TAC ATTACK

FEBRUARY 1985

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ACES II and the ejection decision ...Pg. 4

ANGLE OF ATTACK

Every six months we replace our centerfold stipple rendition of proud and famous aircraft with a graphic of losses in the air and run a page showing ground losses. We wish these pages were blank, but they aren't. However, there are fewer figures on them this time.

In *Ground Safety*, we achieved a 49 percent reduction in off-duty fatalities compared to 1983 (28 deaths versus 55 last year). Traffic accidents were our biggest killer with 24 mishaps—over half (13) were motorcyclists. Eighteen traffic death victims either used alcohol or did not use seat belts. Strong leadership and firsthand line supervisor involvement are evident in this tremendous reduction in ground fatalities. But, the real contributor is you, the people in TAC—you are driving much safer than last year.

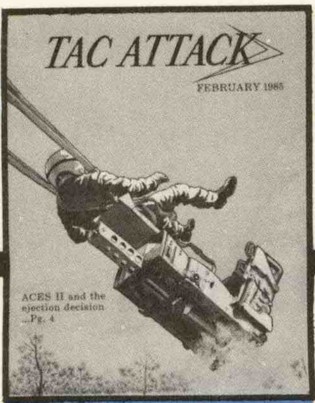
In *Weapons Safety*, the news was mixed. We experienced our first GLCM loss, missile mishaps rose from 54 to 60, and RPV mishaps were up. But the number of explosive mishaps (after gun mishaps not attributable to munitions are withdrawn) decreased from 94 to 83. The really good news is the reduction of weapons mishaps caused by personnel error—down from 109 to 84.

In *Flying Safety*, TAC aircrews earned the Foulois Memorial Trophy for flying safety excellence during 1983. In 1984, you bettered your record by 12 percent (23 mishaps in 1984 versus 26 in 1983). The NFL would be pleased with these statistics. Unfortunately, our losses are not written on sports pages but in lost lives and diluted combat capability. We in TAC can prevent the majority of our mishaps, and we must concentrate on mastering the basics—maintaining aircraft control, avoiding collisions with the ground and successfully coping during IMC/night flying.

We work very hard in *TAC Attack* to bring you not only safety trend information but also information that helps you to do your job better. This and back issues of *TAC Attack* provide excellent information distilled from hours of research and years of experience. First line supervisors should use these articles to initiate hangar-flying and "what if" sessions. Do it smart—use *TAC Attack*.

Harold E. Watson

HAROLD E. WATSON, Colonel, USAF
Chief of Safety



ON THE COVER:
ACES II in action.

FEBRUARY 1985

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VOLUME 25 NUMBER 2

ACES II and the ejection decision

We've come a long way, baby...or have we?

By Maj H. V. (Scott) Sutton
TAFIG/IIPJ
Langley AFB, Virginia

Ed note: Maj Sutton's article is neither an endorsement nor an indictment of a particular product. Rather, it's about the present state-of-the-art ejection seat technology embodied in the Douglas Aircraft Company's advanced concept ejection seat, ACES II, standard equipment on USAF A-10, F-15 and F-16 fighter aircraft.

You've given this mission your best efforts: your planning, briefing and each step of the execution would have satisfied even a flight examiner's expectations. But in spite of your sterling performance, it's not your day, Ace. The sound of freedom that you're so used to hearing suddenly degenerates into a frightening roar as the last of your engine's turbine blades twist into a gnarled mesh. Forget your plans for an overhead to initial; your transportation is headed for a smouldering scrap pile. And your approach to landing will be via a nylon letdown. Thanks to your Advanced Concept Ejection Seat (ACES II), your chances of arriving safely on terra firma are excellent.

The Good Old Days?

Fighter pilots haven't alway

so well equipped. Present ejection seat technology is the result of studies and analyses, testing and development dating to the 1930s. Back then (and today) the aviator trying to bail out manually faced three significant problems: G-forces, airloads and time.

Often, the crippled aircraft that the pilot was trying to escape from was decelerating rapidly or imposing G-loads while spinning or tumbling. Tests showed that two times the force of gravity made it difficult to rise and stand; under three Gs, most men could not manually exit the cockpit.

If it was physically possible for the pilot to exit, the next barrier was the airstream; airloads pinned him against the aircraft. Can you remember ex-·ding your hand into the ·d created by a speedboat cruising at 20 mph, then comparing the resistance to that experienced at 40 mph? Airloads increase directly as the square of the velocity. For example, an average size pilot trying to climb out of the cockpit at 200 knots will face a resistance of around 1,200 pounds; at 400 knots, we're talking about two and one-half tons! Next, if the pilot was resourceful enough to work free of his aircraft, his high-drag figure (even less streamlined by a parachute and harness) decelerated more quickly than the aerodynamic machine he was abandoning. If he survived being bounced along the fuselage, he stood one chance in four of dying from collisions with the tail or various antennas.

And sometimes when a pilot was able to wrestle free from his lap belts and mic cord and open the canopy, there just wasn't enough time . . .

Of 2,500 bailouts between 1943 and 1945, almost 1,500 resulted in injury or death. The fatality rate of crew members exiting single seat aircraft was over *eight* times worse than the rate for larger machines with belly hatches and side door exits.

Early Ejection Seats

A lot of smart people have been working the problem: German engineers experimented with ejection seats in the late 1930s. Swedish forces had an operational seat in the early 1940s. The first American test of a manned ejection system (in an airborne aircraft) didn't occur until August 1946.

Early ejection hardware was far from a panacea. Thanks to the ejection seat catapult, pilots were able to escape the cockpit and clear the aircraft; but many injuries still resulted from not having enough time to release the lap belt or to find and pull the parachute release handle (D ring). The lowest altitude that promised a reasonable chance of success/survival was 1,000 feet above the ground *with no sink rate.*

Lap belts that would automatically release and parachutes that would automatically open were operational in 1953. The next step that came along to improve the lot of aviators was the good idea to wire the parachute release cable directly to the release buckle of the lap belt. The result, again with no sink rate, was a zero altitude/120-knot capability.

In 1958, the "butt snapper" was developed to expedite man-seat separation. A strap was attached from the front of the seat bucket to the top of the seat pan. After ejection, when the seat bucket had done about all it could do for the crew member, the strap automatically tightened and forced him out of the seat. This device prevented the white-knuckled ejection seat occupant from tenaciously clinging to the seat by pushing it away from him.

As our aircraft became more capable, their operational airspeeds increased. Higher airspeeds meant less time for an ejection seat to clear the tail. While larger ballistic charges were effective at blasting crew members and their ejection seats over the tail, the jocks were reaching their limits. Spinal compression fractures were often the price for accelerating ejection seats from one to 20+ Gs in an instant. In 1958, the F-102 Delta Dagger sported a rocket catapult that produced sufficient thrust to clear the tail while imposing fewer Gs (about 15 for ¼ second) on the pilot than ballistic charges. In 1963, the automatic inertia reel, which locked the crew member into a desirable body position before ejection, was developed.

Room for Improvement

We had come a long way. But at this point four areas for improvement were readily identifiable. First, 15 percent of the people who ejected received back injuries from high accelerations or improper body position at ejection. Second, although rocket motors gave better thrust vectors than ballistic charges, they still could not compensate for the changes to the center of gravity of the rising ejection seat as a crew member's body shifted or

ACES II

slumped during acceleration. Third, lack of directional stability after ejection (compounded by windblast and opening shock) was an injury causing weakness in existing systems. Finally, quicker man-seat separation was required.

