With 3,200 pounds of fuel left and a runaway engine demanding 8,300 pounds per hour, Captain Cain started a climb to decrease fuel flow and turned toward home. En route he declared an emergency and contacted the wing supervisor of flying (SOF). Attempts to regain use of the throttle with the F-16's back-up fuel control were unsuccessful. The SOF called the contractor for help in finding a solution to the problem.

Now overhead the field, Captain Cain descended to a more favorable airstart altitude, started the jet fuel starter and emergency power unit, and again tried to shut down the engine with the throttle. No luck. A recent TCTO modification had wired the fuel shutoff valve open, making it impossible to shut down the engine with the fuel master switch. With no way to regain use of the

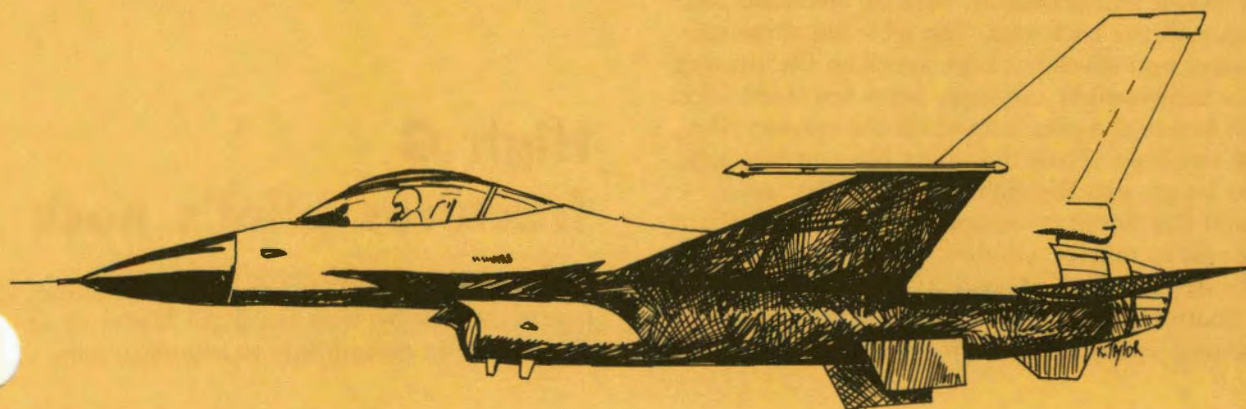


Capt Richard S. Cain
311 TFTS, 58 TTW
Luke AFB, AZ

throttle or to shut down the engine, he was committed to circling the field until running out of fuel and then flying the flight manual's unforgiving flameout pattern.

He watched his fuel gauge register empty and felt the dramatic change in thrust as the engine wound down. He reduced airspeed in a level turn, then set up a glide from the high key of the flameout pattern, 10,000 feet above the field. Later, he used the emergency gear extension and slowed to final approach airspeed. He touched down about a third of the way down the runway and braked the aircraft to a stop.

Captain Cain's superior airmanship in handling this difficult situation prevented the loss of the airplane and possible loss of life. He has earned the Tactical Air Command Aircrew of Distinction Award.



TAC

Tac tips

INTEREST ITEMS,

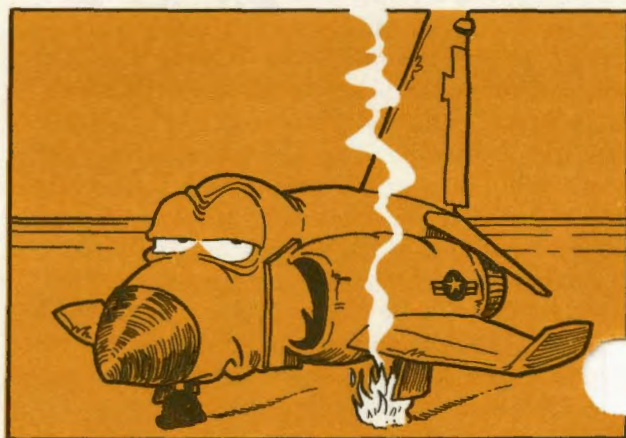
Wrong man for the job

A maintenance dispatcher called squadron ops and asked for a pilot to do a compass swing on an F-4. Ops gave the job to a fairly inexperienced pilot who had been in the unit just two months. When the pilot arrived at the airplane, he discovered that the dispatcher had been wrong; the airplane really needed a high speed taxi check that included lighting the afterburners to check for vibrations on takeoff. Takeoff vibrations were suspected to be the cause of a bustie problem that couldn't be duplicated during static engine runs.

The pilot didn't know what he was supposed to do, so he called the squadron ops desk and asked. The duty officer on the desk tried to find a squadron supervisor to answer the pilot's question, but he couldn't find one. So the duty officer told the pilot to use the procedures for a practice barrier engagement. He read the procedures for practice barrier engagements to the pilot and emphasized staying below 80 knots and using all the runway available to avoid excessive braking.

Armed with that information, the pilot cranked up the jet and taxied out with an electrical technician in the back seat. The pilot did three successive taxi checks at high speed on the runway in a heavyweight airplane. After the third time, just before the pilot turned off the runway, the left tire blew. Then the safety plug on the right tire let go, and the right tire went flat. As a small fire flared up around the left wheel, the pilot and technician climbed out of the airplane. The fire department soon put the fire out.

There's quite a bit of difference between a compass swing and a high speed taxi check. As a



matter of fact, according to AFR 66-5 a high speed taxi check requires a functional-check-flight (FCF) crew. The pilot should have known that the brakes needed time to cool between heavy applications. However, his initial move was right—he called the squadron and asked for guidance. Unfortunately, what he got wasn't right.

The wrong man taxied the airplane because the wrong man made the decision in the squadron. Both tasks called for someone with more knowledge and experience.

High G fractures pilot's neck

An F-15 pilot was practicing basic fighter maneuvers (BFM) with his flight leader, in another F-15. In attempting an intercept from

MISHAPS WITH MORALS, FOR THE TAC AIRCREWMAN

20,000 feet against lead at 13,000 feet, the wingman didn't leave himself enough turning room. As he descended, he let his airspeed build to 500 knots before beginning a nose-low lead turn at 12,000 feet.

The leader saw that the maneuver wasn't working out: the interceptor's nose was too low for his altitude. So leader called, "Knock it off!" and told the wingman to recover using speed-brake and idle power.

The wingman noticed his altitude and immediately began a hard pullout. He pulled 9 Gs, forcing his head down against his chest. At 5,000 feet he recovered the airplane to level flight.

The flight leader called a halt to the mission, and they returned to base for a straight-in landing. The next day, the wingman went to see the flight surgeon because his neck was very sore. X-rays showed a possible compression fracture of the seventh vertebra. The pilot was hospitalized for protection and observation.

The wingman had known about the danger of over-G at high airspeeds. That danger had been reemphasized during the briefings for vertical intercept missions. But when he found himself nose low with the ground rising rapidly toward him, the pilot's adrenalin overcame his concern about over-G.

That's understandable. The trick is not to let ourselves get trapped into the kind of situation where adrenalin alone is flying our airplane. The prudent call from lead was not only appropriate, it may have saved the wingman. But we don't have to wait for lead to tell us to knock it off; we ought to make that decision all by ourselves if we stay on top of the situation. Quitting

ly might help us avoid at least one kind of a in the neck.

"Bends" in the T-33

Two pilots flew a high-altitude mission in a T-33 that was older than either pilot. They climbed all the way to 35,000 feet and leveled off. That's when they first noticed that the cabin pressure was at 30,000 feet. They turned up the cabin heat to drive down the cabin altitude, and each of the pilots switched to Safety on the oxygen regulator.

The pressure began to build in the cockpit. They could hear a hissing noise coming from the



aft section of the canopy seal. In order to quiet the hissing, the crew lowered the heat. The cabin altitude immediately climbed back up to 30,000 feet. Then the front seat pilot felt a mild pain in his right shoulder. Again they moved the cabin heat to full hot; the cabin altitude dropped to 25,000 feet, and the front seater's pain subsided.

The pilot in the back seat took control of the airplane, declared an emergency, descended, and landed. The front seater was treated for mild de-

TAC TIPS

compression sickness, the "bends"; his pain never recurred. Maintenance found that the aft section of the canopy seal had separated. That's where they'd heard the hissing.

The old T-33 takes a long time to climb from 25,000 feet to 35,000 feet. This incident was a gentle warning to remember to check cabin altitude during that climb. If it isn't right, let's get back down below 25,000 feet before we troubleshoot the problem. Decompression sickness can be more serious than a pain in the shoulder.

Air traffic control hotline

By 2d Lt Salette A. Latas
2040th Communications Sq
Cannon AFB, New Mexico

ATC delays, go-arounds, excessive vectoring—these are just a few of the air traffic control annoyances that plague pilots. To provide a contact point for these and other problems, as well as constructive criticism and comments, the 2040th Communications Squadron at Cannon AFB has established an ATC hotline—a direct line between pilots and controllers.

When calling the hotline, pilots of military and civilian aircraft using Cannon AFB air traffic control services may dial directly to a recorded telephone answering service located in approach control. The pilots are asked to leave their name, telephone number, and situation or comment. The air traffic control staff then assigns a controller to investigate the problem and report back to the pilot. Ideally, the same controller that worked the aircraft will be asked to answer the complaint or comment.

"The idea is to get pilots and controllers talking to each other," said Major Marian F. Fredericksen, squadron commander. "We want to be able to improve our services and avoid misunderstandings through more effective communication."