How do we get there? In the late 1960s, the Air Force began an earnest search for a more capable ejection seat that could overcome these limitations. The seat had to be rugged, lightweight and easy to use and had to have an escape envelope that accommodated ejections from zero to 600 knots airspeed. That search eventually led, in 1971, to the advanced concept ejection seat, ACES II.

ACES II qualification tests were completed in 1973, and the seat was first installed in the A-10 in 1977. Now, ACES II comes as standard equipment in the F-15 and F-16 as well. The seat's future assignments include the production models of the B-1 bomber (the seats will have a unique trajectory divergence subsystem that will prevent interference among crew members) and the new advanced trainer, the T-46.

ACES II Features

So what does the ACES II have going for it? For starters, ACES II offers effective solutions to two of the toughest problems, changing centers of gravity and directional stability. The seat contains a stability package, referred to as STAPAC, which monitors and corrects the seat's trajectory from the time the seat leaves the guide rails until the main rocket motor burns out. As the seat travels up the rails, a gas generator fires a gear rack that spins a heavy gyro up to about 10,000 rpm. When the gyro is up to speed, it is uncaged just before the 235-pound-per-second vernier rocket fires. Figure 1 shows that if the seat starts to pitch, the gyro precesses and rotates the vernier rocket around to apply a correcting moment. The STAPAC's vernier rocket not only aids stability, but also supplements the seat's 1,150-pound-per-second main rocket; it adds to trajectory height and improves performance of the seat against sink rates while adding only two Gs to the main rocket's ride.

Some of the other significant features of the ACES II ejection seat include:

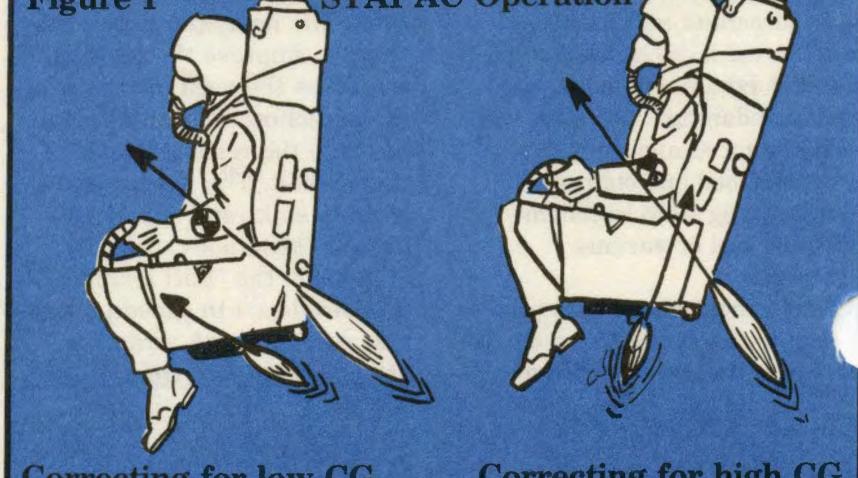
- three operating modes to deliver optimum performance throughout the zero-to-600-knot escape envelope;
- self-contained solid-state electronics for choosing the correct mode and for precise timing and sequencing within each mode;
- a 5-foot hemisflo drogue parachute for stabilization/deceleration at high speeds/Mach numbers and stability during descent from high altitude; and
- a mortar-deployed recovery parachute with a reefed canopy that opens in stages for optimum performance at various speeds.

ACES II Operation

Figure 2 shows portions of the flight envelope appropriate to each of the three modes. Self-contained pitot static sensors provide inputs to speed and altitude transducers that establish switch settings that correspond to appropriate flight conditions.

In mode 1, the slow speed mode (Figure 3), the drogue chute is not used and the recovery parachute is deployed by mortar 0.2 seconds after ignition of the main catapult rocket. As the mortar propels the parachute assembly away from the seat, the reefing line cutters are fired and the reefing lines are cut 1.15 seconds

Figure 1 STAPAC Operation



. A quarter of a second after that, the aircrew member is separated from the seat and the parachute inflates. The result at 150 knots is a full chute in only *1.8* seconds after the rocket catapult fires.

In mode 2 (Figure 4), the drogue gun fires as the seat goes up the rails. The drogue chute stabilizes and slows the seat. Parachute deployment is initiated 0.8 seconds after the drogue gun fires in the A-10 (1.0 seconds in the F-15/F-16 seats). Reefing permits the parachute to be deployed in stages so opening shock at high speeds is reduced compared to an immediate full chute.

In mode 3, the high altitude mode (Figure 5), the drogue chute is deployed as in mode 2, but the recovery sequence is interrupted until the seat descends or decelerates into the mode 2 envelope.

Let's look at Table 1. For the ACES II to perform as well as it does, timing is everything. In older systems, ballistic gas pressure through a series of hoses is used to initiate various actions in the cockpit during the ejection sequence. This technology has been enhanced on F-15s and F-16s by replacing the gas pressure system with explosive cords. Known by egress experts as shielded mild detonating cord (or detonation transfer assemblies), these cords "burn" at a rate of 20,000 to 25,000 feet per second (I said about 4 NM per *second*) and initiate jettisoning the canopy and firing the rocket catapult in about half the time it would take ballistic pressure. This time reduction combined with ACES II capabilities, makes possible, with no sink rate, a safe ejection from 200 feet, in-

Figure 2 Mode Envelopes

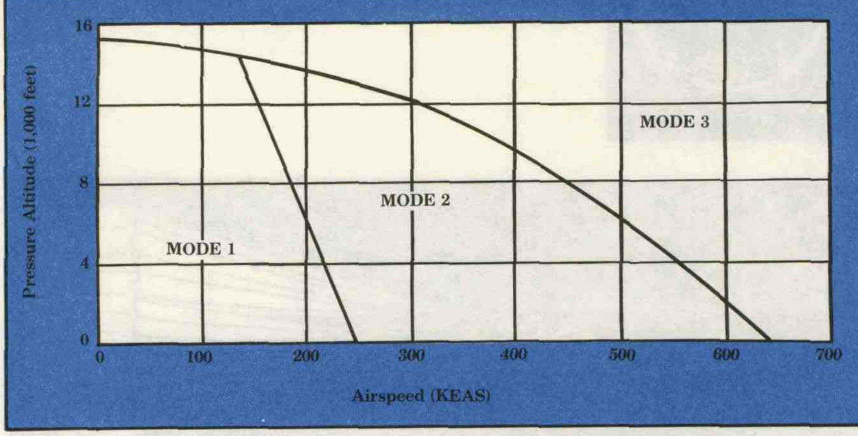
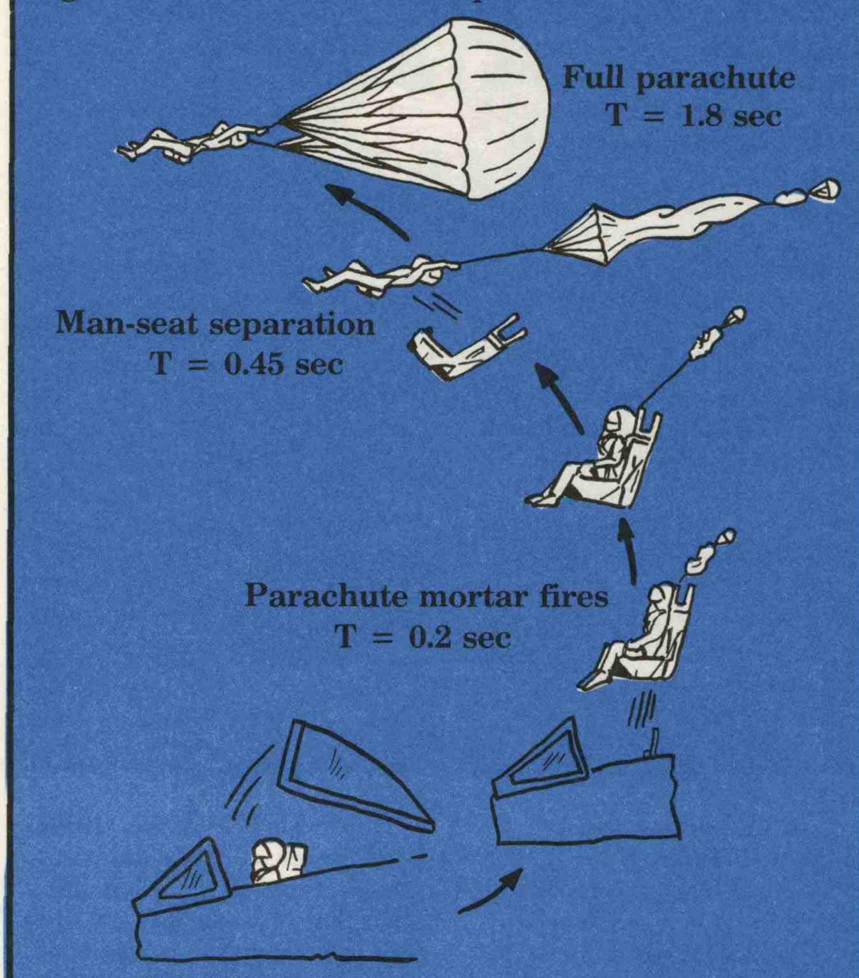