Disoriented? Go lost leader

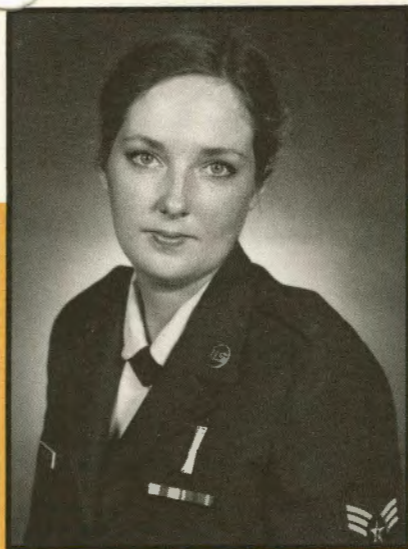
By Col Gary Lape
TAC Flight Safety

After accomplishing weapon system checks, the two-ship tightened into fingertip prior to going IMC. After entering the soup, the flight lead determined that the dark clouds and severe turbulence were probably going to result in a lost wingman situation and decided to do the wingman a favor. While descending at 1,000 feet/minute in a 30-degree left bank, the leader instructed the wingman to level at 17,000 after rolling out and lead would climb back to 18. Two neither understood nor acknowledged the call. Lead rolled level and pulled back up to 18,000 feet. Caught unaware, Two abruptly lost sight of Lead and started an immediate turn away without referring to the ADI. When he did focus on the ADI, there wasn't any white showing. After some difficulty in getting squared away on the gauges, he found himself in a 60-degree dive at 7,000 feet AGL. He pulled 9 G's plus on the pole and came back to tell us the story; the only aircraft damage sustained was minor seat cushion deformation.



Every 55-series has clear guidance on flight split-up procedures and other factors to be considered if spatial disorientation gets to be serious. This lead's technique wasn't one of them. Lead probably should have asked Two his opinion of how bad it was out there or directed Two to go lost wingman after (1) achieving level, stabilized flight and (2) announcing the attitude, heading, altitude, and airspeed as appropriate, as specified in the book. When Two started his lost wingman procedure, his first and foremost task should have been to transition to instruments. He came close to not being able to tell this story.

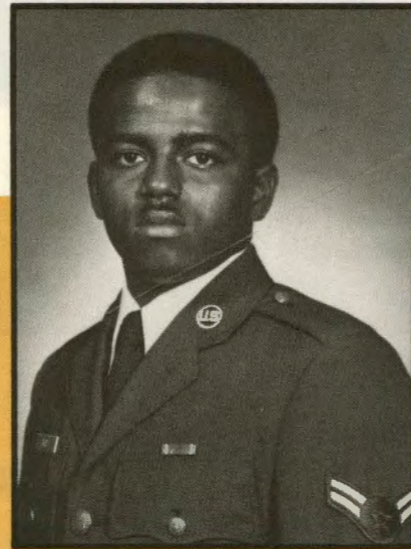
SPECIAL ACHIEVEMENT IN SAFETY AWARD



Sgt Robin L. MacTaggart



Sgt Sharon L. Spears



A1C Robert J. Bailey

SGT ROBIN L. MACTAGGART, SGT SHARON L. SPEARS, and A1C ROBERT J. BAILEY have been selected to receive the Tactical Air Command Special Achievement in Safety Award. They are members of the 48th Fighter Interceptor Squadron, Langley Air Force Base, Virginia.

On 6 June 1983, Sergeants MacTaggart and Spears and Airman Bailey were convoying AIM-7 and AIM-9 missiles from the flight line to the weapons storage area when the tow tractor, operated by Sergeant MacTaggart, caught fire. Sergeant Spears, who was operating the vehicle directly behind Sergeant MacTaggart, saw the fire and immediately notified munitions control to call for help. Then they all sprang into action.

Sergeant MacTaggart and Airman Bailey left their vehicles and started to fight the fire. However, they knew they had to move the missiles, so while Airman Bailey stayed with the fire, Sergeants MacTaggart and Spears disconnected the two missile-laden trailers from the burning tractor and moved them away from the fire. Airman Bailey extinguished the fire, then joined Sergeants MacTaggart and Spears who were controlling vehicle traffic.

The actions by these three workers prevented the loss of lives and valuable Air Force equipment.



CHOCK TALK

chock talk

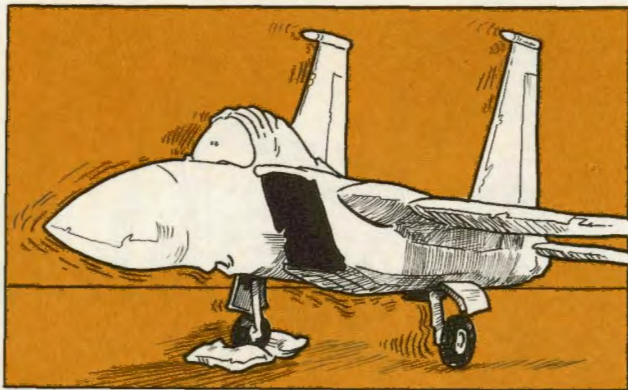
incidents and

INCIDENTS AND

"Hit the brakes!"

A five-member tow crew took an F-15 to the nose dock. After they arrived they chocked both main wheels fore and aft. Because this unit had experienced some slippage with F-15 chocks, a local procedure called for sandbagging the wheels. The right main was sandbagged.

Before the left main was sandbagged, the brake rider began to climb out of the cockpit. At the same time, the tow vehicle operator, who was the team supervisor, released the tow bar. The left tire began rolling backwards. All the other



crewmembers yelled, "Hit the brakes! Hit the brakes!" to the brake rider. He scrambled back into the cockpit and stepped on the brakes. Then he remembered he needed to pull the emergency brake handle. He reached for what he thought was the right handle, but he pulled the emergency canopy jettison handle instead.

The jettison system worked as designed; the canopy wasn't blown off the airplane because it was up. However, the airplane didn't stop, either. It rolled until its tailcone bumped into the nose

of another airplane. Both the tailcone and the other airplane's radome suffered some damage.

The brake rider was taking part in his fourth towing operation in F-15s. Before that, he'd had a year and a half of experience towing T-38s, which don't have brake handles. He was certified for the task in the F-15, but apparently he didn't know it well enough to respond correctly in a crisis.

The supervisor didn't help much. He not only let the brake rider get out of the cockpit before the left wheel was sandbagged, but he also released the tow bar.

Finally, all of us who knew something wasn't quite right about the F-15 chocks but didn't do anything about it have contributed in our own small way to this mishap. If a piece of equipment doesn't work right, let's tell the people who can fix it.

Murphy's can

If you fix or fly jets, you're accustomed to reading accounts of incidents that could *never* happen to you. Here's another to be on the lookout for while we try to fix the problem.

The pilot's troubles started right after takeoff when the oil pressure warning light called his attention to low oil pressure on the left engine. After he pulled the throttle to idle, declared an emergency, dumped fuel, and set up for a straight-in approach, the *right* engine oil pressure began dropping rapidly. Fortunately, he was able to continue to a safe landing.

The lack of oil pressure on both engines is no

INCIDENTALS WITH A MAINTENANCE SLANT

surprising, since the "oil" cart used to service the jet was filled with liquid cooling system (LCS) fluid for the radar instead of oil for the engine. That happened because several cans of LCS fluid were stored in the same locker where the engine oil was kept. The quart cans are identical in size and color; the only distinguishing characteristic is the mil spec number and nomenclature on the can. A similar problem can result in confusion between jet engine oil and automobile engine oil.

This problem could exist between other cans in different type aircraft, so be especially careful to read the label until (and even after) we get the cans color-coded.

A form of communication

An F-4 flew a mission that required extensive use of the radar. After the mission, the aircrew made several radar writeups. A maintenance technician opened the radome to get at the radar, and he discovered that the radar package was loose. The whole radar package had slid forward, damaging the radar antenna and electronic

countermeasures (ECM) equipment inside the radome.

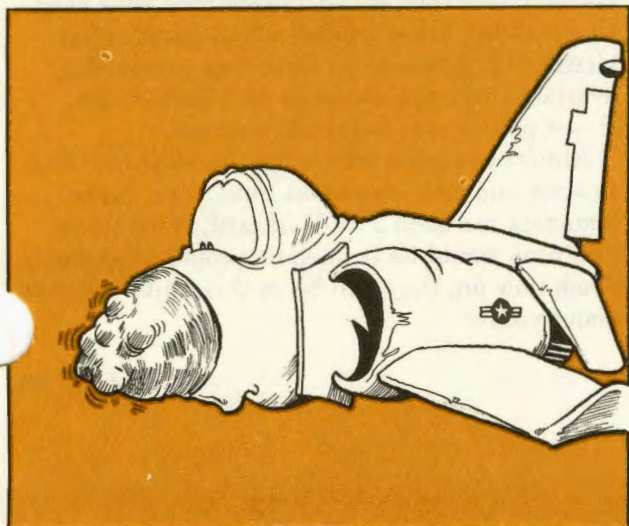
The day before, ECM troops had opened up the radome to fix an ECM writeup. They extended the radar package, but didn't note it in the aircraft forms. After they finished working on the ECM equipment, they slid the radar package back but didn't secure it. ECM workers aren't qualified to torque down the package; that job requires weapons control system (WCS) technicians. The ECM troops closed the radome, but again they didn't torque it down because that job is also done by WCS technicians. They did write in the forms that the radome needed to be torqued down.