Figure 3 Mode 1 Operation



ACES II

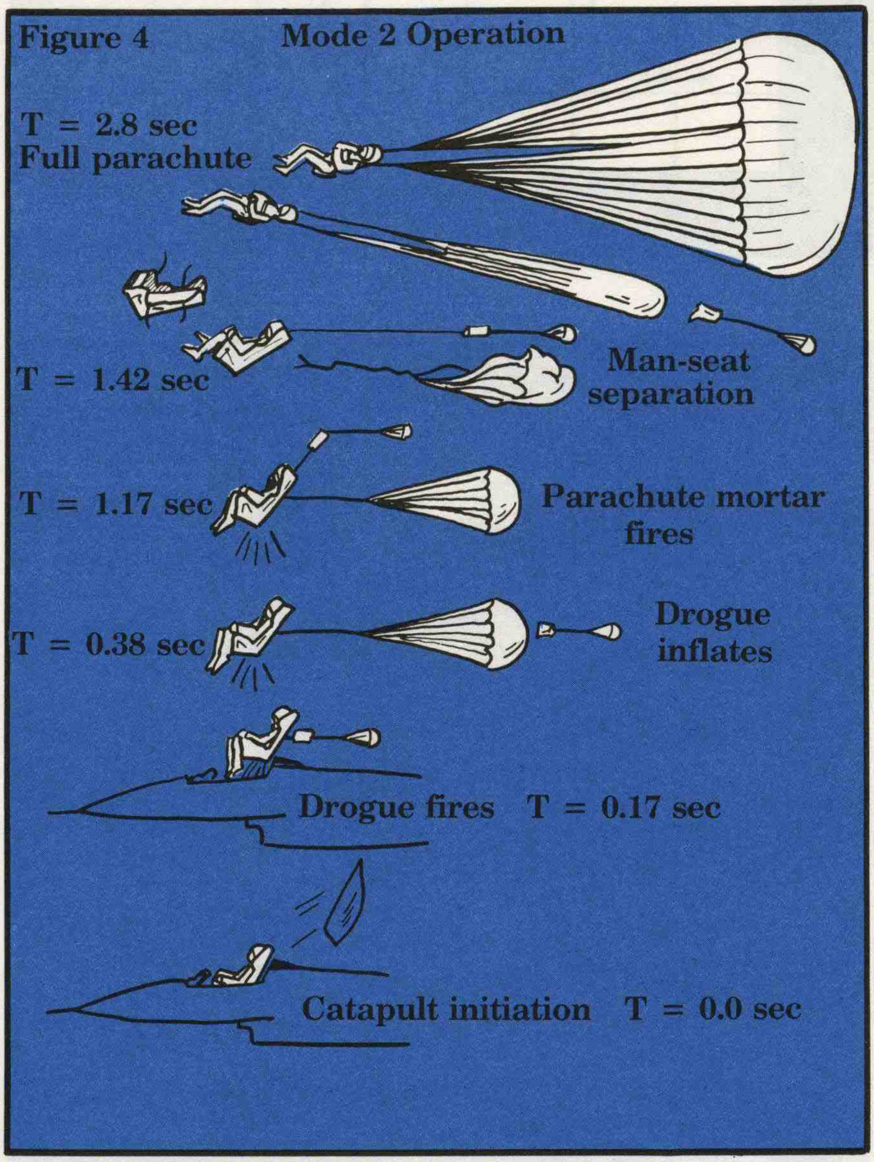


Figure 4 **Mode 2 Operation**

verted, at 150 knots.

ACES II performance is unparalleled. Through November 1984, 81 of 82 ejection attempts within the design envelope have been successful, for 98.8 percent. The one loss was not attributed to seat design or construction.

Hardware is Not Everything

However, at this point, we should remember the admonition that if we don't learn from our mistakes, we are bound to repeat them. In 1959, when the capability of many ejection seats was greatly enhanced by the introduction of rocket catapults, the Air Force had an 11 percent ejection fatality rate. By 1963, when our aircrews had become familiar with such capabilities, 20 percent of those who ejected died. From late 1958 through 1963, 76 percent of rocket assisted ejections were successful while 84 percent of the ejections with less capable ballistic systems were successful. Studies showed that almost one-fourth of the rocket-assisted attempts were initiated below 500 feet; only one in ten ballistic system ejections were begun that low. Aircrews were clearly expecting too much of the more capable equipment.

Now, let's take a quick look at those 81 successful ACES II ejections. One number that jumps out from the statistics is that more than a quarter of the ejections were initiated a full thousand feet below the 2,000-foot recommended bailout altitude for controlled ejections. Some of these, obviously, were beyond the pilot's control, ejection became necessary just after the aircraft lifted off, mechanical malfunctions occured at low level, the engine quit in the pattern, etc. And not all of these 21 ejections initiated below 1,000 feet AGL were under controlled conditions. But what about some of the others?

One pilot flying an air combat maneuvering mission recognized his aircraft was out of control around 9,000 feet MSL; after several unsuccessful recovery attempts, he ejected at less than 1,000 feet above the ground.