WCS workers came out, inspected the radome, and torqued it down. But they didn't inspect or torque the radar package because they did not know that the package had been extended. The damage to the radar most likely occurred on the next flight during descent or deceleration, when the unsecured radar package slid forward.

Our aircraft forms are not just some bureaucratic requirements—they are a means of communicating. We use the forms to tell each other what's wrong, what's been done, and what needs to be done. The problem here was a failure to communicate.

FOD causes rapid decompression

An F-15 was cruising at 47,000 feet when the pilot felt increasing pressure in his ears. He glanced at the cabin altitude, then did a double



CHOCK TALK

take when he saw the needle increasing rapidly past 28,000 feet. The pilot made an emergency descent and landed at a nearby Air Force base. There a flight surgeon put him under observation overnight, but no physiological aftereffects were noted.

At first, troubleshooters thought the problem had been caused by a bad controller in the avionics air circuit, so it was removed and replaced. But later a specialist noticed that hot air instead of cold air was being discharged from the outlet side of the air conditioner turbine. A closer look revealed damage to the left heat exchanger: its bypass valve was jammed by a four-inch metal bolt.

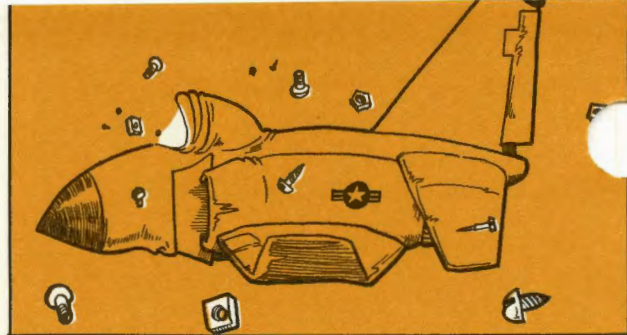
The bolt is an engine component used to secure the aft engine casing near the 13th-stage bleed-air port. Due to high temperatures in that area, these bolts often freeze up, preventing removal of the aft engine casing. So engine shop practices call for intentionally shearing the frozen bolt to make removal of the casing easier. The bolt that jammed the valve had been sheared.

Apparently what happened is that the bolt had been sheared and then inadvertently left in the engine bleed-air port. It wasn't discovered during the required reassembly inspections before the engine was reinstalled in the airplane. The bolt entered the left side ducting for the environmental control system and eventually worked its way through the system until it jammed in the valve.

It looks as though we've discovered a new way that poor accountability for tools and parts can threaten an aircraft. FOD can end up disabling a pilot through the cabin pressurization system. Now that we know the potential, let's not let it happen.

FOD in a hangar queen

An F-4 was hangared for about three weeks. During that time, many pieces of equipment were cannibalized from its cockpit. Finally it was released for flight, and it flew five sorties in the next two weeks. On its last flight, the aircrew noticed lots of nuts and screws floating by them



as they did a negative-G maneuver. The back seater caught seven or eight items, and the aircrew wrote up the airplane for foreign objects in the cockpit after they got back on the ground. Four or five more items were found on the bulkhead behind the rear seat after engine shutdown, and the crew chief found even more during his inspection.

Four days later, an intake inspection on this same aircraft turned up foreign object damage to the engine. Forty-eight compressor blades in the left engine had been damaged by some type of malleable fastener.

Do you suppose that hangar queens might be more susceptible to FOD because parts are so often cannibalized from them? When it comes to looking for foreign objects, maybe an airplane coming out of the hangar deserves some special attention.

A training problem

An F-111 returned from its mission with no writeups. But during the thru-flight inspection, the crew chief noticed a fastener missing from panel 1202. His discovery led to a close inspection of the engines. The right engine had foreign object damage from the 1st to the 10th stage. Impressions on the blades matched the outline of the missing fastener.

The running torque, a self-locking feature, was checked on all the fasteners from panel 1202. Eleven were found to be unserviceable. That discovery raised some suspicions. QA surveyed the maintenance complex and discovered that most people didn't know enough about fastener serviceability. A course on fastening panels was available, but not everyone who opened and closed panels was required to attend.

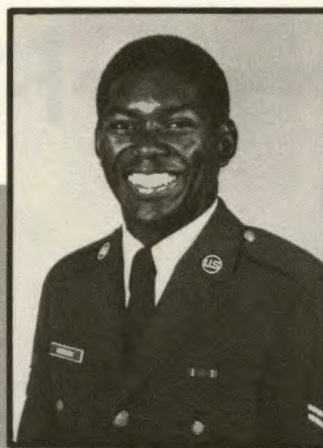
Almost everyone who works on airplanes has to open and close panels at some time. Since fasteners are such a FOD hazard, you'd think everyone would be trained on proper procedures. From now on, they will be in this unit—but how about yours?

CREW CHIEF SAFETY AWARD

A1C CHRISTOPHER S. MONTGOMERY of the 4405th Aircraft Generation Squadron, 405th Tactical Training Wing, Luke Air Force Base, Arizona, is this month's winner of the Crew Chief Safety Award.

Airman Montgomery accompanied his F-15 aircraft to the aircraft inspection docks for a number three hourly postflight inspection. The inspection proceeded normally, so Airman Montgomery began ordering parts for his aircraft. All of a sudden he noticed fuel spilling from the aircraft's 600-gallon centerline tank and spreading throughout the hangar. During the fuel-sampling check of the inspection, the tank drain valve had malfunctioned and was not closed.

Airman Montgomery reacted quickly. First he alerted his co-workers of the danger, then he tried to close the valve. Airman Montgomery donned a pair of goggles and went under the leaking tank. By carefully shifting his position



A1C Christopher S. Montgomery

under the tank and skillfully manipulating the valve, he was finally able to close it and stop the flow of fuel. Saturated with fuel, he was quickly led to the emergency shower.

Airman Montgomery's quick reaction and clear thinking averted a potential disaster that could have resulted in the deaths or serious injury to many of his co-workers, the destruction of six F-15s, and severe damage to the facility. He has earned the Tactical Air Command Crew Chief Safety Award.

INDIVIDUAL SAFETY AWARD

TSgt ROBERT D. MCCAUGHEY is this month's winner of the Individual Safety Award. He is NCOIC of the electric shop, 354th Component Repair Squadron, 354th Tactical Fighter Wing, Myrtle Beach Air Force Base, South Carolina.

Sergeant McCaughey completely redesigned the electric shop and lead-acid battery facilities to make a safer and more efficient operation.

He had work benches for the lead-acid shop rebuilt with a 10-degree downward slope so that sulfuric acid wouldn't collect on the work area of the bench. The acid runs down into a stainless steel trough attached to the front of the work bench and empties into a one-gallon can filled with sodium bicarbonate which neutralizes the acid. A top shelf has been built to hold battery chargers and house power outlets so wiring is out of the way.