Or how about the pilot whose engine quit while he was cruising above 40,000 feet MSL one

Figure 5 Mode 3 Operation

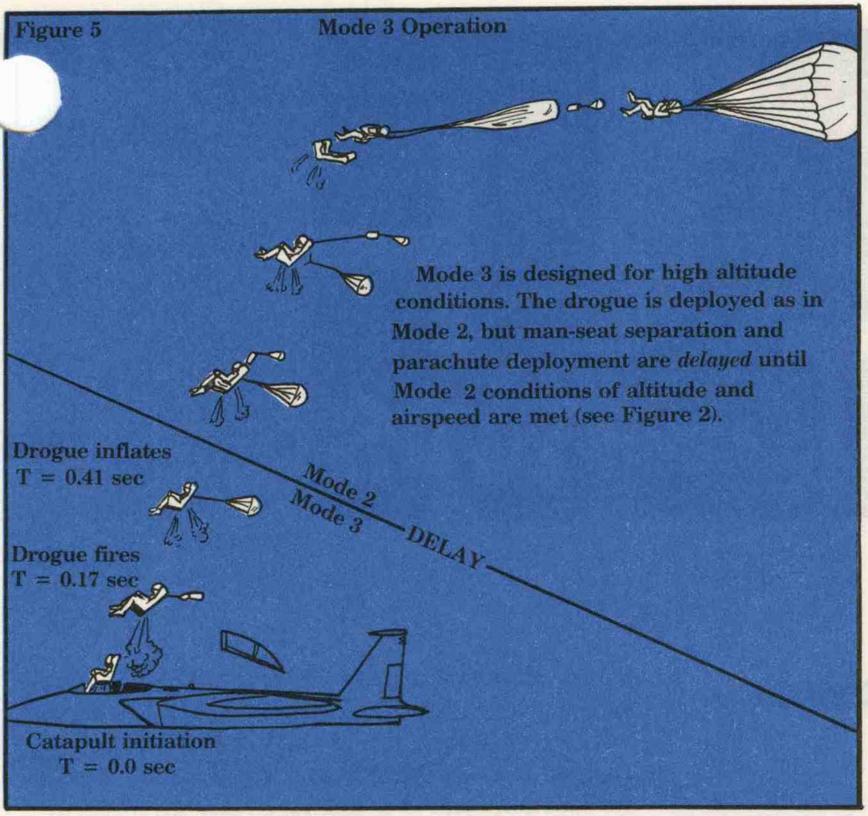


Table 1 Event–Time Sequence

Typical event timing	Mode 1	Mode 2 (A-10)	Mode 2 (F-15/16)	Mode 3
	Time (seconds)			
Rocket catapult fires	0.0	0.0	0.0	0.0
Drogue deploys	n/a	0.17	0.17	0.17
STAPAC ignites	0.18	0.18	0.18	0.18
Parachute deploys	0.20	0.97	1.17	*
Drogue releases from seat	n/a	1.12	1.32	*
Man-seat separation	0.45	1.22	1.42	*
Parachute inflates	1.8	2.6	2.8	*

*Sequence is interrupted until seat crosses Mode 3 boundary, then deploys parachute after 0.8 second delay (A-10)/1.0 second delay (F-15/16).

night. He tried several primary and alternate airstarts during the controlled plunge into the murk, none of which revived his engine. Unable to see the ground and without a radar altimeter, he didn't eject until his altimeter read about 2,000 feet—which was only 300-400 feet AGL.

The Ejection Decision

What are some of the reasons we delay ejecting? Sometimes it is disbelief; we have trouble comprehending that "this really is happening to me." We might fear being criticized for not bringing home a multimillion dollar aircraft; so sometimes we labor much longer than we should to regain control or we wait too long to develop the conviction that "I've done all I can." Some survivors have shared their feelings of reluctance to leave their warm, familiar cockpit to deal with mostly unknown quantities like windblast, PLFs, or water landings. Perhaps a final consideration is temporal distortions, the false perception that events around us are happening in slow motion; so we think we have more time available to recover or to pull the handle than there really is.

Many of us have lost friends who waited too long to use a perfectly capable seat. In one accident scene that I inspected, a friend's parachute was lying fully extended (but not yet opened) on the ground; he pulled the handle about two seconds too late. In an earlier accident, according to the investigation, another friend didn't come home because he waited just three-tenths of a second too long to make the ejection decision.

ACES II is a beautiful system. Great care went into the design and testing. Construction is meticulous and maintenance is comprehensive. But the chain of events that culminates in safe recovery is only as strong as its weakest link. And sometimes we, the operators, are that weakest link. It's up to us to *make the seat perform soon enough*. Our flight manuals give us well conceived guidance on when to step over the side; we need to use it. ➝

Maj Sutton works at the Tactical Air Forces Interoperability Group at Langley AFB, Virginia. The 1968 Purdue graduate has flown 1,600 hours in the F-4 and is an FAA certified instrument instructor. Having a personal interest in the subject, he researched the article with the help of MSgt Jim Hodges, HQ TAC/LGMDE, Mr. Jeff Eckhart, Douglas Aircraft Company, and statistical data from AFWAL, Air Force Wright Aeronautical Laboratories.

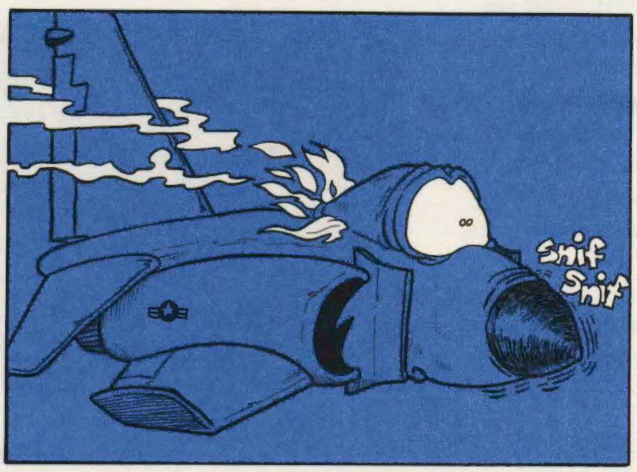
TAC tips INTEREST ITEMS,

Knowledge is power

If you've survived an ejection, you probably have more useful things to say about the experience than a life support officer who hasn't. Firsthand experience makes you the new expert. Experience is by far the best teacher. But we can't all experience everything.

The next best thing to actual experience is learning the lesson from someone who has just lived through an experience. If you're armed with some practical knowledge that someone else learned the hard way, the situation you find yourself in the middle of is less of an unknown quantity. You may not feel like you've been there before, but you'll probably have a better idea of what to expect next.

Sometimes a little firsthand information can make a big difference. Some time ago, an F-4 crew experienced an electrical fire. Flames and smoke were coming from a circuit breaker panel in the rear cockpit. The crew selected 100 percent oxygen; then, because of the fire's intensity, they zoomed the aircraft and ejected. Because of what we learned from this mishap, other aircrews in the F-4 community learned what to expect with such an emergency.



Recently, when an electrical fire erupted on the circuit breaker panel in the rear cockpit of another F-4, the aircrew reacted differently. The pilot shut off the aircraft generators, and the WSO smothered the flames with his flight gloves. The fire went out and remained out when the generators were turned back on later. This aircrew landed safely. The difference was knowledge.

Having a solid grasp of the flight manual's discussion of aircraft systems helps prepare us for eventual emergencies. But that may not be enough. Supplementing that knowledge with hangar flying sessions, trips to FTD, picking the brains of pilots with thousand-hour patches and reading "there I was stories" contributes to a healthy personal repertoire of practical, firsthand information. Knowledge that's available when "you are there."

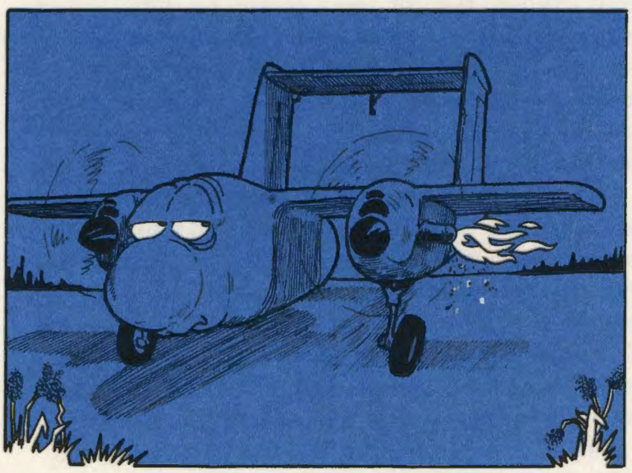
Early out

After landing, an OV-10 pilot was having a hard time moving the binding right engine's flight condition lever to the Normal flight mode. So he elected to use the Takeoff and Land mode

MISHAPS WITH MORALS, FOR THE TAC AIRCREWMAN

for the short taxi back to parking. Because of icing conditions on final approach, he had turned on the continuous ignition and neglected to turn it off after landing.