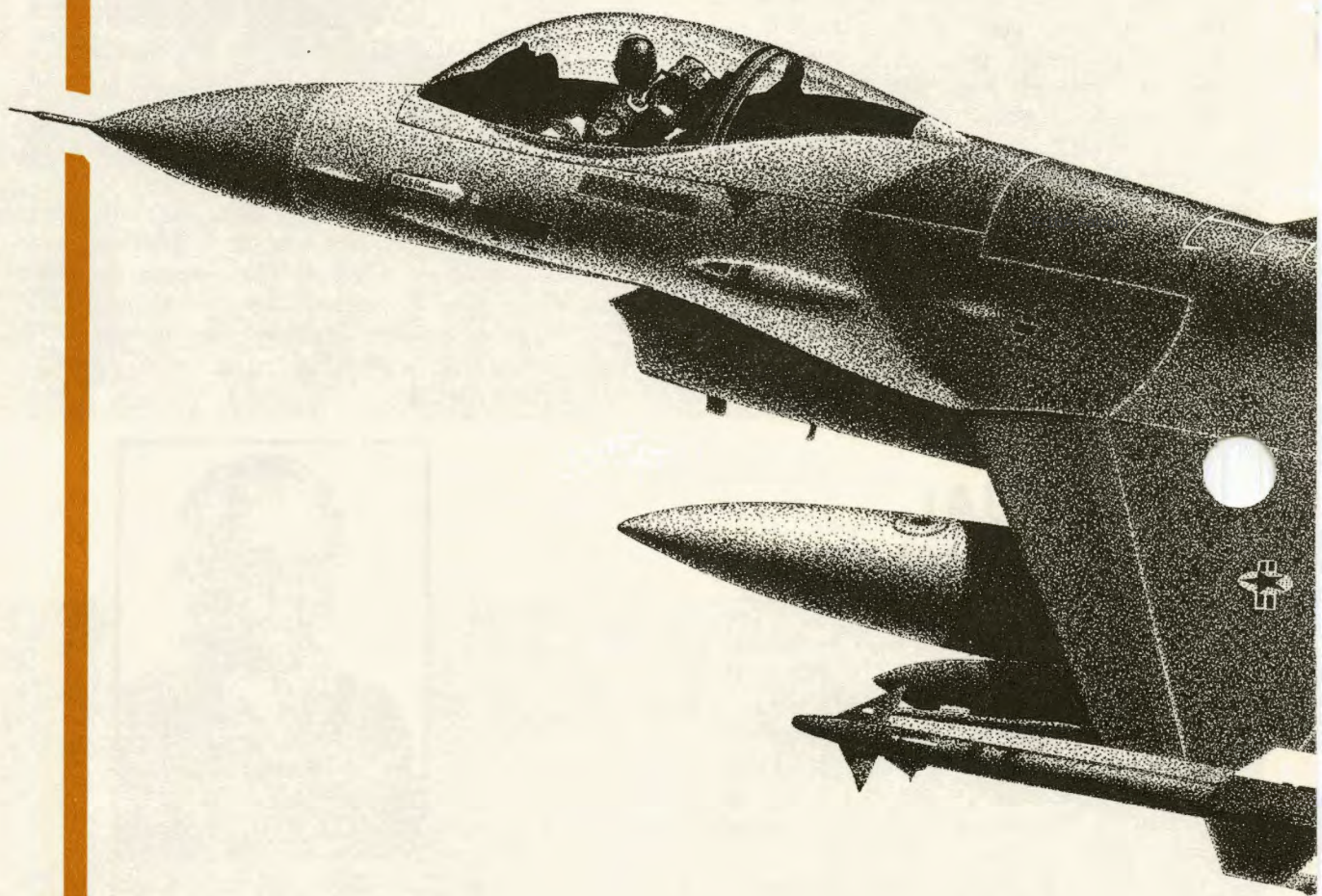
Thanks to Sergeant McCaughey's efforts,

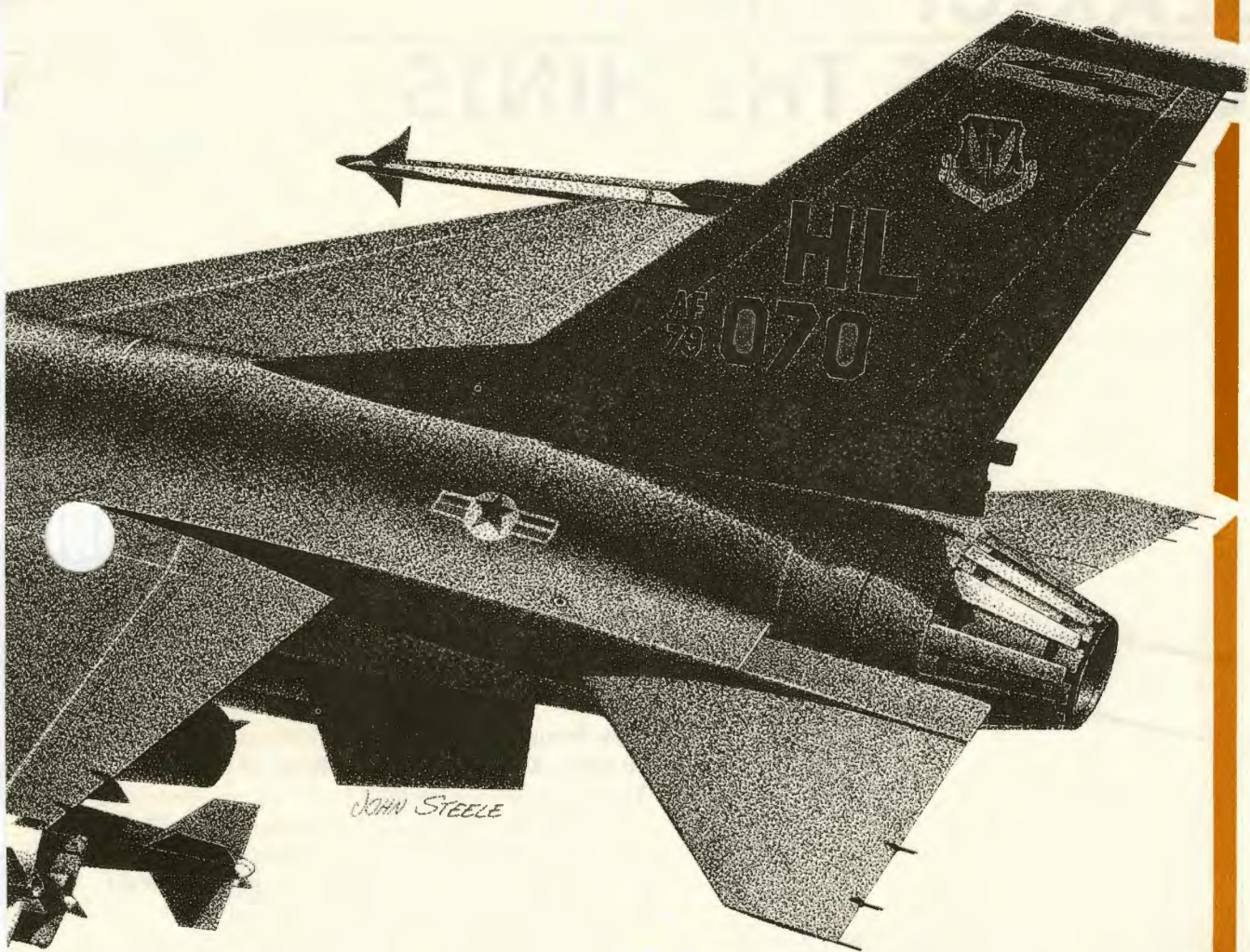


TSgt Robert D. McCaughey

physical hazards are better controlled, with an excellent work process and appearance. He has submitted a suggestion to make his design available throughout the Air Force. His professional dedication and safety awareness have inspired his fellow workers and have earned him the Tactical Air Command Individual Safety Award.