When the pilot pulled into the chocks, he shut down the left engine first and then began struggling again to get the right engine into the normal flight mode. The crew chief interrupted the pilot's struggle with an announcement that the left tail pipe was on FIRE.



The pilot immediately shut down the remaining engine and quickly ground egressed as flames were spreading to the ground beneath the aircraft. But in the haste of exiting the burning aircraft, he didn't remember to turn off the battery or the continuous ignition. Some very alert teamwork from the crew chief and the maintenance supervisor, using a fire extinguisher and turning off the battery and continuous ignition, prevented more serious fire damage.

We learned a lot from this incident: OV-10 pilots and maintainers found out that the engine's fuel enrichment solenoid valve continues to provide fuel until the temperature falls below 450 degrees C when the engine is rotating and the continuous ignition is on. And now Bronco pilots have an additional step in the after landing check to remind them to turn off the continuous ignition.

But the incident serves to remind *all* of us about premature departures (early outs) from the cockpit during ground emergencies. In a moment of panic, some of us have been known to climb out of the cockpit with an engine still running. Others have forgotten to turn off certain key switches that resulted in feeding a fire. Yet, we're the same ones who can write the applicable boldface procedure verbatim 99 times out of a hundred . . .

I was lucky. During a particularly demanding EP in an F-4 simulator, I ground egressed without shutting down either engine. When the instructor pointed out the obvious omission, I couldn't believe it. I was mortified and embarrassed — but I never did another ground egress in the sim or aircraft that I didn't think about shutting the throttles off. Thereafter, whenever I had the opportunity to instruct a sim or practice some one-on-one situational emergency procedure training, I often tried to create the environment where another aircrew could learn the same lesson.

If we can do a better job of making our mistakes and learning our lessons in the comfort of the debriefing room, we'll be better prepared when we strap on the aircraft.

TAC tips

Bag drag

An F-4 crew marched out to their Phantom for an air combat training (ACBT) mission carrying only the essential paraphernalia. We're talking checklist in one G-suit pocket, lady's (aircrew) aid in the other and helmet bags. Because of the probability of stray objects flying around the cockpits during maneuvering (and lodging in places where they might cause problems), they left behind their maps of the CONUS, speed planks, computers, crackers, toothbrushes and other nice-to-have trinkets that some of us usually tote.

The mission was unremarkable, but not the taxi back. After landing, the back-seater leaned forward and made sure the top of the front-seater's ejection seat was clear so the pilot could open his canopy. Then, at around 20 knots groundspeed, the pilot popped his lid. Next, the WSO saw a green blur pass by the right side of the aircraft. Hmmm. Some time later the pilot noticed that his helmet bag wasn't where he had stashed it . . .

After the engines were shut down, the crew's fears were realized. The engine had ingested the bag and the checklist that the pilot had tucked away inside.

TACR 501-1, the life support reg, requires the aircrew to carry their helmets to and from the aircraft in the helmet bag. What the crew member does with the bag once he's at the aircraft isn't covered. As a result, some jocks carry the bag in the cockpit; others leave it with the crew chief (if you carry a spare toothbrush and 25-cent razor in the bag, this technique is poor insurance against having to divert).

The folks who drag the bag usually have their own favorite hiding places. Some are better than others. One fellow jams his in the map case. Another just tucks it away on the side of the seat, careful not to interfere with any of the hardware. This pilot wedged his between the map case and the flood light bracket that is aft and above the right console.

A number of us remember reading about a crew member who bailed out while he was sitting on his helmet bag; as the ejection seat was going up the rails, he found himself sliding forward under the lap belt. Not a good place.

Taking the minimum number of items with us on an ACBT mission is a good idea. Perhaps one more thing we can leave behind on the ground is the helmet bag.

Whether or not we choose to drag the bag, a thorough check of the cockpit for loose items *before* opening the canopy may save us some grief.

Phyz biz

While cruising at FL370, an F-16 pilot noticed the Master Caution and Cabin Pressure lights come on and felt the pressure in the cockpit changing rapidly. Later, he would learn that the pressure regulator that keeps the canopy seal inflated was acting up. The cabin altimeter was easing through 29,000 feet when the pilot requested and began an emergency descent to lower altitude. About a minute later while covering the checklist steps, he switched to 100 percent oxygen. But for some reason he didn't select emergency pressure as well. Normally at that altitude the oxygen regulator delivers oxygen under pressure. But this regulator was defective, and at no time during the incident did the pilot feel he was pressure breathing.

The pilot was exposed to cabin altitudes greater than 25,000 feet for three to four minutes. He had been on oxygen for about two minutes when he leveled at 13,000 feet and switched back to Normal (ambient air). Then he felt confused and noticed some pain in one knee; so he reselected 100 percent oxygen. Although he still felt a little woozy, he landed uneventfully.

Physiological training teaches us to *gangload* the oxygen regulator (select on, 100 percent oxygen, and emergency pressure) when we're faced with situations like this one. That's a good idea in any aircraft, because we can't predict when a regulator (either one that manages oxygen or canopy seal pressure) will malfunction. Likewise, we can't predict when latent physiological symptoms caused by serious cabin pressure problems will incapacitate a pilot. Remaining on 100 percent oxygen until landing is good insurance.

The right way to solve a problem

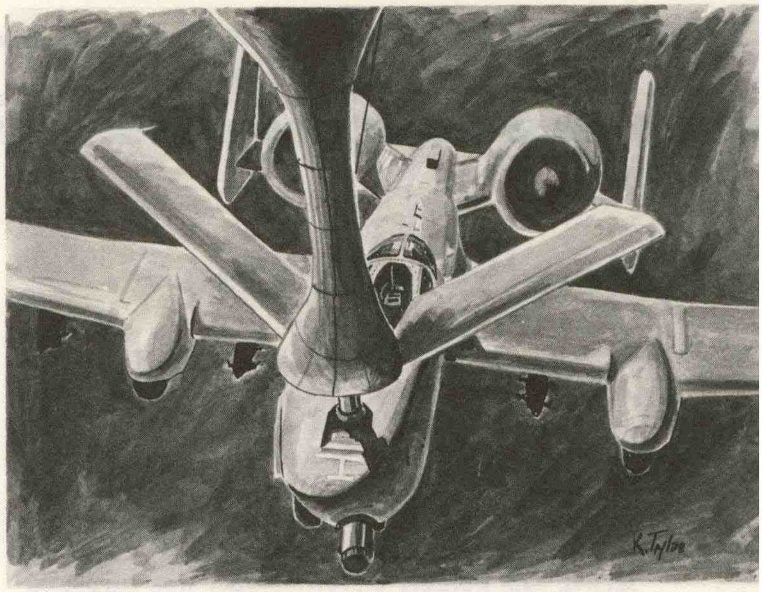
On 13 September 1984, 1st Lieutenant Mark Clemons (75 TFS, 23 TFW, England AFB, Louisiana) was leading a three-ship of A-10s on a night air refueling mission that was part of his flight lead upgrade. What started out as a routine mission turned into an hour on the boom of a KC-135 tanker for the young pilot.

After a normal rendezvous and hookup, Lt Clemons off-loaded 1,000 pounds. Then, both he and the boom operator tried several times to disconnect the nozzle from the air refueling receptacle, including slowing to fully extend the boom. They exhausted everything their checklists said except a brute force disconnect, and nothing seemed to work.

The trapped A-10 pilot directed one wingman to return to base. The other wingman, Lt Clemons' IP, stayed on the wing to provide radio relay to the supervisor of flying (SOF) permitting Lt Clemons to concentrate on flying.

The SOF went through the TO procedures with the pilot and informed the Wing DO. Soon the Wing Commander, DO and MA gathered in the wing command post and began working the problem. Calls were made to the tanker unit's SOF and stan/eval boom operator. Center cleared the tanker to move the orbit overhead the recovery base.

Because of the lateness of the hour, the SOF was unable to reach the contractor for technical advice. However, the squadron and AMU called the wing's fuel shop. Senior Airman Michael R. Guadagno, an A-10 fuel system mechanic, responded to the call and reported to the wing command post. He recalled similar situations while checking out the refueling system on the ground during phase inspections. In those instances, he remembered rapidly cycling the IFR (in-flight refueling) door handle while holding in the disconnect button usually released the IFR tester from the receptacle. Amn Guadagno suggested the pilot try this technique to disconnect from the KC-135's boom. The SOF suggested Lt Clemons try it. It worked, and the two aircraft separated without resorting to a brute force disconnect.



The point to be made here is the *process* that the mishap pilot and SOF used to handle the airborne emergency. The rather sophisticated system we have for dealing with emergencies works well when properly executed.

Lt Clemons maintained aircraft control (which in this case meant 1.1 hours on the boom). The IP helped him assess the situation and relayed important radio calls. The SOF confirmed TO procedures had been completed and contacted wing leaders. The command post coordinated telephone calls around the country. Maintenance leaders knew their people. Amn Guadagno knew his job and took the initiative to make the suggestion.

It wasn't a matter of luck that brought home both aircraft without a scratch—it was preparation and execution. ➤

Ed note: About a month later, another A-10 and tanker were similarly stuck together. Because of what he had read, this A-10 pilot also tried Amn Guadagno's disconnect technique—to no avail. A tension disconnect finally separated these two aircraft without damaging either. A-10/boom disconnects are being fully investigated by AFLC.

WEAPONS WORDS

Handle with care

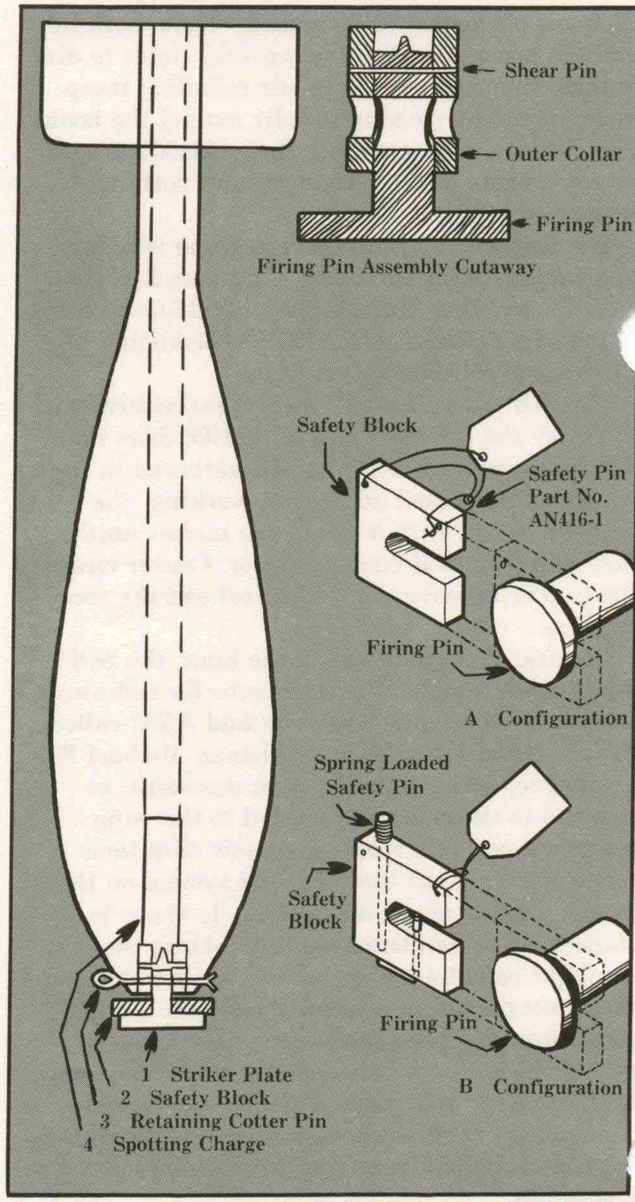
A weapons load crew was loading BDU-33 practice bombs into a SUU-20 bomb dispenser mounted under an F-16. The number 2 crewmember locked the bomb into the rack hooks, gave it the shake check, and held it while the number 3 man tried to pin the bomb rack. But the rack released the bomb before the safety pin could be inserted. The number 2 crewmember was surprised to be suddenly holding 25 pounds and lost his grip on the bomb's nose. The practice bomb crashed to the ramp, and its spotting charge exploded. Kapow!

Being heavier, the nose of a BDU-33 falls first — when it's dropped from an aircraft, and when it's accidentally dropped by a weapons handler. The spotting charge discharges from the rear of the bomb. That means the worker who accidentally drops a practice bomb is liable to take the brunt of the burst.

The blast from this BDU-33 dented the bomb dispenser, burned the number 3 crewmember's hand, and singed the load crew chief's hair.

According to the load crew, the safety block was in place when the bomb fell. But the bomb's striker plate sheared on impact. Then when the bomb bounced up, the safety block fell out. When the bomb's nose struck the ramp a second time, the firing pin met the primer.

It looks like we learned that these practice bombs are potentially dangerous with or without their safety blocks. And that means we need to handle munitions with care — to be ready for the unexpected. It also means developing an outlook that says "If it can happen, it will; so I'll be ready."



Dad was wrong

My Daddy used to say, "You can't hit the broad side of a barn with a .45." He wasn't speaking of my marksmanship, he was talking about the alleged inherent inaccuracy of the .45 caliber pistols that some of our servicemen carried back during the *big one.* Recently an OSI (office of special investigation) agent demonstrated that .45 caliber ammunition should still command our respect.

The agent removed a pistol and a plastic bag full of bullets from storage and carried them over to the clearing barrel. There, he sat the bag on one of the barrel's support beams and began a functional check of the pistol. Before long, the bag of bullets slipped off the beam and fell about three feet to the floor. Crack! One of the rounds fired. Fortunately the bullet lodged in the broad side of the interior wall instead of the OSI agent.