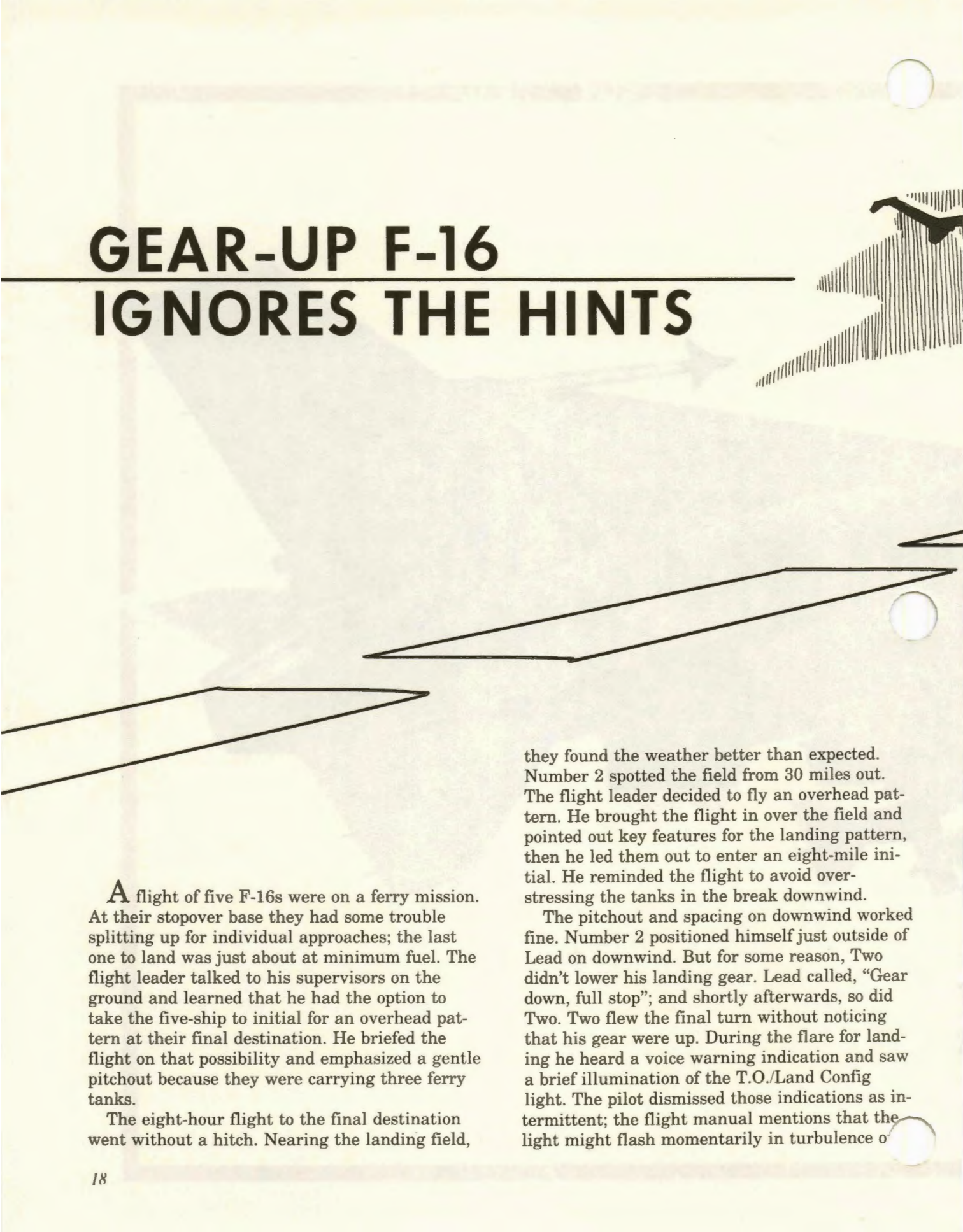
F-16A FALCON





JOHN STEELE

GEAR-UP F-16 IGNORES THE HINTS

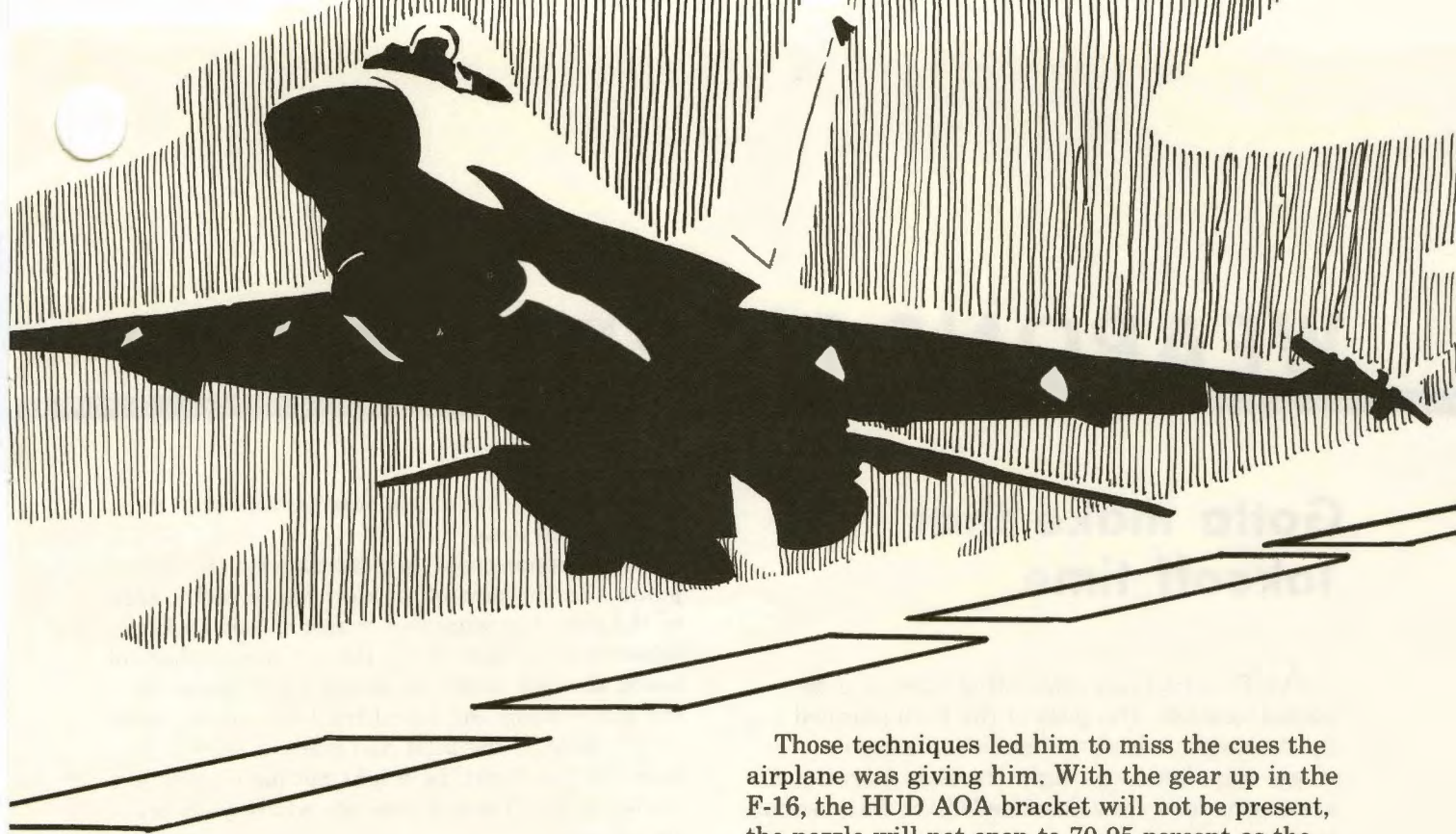


A flight of five F-16s were on a ferry mission. At their stopover base they had some trouble splitting up for individual approaches; the last one to land was just about at minimum fuel. The flight leader talked to his supervisors on the ground and learned that he had the option to take the five-ship to initial for an overhead pattern at their final destination. He briefed the flight on that possibility and emphasized a gentle pitchout because they were carrying three ferry tanks.

The eight-hour flight to the final destination went without a hitch. Nearing the landing field,

they found the weather better than expected. Number 2 spotted the field from 30 miles out. The flight leader decided to fly an overhead pattern. He brought the flight in over the field and pointed out key features for the landing pattern, then he led them out to enter an eight-mile initial. He reminded the flight to avoid overstressing the tanks in the break downwind.

The pitchout and spacing on downwind worked fine. Number 2 positioned himself just outside of Lead on downwind. But for some reason, Two didn't lower his landing gear. Lead called, "Gear down, full stop"; and shortly afterwards, so did Two. Two flew the final turn without noticing that his gear were up. During the flare for landing he heard a voice warning indication and saw a brief illumination of the T.O./Land Config light. The pilot dismissed those indications as intermittent; the flight manual mentions that the light might flash momentarily in turbulence o



h high roll rates. So the pilot landed.

First, the centerline tank began lightly scraping the runway. As the weight of the aircraft settled on the tank, it ruptured. People on the ground heard an explosion and saw a flash fire under the airplane. The F-16 slid to a stop about 5,000 feet further down the runway. The pilot scampered out, and Crash Rescue quickly extinguished the fire. No one was hurt, and the damage was limited to about \$25,000.

Why did it happen? Well, of course, no one's at his peak performance after an eight-hour flight in a single-seat fighter. But the pilot wasn't unusually fatigued, considering the circumstances. What really got him into trouble were his day-to-day landing techniques.

The F-16 conversion manual tells the pilot to compute final approach speed and compare it with angle of attack (AOA) on final. Computing the airspeed not only verifies the angle of attack but also aids precise airspeed control in the final turn. But this pilot didn't usually do that. Instead, he would compare AOA with airspeed on the perch and in the final turn to see if they looked "normal." On final, he normally established 10 to 11 degrees angle of attack by using cockpit gauge, not the HUD bracket.

Those techniques led him to miss the cues the airplane was giving him. With the gear up in the F-16, the HUD AOA bracket will not be present, the nozzle will not open to 70-95 percent as the throttle is moved to idle, the trailing-edge flaps will not extend, and the flight control computer will not reschedule to landing gains, changing the trim. The closed nozzle increases the thrust, and the raised gear and flaps decrease the drag, so airspeeds are higher—high enough that the landing gear warning system may not be activated (170 plus or minus 10 knots). In this case, the gear warning system wasn't activated until the pilot was in the flare. Then it shut off when the vertical velocity became less than 200 feet per minute rate of descent. (A rate of descent of 250 plus or minus 150 feet per minute is also necessary for the gear warning to come on.)

A pilot who computed his airspeed should notice the disparity, however, and at least realize that something wasn't right. The lack of a bracket could be another clue, if the pilot used it. The different feel might be masked by the unfamiliarity of the three-tank load, but it might also have occasioned a recheck of configuration.

This mishap shows that using normal throttle settings and normal angle of attack, we can fly almost the whole pattern in a gear-up F-16 without activating the gear warning system—but not at normal airspeeds. And if we really check the green lights before we tell tower that we've checked the gear, we shouldn't get caught in that trap in the first place. ➤

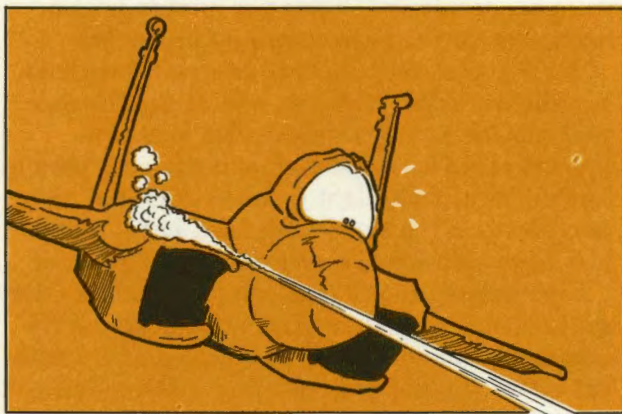
WEAPONS WORDS

Gotta make that takeoff time

An F-15 had just come off of alert at a deployed location. The pilot of the F-15 planned to fly the airplane back to his home base on a single-ship, low-level flight the next morning. So a weapons load crew downloaded the fully armed airplane.

The next day, the pilot showed up at the airplane 30 minutes before his scheduled takeoff. But the crew chief was late, and some spare parts had to be loaded before the airplane was ready. The pilot hurried his preflight to make the scheduled takeoff time. By rushing, he managed to avoid a late takeoff.

On the way home, the pilot decided to check the weapons systems. Assuming that the gun had been safetied, he turned on the Master Arm, checked the arm cross in the heads-up display, and pulled the trigger. The gun fired.



The pilot quickly let go of the trigger. But he had already fired 20 rounds of high-explosive, incendiary ammo. Fortunately, when he'd armed

the system, he had made sure he was over an unpopulated area.

The weapons crew that downloaded the airplane after it came off of alert had failed to safetied the gun. For whatever reasons, they hadn't followed their tech order. But if the pilot had followed his tech order, he would have inspected the gun system and found the load crew's error.

Of course, if the pilot had made a really thorough preflight, he might not have made his takeoff time. Guess it depends where your priorities are.

Sherlock the FOD monitor

During maintenance thru-flight of an A-10 after a gunnery mission on the tactical range, the crew chief discovered damage to the left engine. Four fan blades had suffered foreign object damage. Further investigation turned up the probable cause of the FOD. A four-inch piece of the left outboard rib of panel F-5 was missing from the aircraft.

Suspicious aroused, the wing FOD monitor checked 12 other A-10s. Nine had damaged panels. The damage appears to be the result of the jammer table hitting the corner of the panel when the gun was removed or replaced.

The tech data for the A-10 calls for using a lanyard set, or the equivalent, to hold the gun access doors out of the way of the gun jammer table when the gun is removed or replaced. But the lanyard sets were not being used; in fact, they weren't even available on the base. No one seemed aware of the need to hold the access doors out of the way. Maintenance training didn't teach using the lanyard set, supervisors didn't require it, so the workers didn't know about it.

When we lose track of essential information

the tech data, something's bound to go wrong eventually. Fortunately, in this case the suspicions of the FOD monitor uncovered the problem before the results became more serious. That's good sleuthing.

The target-size trap

An A-10 returned from a difficult mission strafing tactical targets in a realistic scenario. The mission seemed to have gone well until the crew chief found some damage to the aircraft during his postflight. A fragment of a 30-mm bullet was embedded in the top leading edge of the left wing.

On that mission, the pilot had made several attacks against 3/4-scale plywood tanks and armored personnel carriers. The targets were well camouflaged. The pilot thought he might have ceased fire at less than 3,000 feet at times. Under the stress of the demanding mission, he may have misjudged his range. The fact that the ricochet was a small fragment indicates that he probably flew through his own frag pattern.

Even without the heavy task loading of a difficult scenario, undersized targets can deceive us about our ranges (and altitudes, for that matter.) For instance, if we figure a 20-foot tank will be 5 mils in our pippier when we open fire at 4,000-foot slant range but the tank is really 15 feet long, then when the tank is 5 mils in our pippier, we are really at 3,000 feet. We can very easily fly through the frag pattern—or worse.

So we need to read the fine print when we study targets on the tactical range. Somewhere buried in the range description may lie hidden the information that the targets are not full size.

corporate that information into your target study.



Ho-hum, just another dropped bomb

A weapons crew was loading live 500-pound Mk-82 bombs on an F-4. They moved the first bomb off the trailer onto the jammer. The crew chief shook it to test its stability. Then the jammer driver drove to the rear of the airplane and got ready to load the centerline MER on the F-4. The jammer stopped while the crew chief aligned the bomb parallel with the jammer. Once the bomb was aligned, the driver lowered the lift arm and moved forward. As the jammer moved, the other crewmembers saw the bomb start to slide forward. The crew chief tried to stop it but couldn't. The bomb slid forward until the nose fuze impacted the ground.

The crew got the bomb back onto the jammer. From there they returned it to the trailer. Then they went back to work and loaded the five remaining bombs. The dropped bomb just sat on the trailer until the line supervisor happened by to check on the progress of loading. When he learned what had happened, he notified the maintenance operational control center. The control center immediately directed them to stop and evacuate the area.

When we work around bombs all the time, we begin to treat them pretty casually. We may even forget that 500-pound bombs are designed to destroy. But we'd better not forget, or we might become the objects of its destruction.

Funny Fotos



I THINK THIS FORMED-CREW CONCEPT
HAS GONE TOO FAR.
NEXT TIME, GET YOUR OWN DINGHY.

NOW, NOW
A
DOES EVEN



I JUST LOVE
SAFETY MEETINGS.

HI, CLARENCE.

WHAT'S GOING ON
OUT HERE?

Πρόκλα Γρέκ
To Μέ.

TAKE YOUR HANDS
OFF ME, CHARLES.

HE'S BRIEFING MISHAP
#9. HOW MANY OF
THEM ARE LEFT?

DON'T THESE FOOLS
KNOW THEIR PICTURE
IS BEING TAKEN?

ZZZZZ

AW CO'MON,
LET'S GIT DIS THING OVER WIT.
MA'CHAW IS WORE OUT.

WHO SPIT
ON MY LENS?

112.

DON'T GET TESTY.
GOOD CREW
STAY TOGETHER.



DOWN TO EARTH

When the hawk bites

Of all the bad weather conditions—rain, wind, cold, and heat—cold is the one most disliked. It's especially bad for those of us who have to work in the cold. We tend to take shortcuts just to get back inside quicker. Cold weather does that—tempts us to take shortcuts. The body sends a warning when it gets cold—it starts to shiver. Shortcutting is a warning too. It means the job probably isn't going to be done properly.

There are several ways to avoid shortcutting. The simplest way is, don't even think of doing it. Concentrate on the credibility of the tech order or job guide. They were written that way for a reason, and every step is important.

Another way is to dress for cold weather. Wear something to protect your ears, face, and head. Ears are especially susceptible to frostbite, and almost half of your body heat is lost through the top of your head. Wear a face mask so you won't



breathe in so much cold air. Wear gloves. Yes, it's hard to work with gloves on, and the job might take longer to do. But the job would probably take the same amount of time to do with cold, inflexible hands. And in freezing temperatures if you touch cold metal with bare hands, you'll lose some skin. Wear several layers of loose clothing, not one or two bulky pieces. Wear wool, especially when you could get wet. And don't tie your shoe laces too tight.

And last, the supervisors' role—planning and being ready is the key. Give your people more breaks than usual to get in from the cold. Provide heaters wherever possible and make sure the heaters are in good working condition. Learn all you can about protective gear, and be sure that your people wear it and know why. Don't be the cause of a short cut by not sending enough people out because it's cold. And if supervision is needed, make sure you're prepared. Set the example.

It's up to all of us to watch for and prevent unauthorized shortcuts. Bad weather, especially the cold, is when we're most likely to give in to temptation. But if we prepare ourselves, the temptation won't be as strong.

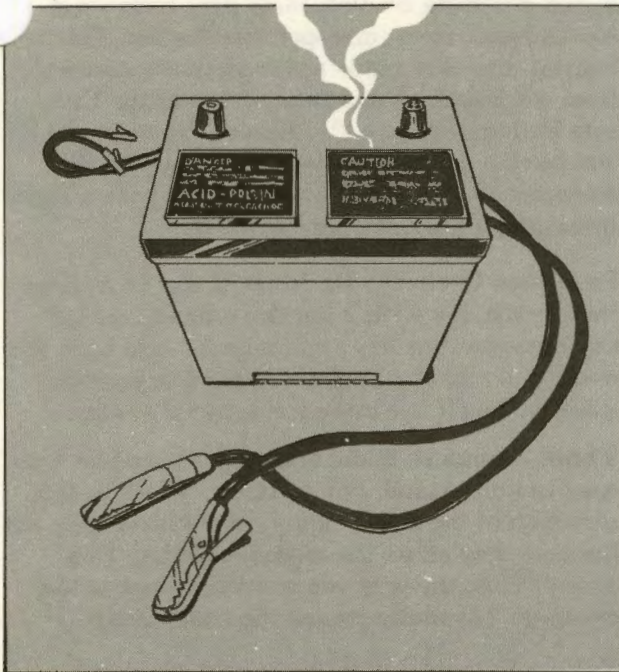
Jump start

Last year, about 16,000 people were treated for eye injuries related to car battery accidents. So the National Society to Prevent Blindness came up with a vinyl sticker that tells how to safely jump start cars. It can be purchased for 2



cents. Just send a self-addressed, stamped envelope to the National Society to Prevent Blindness, 79 Madison Ave, New York, NY, 10016. The sticker has this and more information on it.

- Wear safety goggles.
- Put out cigarettes before attaching cables to cars.
- Don't let the cars touch.
- Add water to the battery if needed. Replace caps and cover with a damp cloth to keep fumes down.



- Attach the jumper cable from the negative pole of the good battery to the engine block of the dead car instead of the negative battery pole. That way any sparks will be farther from combustible battery fumes.

Silent death

By Bill Parsons
410 BMW Safety
K.I. Sawyer AFB, Michigan

What is poisonous, invisible, odorless, tasteless and kills more than 1,000 people each year? Carbon monoxide. This alarming number is only one-tenth the number of people actually exposed to the gas and treated at hospitals.

Carbon monoxide is extremely toxic and is produced whenever there is incomplete combustion of fuel. Any fuel-burning motor or appliance gives off carbon monoxide but usually in such small amounts that we're not affected. In some instances exposure can be great enough to be dangerous—usually in the home environment.

The following do's and don'ts will minimize your chances of carbon monoxide poisoning:

- Don't run your auto in a garage with the garage door closed.
- Do insure that all fuel-burning heaters are vented to the outside.
- Don't sit in a car with the windows up, vents closed, and the motor running. Even in the most severe cold weather fresh air must be allowed in the car.
- Do insure that poorly fitted stove pipes are repaired.
- Do be careful with unvented space heaters. Most give off carbon monoxide at all times. If they aren't perfectly adjusted, the amount of carbon monoxide is greatly increased.
- Do make sure the flame on your gas stove produces a blue flame—a yellow flame indicates

DOWN TO EARTH

that large amounts of carbon monoxide are being given off into the room.

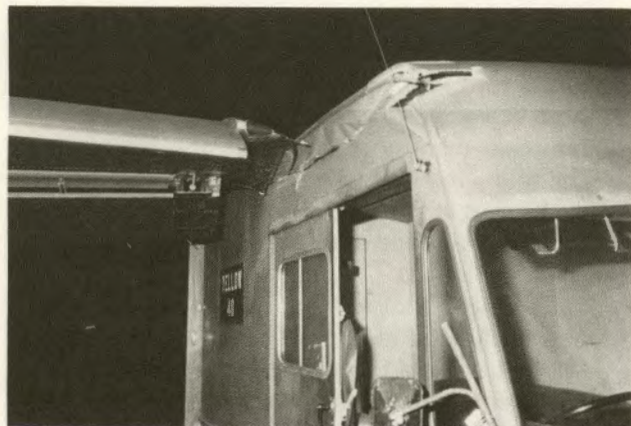
— Don't drive your car with a faulty exhaust system—it allows carbon monoxide to leak into the car.