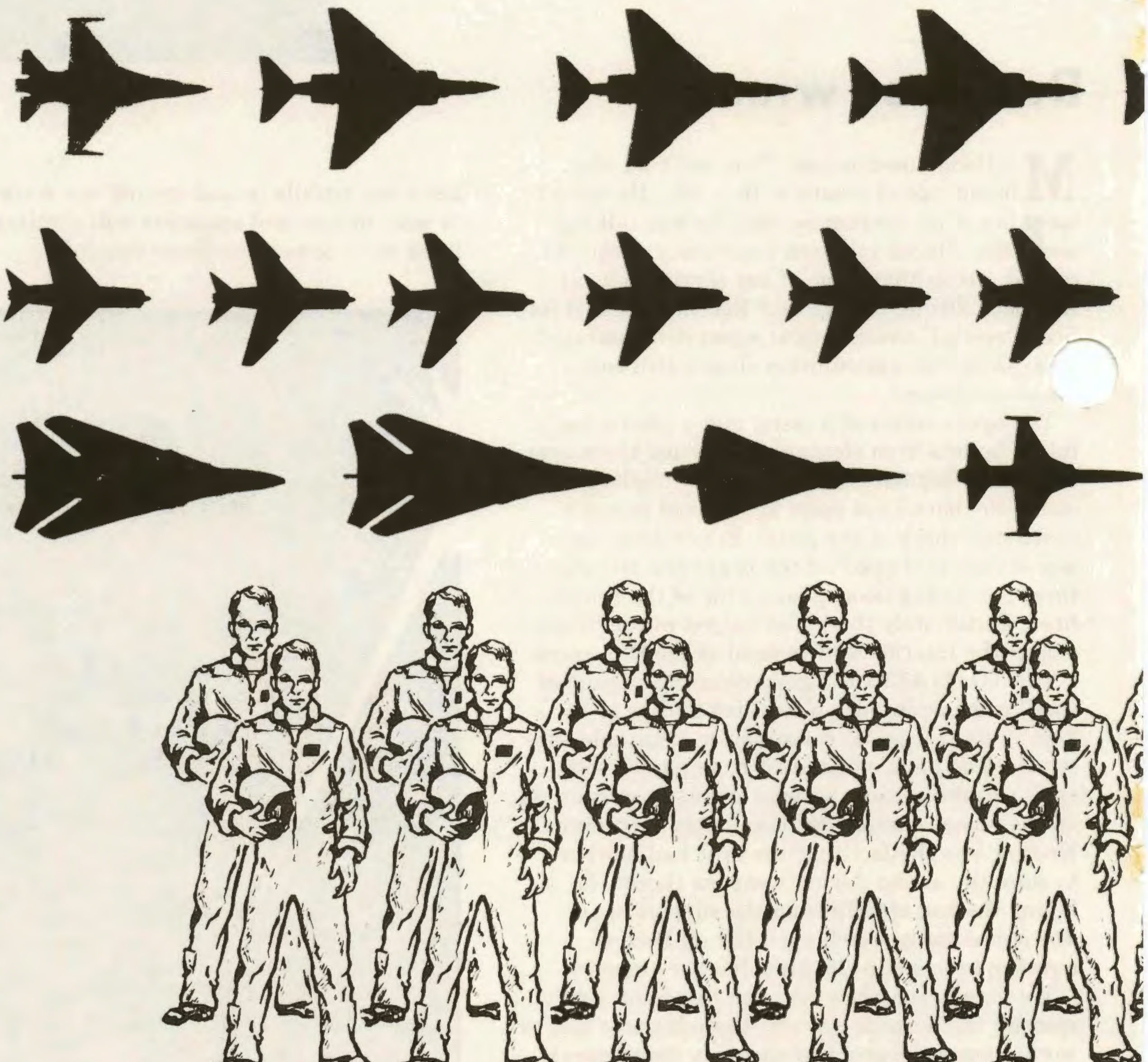
The TO (11A13-10-7) governing the storage of small arms ammunition requires bullets to be kept in their original container or a suitable substitute. The plastic bag must have passed someone's suitability test, because it wasn't written up on the recent annual weapons safety inspection. Neither was the fact that the unit had nowhere to store the ammo during weapons checks. So laying the bag of bullets on the support beam and occasionally watching it fall off became common practice in the unit. It's not anymore.

We may never know why the inspector didn't identify the hazards. Or why the folks who had to work around the problem each day didn't speak up to management. So it took a close call to identify the hazard.

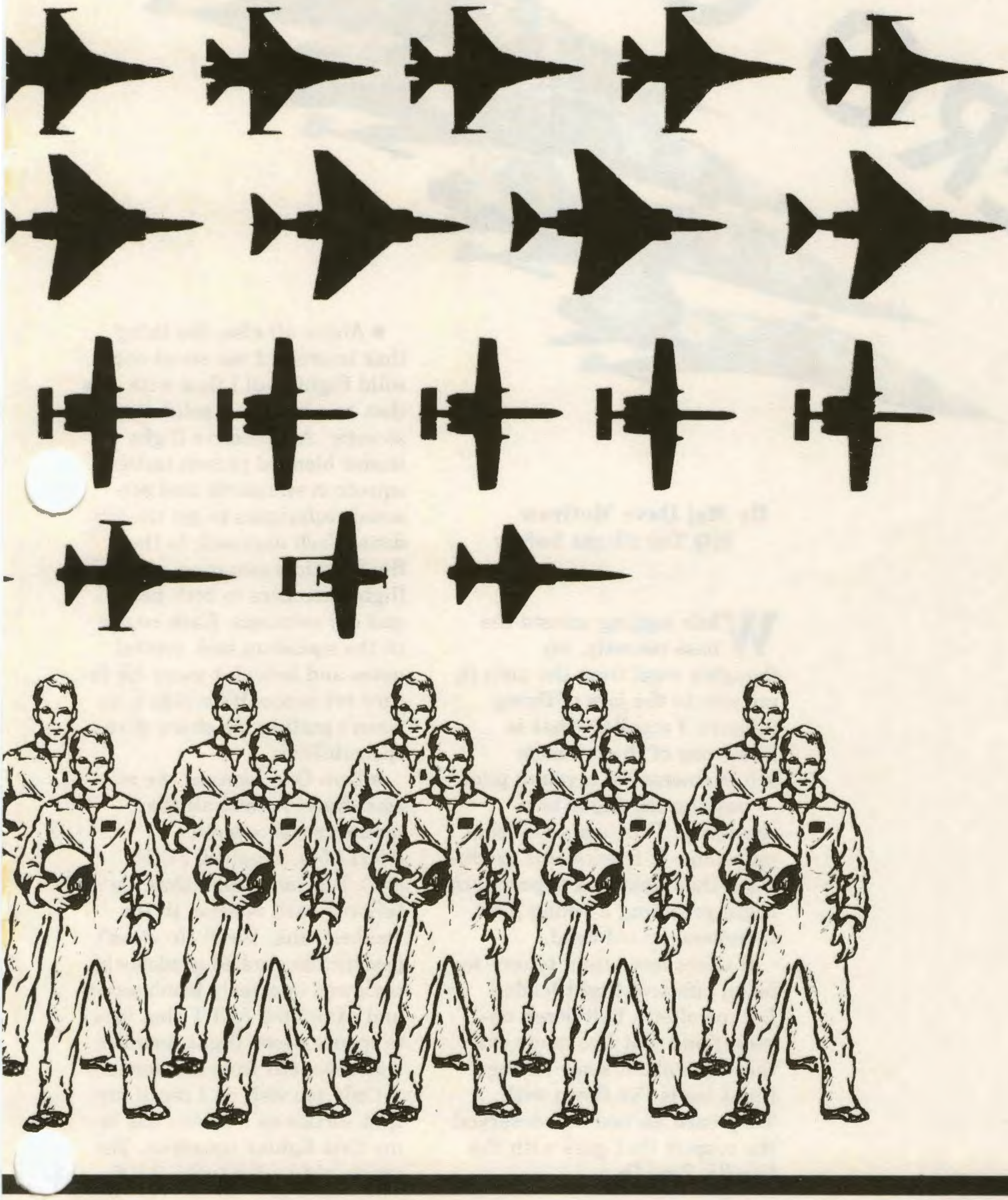
The choice is ours. We can each look for and point out pitfalls in and around our work areas, or near misses and accidents will continue to do it for us — sometimes more painfully.