— Don't drive your hatch-back auto with the hatch open—the exhaust will be drawn into the car as you drive.

— Do use your barbecue grill in a well-ventilated area—never indoors.

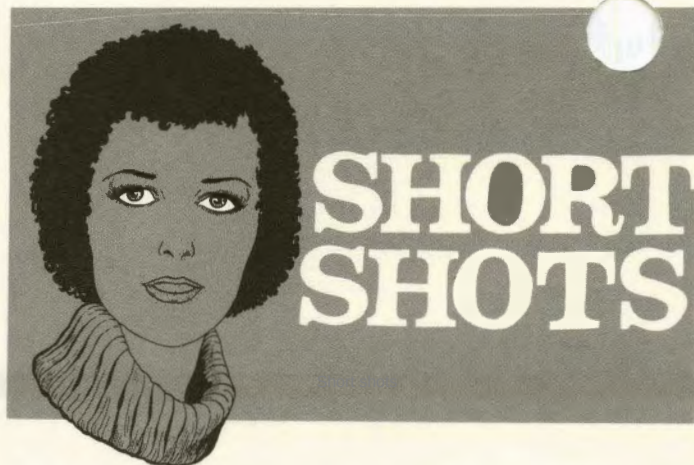
Some early symptoms of carbon monoxide poisoning are headache, shortness of breath, weakness, dizziness, blurred vision, nausea, and vomiting. More severe symptoms include rapid pulse and respiration, coma, and convulsions. Weak pulse and slowed respiration precede respiratory failure and death.

If you suspect that you or someone else is suffering from carbon monoxide poisoning, get to fresh air immediately and then call a doctor.



This step van, operated by an NCO on the flight line at night, was driven into the left wingtip of an F-111. Damage to the airplane was limited to a broken light, but the van was torn open as if someone had used a can opener on it. Had the operator been driving a little farther to his right, the mishap would have been very costly to him.

—SSgt Robert J. Gross, 20 TFW/SEG



You Might Not Have the Flu. The symptoms of flu—nausea, headache, dizziness—are the same as those for carbon monoxide poisoning. Check your heating system, especially if the symptoms go away when you're out of the house.

Once Is All It Takes. A person who has had frostbite once is more prone to frostbite than a person who hasn't. The frostbitten area may become permanently sensitive to cold and will always need extra protection.

Wood Burning Stoves. Most fires from wood stoves result from improper installation. The two biggest mistakes made are inadequate clearance from combustibles and improper venting. Creosote buildup is also a fire hazard. You can tell if you have a dangerous buildup by tapping the stovepipe with a metal object. If you hear a thud instead of a ping, it's time to clean.

Fireplace Creosote Buildup. It can be avoided. Begin each day with a hot fire—this burns off any creosote that has accumulated. And burn the wood, don't smoke it; add wood and oxygen frequently. You'll use more wood, but it's safer.

Think About It. Some instructions are just not easy to understand. For instance, "Steer in the direction of the skid." Many people have spun out because they chose the wrong direction. How about "Turn the way you want the front of the car to go"? It really means the same thing.

Take a Second Look. Make cold weather a seasonal check for tech order changes. Do you know a better way to do the job? If so, submit a change and let the rest of us in on your idea. But don't stop using the old tech data until the change is official.

Are Helmets Too Confining?

A mortician's point of view

By ALC David A. Hicks
366 EMS
Mountain Home AFB, Idaho

Two years ago, I was working as an apprentice mortician for a funeral home in Garnett, Georgia. It was a small concern that mostly handled cases involving old folks who had lived full lives. But one night I got a call that was not one of the usual.

The first rule a mortician learns is not to become emotionally involved. Even if the case is a friend or family. But it's a hard lesson to learn.

I answered the ringing phone.

"Dave?" The voice on the other end seemed surprised and questioning.

"Yes, this is David." I said in my most soothing, professional voice.

"This is Ray Tolbert. I am out here near the Williamton Bridge here in Kingston. There's been an accident and one of them is gone. Need your ambulance out here stat."

"Any identification?" I asked, pulling a death notice from the desk drawer. By now my boss, Ken Harris, was looking over my shoulder.

"Yeah. You ain't gonna like this, Dave. It was Mike Andrews." I froze in the chair. Numbly my hand wrote the name on the form.

"We will be right out," I said sadly. Ken Harris and I went together.

Once out at the site, we found the body surrounded by flashlights in the dark. I knelt beside the sixteen-year-old boy who was as close to me as my own brother. His face was a mass of bloody tissue.

He had been riding a 650cc motorcycle with no helmet and only a pair of cutoff bluejeans on. On a one-lane bridge he was hit head-on by a pickup truck whose driver was intoxicated. The bike was now just junk—tangled steel and wire.

Ken and I eased the body into a long, formed plastic bag. We carried the bag back to the hearse. Then I took it on myself to go along with Sheriff Ray Tolbert to the Andrews home. Tony Andrews, Mike's father, opened the door and let us in. Sitting at the kitchen table, we told Tony what had happened to his son. We stayed the better part of the night,

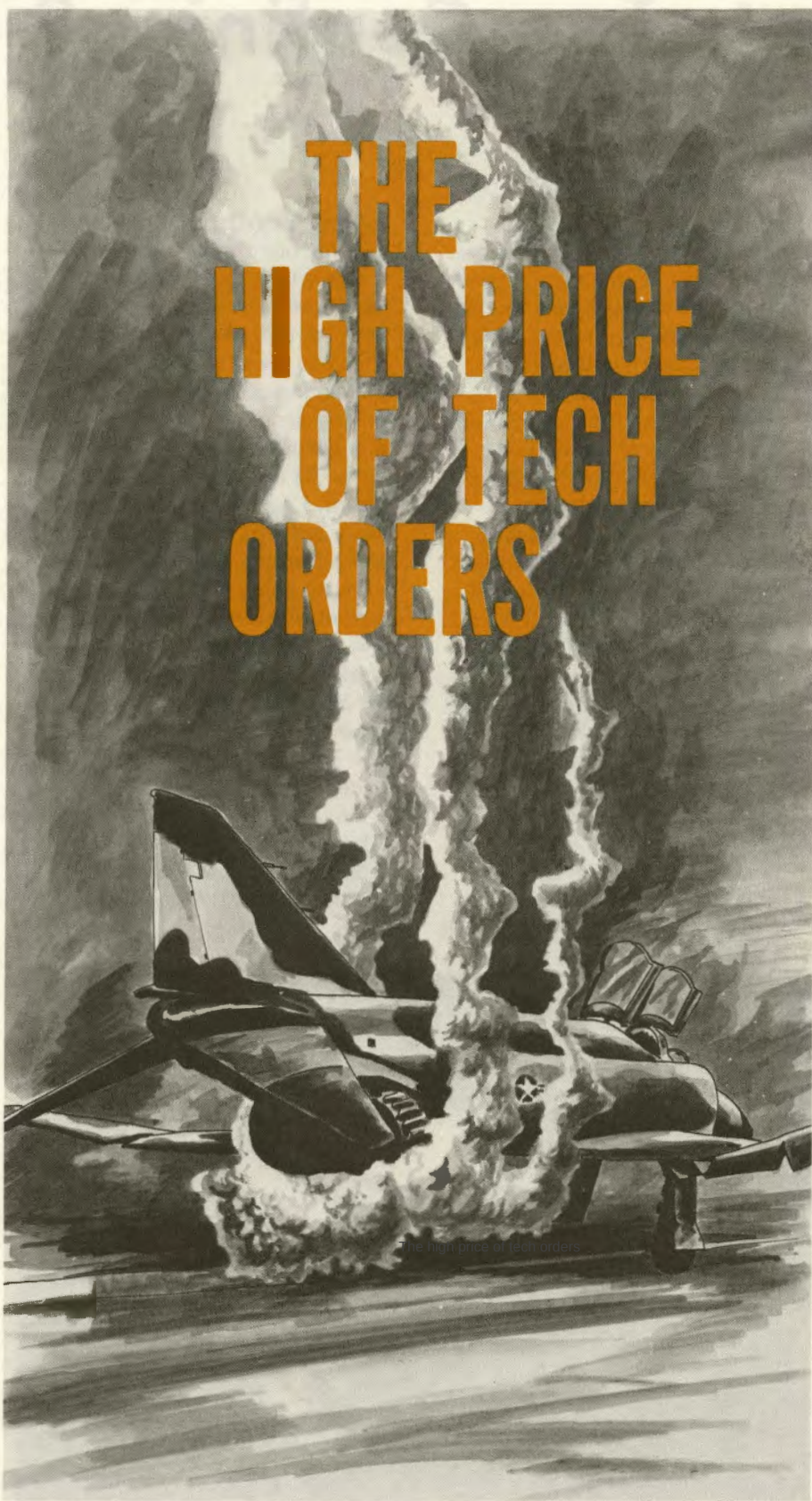
talking, praying, and trying to comfort our friend and his wife.

Don't talk to me of "tough jobs" until you work a shift with an undertaker. Don't speak to me of problems until you've faced the problem of telling people that their son, daughter, wife, or husband is dead. As an apprentice mortician, I saw all kinds of death. Still, nothing tears my heart more than to see the family of a youth come in to pick out the casket and arrange the funeral. I've seen strong, hefty guys come in to make arrangements for their younger brothers; when the time comes to view the body, these big, tough men crumble like sand.

So don't say to me, "I don't like helmets; they're too confining." Here's a standard coffin. Now tell me which is more confining. ➤



THE HIGH PRICE OF TECH ORDERS



An F-4E took the runway for takeoff. The aircrew did their normal engine checks; then the aircraft commander pushed the throttle up to full military thrust and selected afterburners. The afterburners seemed to light off normally. But at about 100 knots the aircrew heard a loud bang, the airplane pulled slightly to the right, and the fire warning light for the right engine came on.

The aircrew aborted their takeoff and shut down the right engine. As they slowed down, they heard several radio calls telling them they were on fire. So, as they came to a stop, the pilot shut down the left engine; and the crew used emergency egress procedures to exit the airplane. As they moved away from the F-4, they could see a large fire underneath it and several smaller fires near the afterburner of the right engine. The crash response team soon extinguished the fires.

The fires had been caused by a failed hose connection in the right afterburner. Examination of the right afterburner fuel pump showed that the upper two bolts in the connection between the fuel discharge check valve and the fuel filter outlet hose and seal weren't sealed with safety wire. The upper right bolt had backed out of position so that threads were visible; the washer between the bolt head and flange could be freely rotated. The bottom two bolts were safety wired, but they indicated a torque value of zero. When the fuel pump was tested on an open air test stand, it had a large, steady leak at the connection. The pump itself was intact and working correctly.

The only way the bottom two bolts could have lost torque is if the connection had been misaligned during installation. Bolts that are safety wired cannot turn or back out of position. But if the flange shifts from a misaligned position to correct alignment, torque would be lost on some bolts, safety wired or not. That happened to one of our F-4s on a trim pad a couple of years ago. The flange was misaligned, torqued, and safety wired. During the engine run the flange realigned itself and began leaking fuel when torque was lost on the flange bolts. The resulting fire caused major damage to the airplane. That incident spurred the addition of caution notes to the tech order, warning of the importance of checking the outlet hose flange on all sides for proper seating and alignment.

The problem is that we have to use the tech data in order to be familiar with its cautions. The people who worked on the F-4 involved in this second incident didn't take the time to refer to the tech data.

Two weeks before its ill-fated takeoff attempt, this airplane had its right afterburner fuel pump replaced with the new, modified P-14 pump. At the same time that the pump on the right engine was replaced, the left engine was removed and reinstalled. Working on both engines on the same aircraft isn't that unusual. The shift supervisor was involved with only this one aircraft.

The supervisor assigned a three-level technician to do the right afterburner pump installation. But when the left engine bay was ready, the supervisor interrupted the technician's work on the pump and



told him to help install the left engine. Later, a five-level technician took over the fuel pump job. The supervisor followed that work by signing off the inspection and clearing the red X.

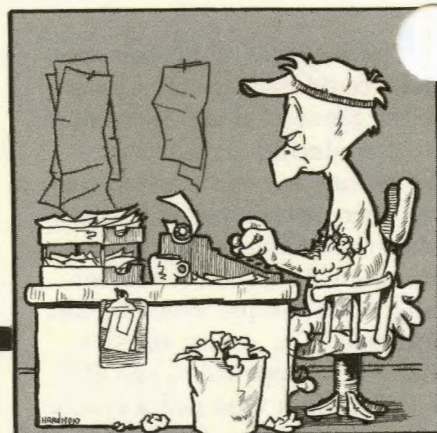
The way the whole thing was done wasn't quite up to snuff. Changing an afterburner fuel pump on an installed engine, especially the right engine, is tough. But this crew did it without using the tech data or a torque wrench. The supervisor told the three-level technician to sign off the "corrected by" block of the 781A because he'd done most of the work; but the three-level wasn't even qualified to do the work without direct supervision, much less clear the discrepancy.

The five-level who took over the job was trained and qualified. But he took over without knowing what had already been done; there was no 781 entry indicating that action had been stopped on an incomplete task. He also never fin-

ished the job—apparently nobody did. The supervisor signed off the inspection, and no more work was done on the pump. Maybe when he inspected, he saw the bottom two bolts safety wired and assumed the job was done. Really checking the connection requires a mirror and supplemental light. But the supervisor wasn't familiar with the caution notes about carefully checking the flange alignment. In fact, there is no evidence that anyone consulted tech data or considered the caution note.

Tech orders are expensive to produce. When you add in the cost of the lessons learned that are incorporated in the tech data, the tech orders may be the most expensive books you'll ever hold in your hands. But if they can prevent things like afterburner fires and so save lives, the books are well worth the cost. The only hitch is, these expensive books have to be read to be of any use. ➤

LETTERS



Dear Editor

In your September issue, the slant of your article "Short-cutting engine maintenance" is entirely wrong. Unless there is something you left out, the incident is not an example of "short-cutting" or any other improper maintenance practice. In the absence of tech data to the contrary, sound troubleshooting dictates going from the simple to the complex and stopping when you have solved the problem. Anything else is poor management. In this case the checkout procedure failed to identify a false corrective action. How many times has this same procedure resulted in proper corrective actions, consequently maintaining mission capability? As an ex F-4 crew chief, my gut feeling is if you send every rpm writeup to the sound suppressor, you'll soon have your whole fleet waiting for a tow team.

JAMES K. HARKINS, JR.,
Captain, USAF
Chief, Quality Assurance
Division
Keesler Technical Training
Center

Dear Captain Harkins

Don't know when and where you crewed F-4s, but our TAC logistics folks tell us the max rpm for running an F-4 engine on the open ramp is 80 percent. The rpm writeup on this engine occurred only above 90 percent, so there was no way sound troubleshooting could have been done without taking the airplane to the sound suppressor. But the maintenance supervisors in this case allowed the engine to be run at military power briefly on the ramp. This unauthorized shortcut resulted in the engine not being run long enough for the effectiveness of the maintenance action to be thoroughly analyzed. If they had followed the rules, they would have taken the airplane out to the sound suppressor, where they would have had no reason to rush the engine run at military power.
Ed.

Dear Editor

In "Weapons Words" (Sep 83) you wrote about an F-106 mishap in which the external tanks were unintentionally jet-

tisoned. You also could not resist some "idle speculation." I have not seen the message covering the mishap. However, I can tell you that tanks in the F-106 have been jettisoned in exactly the same manner despite the pilot's frame of mind.

The external tanks jettison button is located right above the gear handle. As the pilot reaches for the gear handle the thumb is extended in a natural manner. Unless the thumb is moved when the handle is raised the thumb *will* enter the cover over the jettison button and contact the button. The real cause of this mishap is the man/machine interface. The pilot's frame of mind as reported by the article is a resultant and not a root cause.

Idle speculation has very little to do with mishap investigation and prevention. Possibly, minds have been stimulated into thought by your article, but it has done very little to keep the tanks from being inadvertently jettisoned again.

THOMAS A. POWELL, Captain, USAF
Chief of Safety
326th Air Division

TAC TALLY



CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
NOV	THRU NOV	
	1983	1982
3	25	26
3	11	17
3	25	21
3	22	18

ANG		
NOV	THRU NOV	
	1983	1982
0	10	6
0	9	3
0	9	5
0	4	4

AFR		
NOV	THRU NOV	
	1983	1982
0	1	1
0	1	0
0	0	2
0	0	2

TAC'S TOP 5 thru NOV '83



TAC FTR/RECCE	
class A mishap-free months	
48	355 TTW
31	363 TFW
27	58 TTW
20	4 TFW
17	37 TFW

TAC AIR DEFENSE	
class A mishap-free months	
130	57 FIS
83	5 FIS
80	48 FIS
39	318 FIS
30	87 FIS

TAC-GAINED FTR/RECCE	
class A mishap-free months	
139	188 TFG (ANG)
131	138 TFG (ANG)
130	917 TFG (AFR)
108	114 TFG & 174 TFW (ANG)
103	112 TFG (ANG)

TAC-GAINED AIR DEFENSE	
class A mishap-free months	
113	177 FIG
79	125 FIG
62	119 FIG
46	107 FIG
37	147 FIG

TAC/GAINED Other Units	
class A mishap-free months	
172	182 TASG (ANG)
156	110 TASG (ANG)
152	USAF TAWC
144	84 FITS
140	105 TASG (ANG)

CLASS A MISHAP COMPARISON RATE

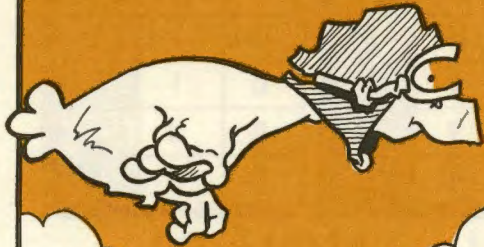
(BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

TAC	1983	6.9	5.3	3.4	3.8	4.0	3.8	4.5	4.1	3.9	3.7	3.8	
	1982	7.8	5.7	5.9	5.2	5.9	5.7	5.1	4.7	4.4	4.1	4.1	
ANG	1983	9.1	7.0	4.4	4.3	3.4	4.2	4.8	4.2	4.7	4.3	3.8	
	1982	0.0	2.7	3.2	3.4	3.6	2.9	3.1	2.7	2.4	2.1	2.3	
AFR	1983	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.1	2.8	2.5	2.3	
	1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.1	2.7	2.5	

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

FLEAGLE

ROGER, WE'LL SPLIT
TH' FLIGHT UP FOR
APPROACH.



FLEAGLE, MAKE LEFT
270° TURN.



DON'T MAKE
SENSE. A RIGHT
TURN IS
SHORTER.



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HARRISON



GUESS TH' FLIGHT LEAD KNEW
SUMPIN' AFTER ALL, DIDN'T HE?



YEP