OUR TAC AND TAC-GAINED

JANUARY-DECEMBER 1984



UNITS' LOSSES IN THE AIR



ZERO ONE

By Maj Dave McGraw
HQ Tac Flight Safety

While jogging around the base recently, my thoughts went from the pain in my side to the joys of flying fighters. I recalled what is likely one of the proudest achievements for a young pilot — passing the flight lead checkride. This is a significant milestone. It is with this graduation that squadron supervisors begin grooming a young pilot to become an old head.

It takes more than tenure to be an effective flight leader. Let me offer a half-dozen observations that I've made over the years about some strong flight leads I've flown with. They each earned and deserved the respect that goes with the handle, Zero One.

• Above all else, the thing that impressed me about each solid flight lead I flew with was that he was also a *solid instructor.* An effective flight leader blended proven tactics, squadron standards and personal techniques to get the job done. Each approach to the fluid tactical situation exposed flight members to both new and old solutions. Each rookie in the squadron took mental notes and locked it away for future reference. If he didn't, he wasn't pulling his share of responsibilities.

• Zero One *planned the mission.* Sure, he had all the motherhoods covered (NOTAMs, weather, FCIFs, etc.). But more than that, he tailored each mission to the weakest link. How? He wasn't psychic; he studied gradebooks, reviewed quarterly bomb scores and examined ACBT shot logs to insure every flight member would benefit from the sortie.

Only too well do I recall my first sorties as a brown bar in my first fighter squadron. The crusty old leader (with 2,500

…ars) ended a super discussion on dropping bombs at the range with "Standard bet . . . buck a bomb and nickel a hole." Well, I eventually got my heart started again, paid my debts, then hit the books and picked the old heads' brains. It wasn't easy to see at the time, but I was being raised under the wings of old pros. You see, they were concerned that the flight would be meaningful, not just a square filler. Zero one designed the mission around real world circumstances and insured that each member understood what was expected, what the flight objectives were and how they would be achieved.

• Prior to wheels in the well, the strong flight lead had already considered and *developed alternatives* for the flight. He …d planned options for flight …mbers dropping out, late takeoffs, weather anomalies, lack of tanker support, etc. In each case while I was thinking "What are we gonna do?" lead would be transmitting the new or amended game plan. He always seemed to be prepared. It could be classified as having been there before, but it always surfaced as a trait that strong flight leads exhibited.

• Zero One *knew the rules.* He didn't just *read* the rules in the briefing, he *knew* them. No matter what the mission, the flight was conducted within the constraints, be it minimum airspeeds or altitudes, weapons parameters, foul criteria or weather minimums.

Rules are inherently distasteful to fighter pilots since they often restrain the free spirit within our community. …owever, they exist to insure … have men and machinery to conduct wartime operations. The solid flight leads realized this, and it permeated their flights in the form of discipline. In a well disciplined flight, mission success was a natural by-product. When a rule was broken, it was only done to safely conduct the flight, and the flight lead accepted the responsibility for deviating.

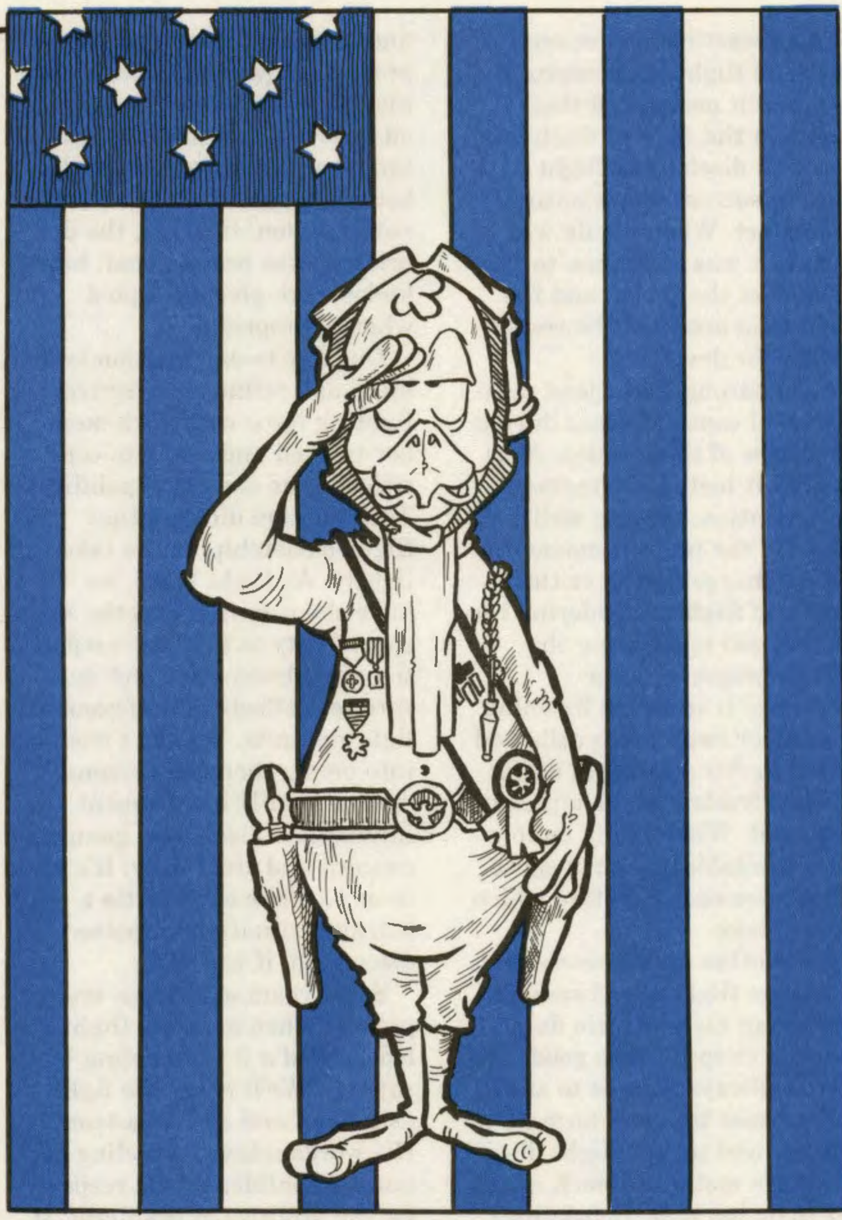
• The strong flight lead demonstrated *common sense* during all phases of the mission. Most notably it included wingman consideration, looking well ahead of the present moment, taking charge during critical phases of flight, considering the options and monitoring the flight's progress or performance. It involved listening to number two's radio calls and watching his aircraft to detect fatigue, frustration or lapses in judgment. When many options were available, common sense always seemed to dictate which road to take.

• Zero One *continuously evaluated* the flight's *performance* (including his own). He demanded crisp RT (the good sorties always seemed to start here), exact taxi and formation spacing and proper flight discipline. He motivated each member to do his best. Debriefings included a critique of all errors noted, and comments from flight members were expected and integral to the learning process. If questions concerning tactics arose, he would either address them directly or entertain comments from others to better prepare everyone for the next mission. In short, the debriefing was professional; hits/kudos were given/accepted when appropriate.

Our day-to-day mission is to build and refine an effective fighting force with each member trained and ready to contribute true combat capability. That mission dictates that flight leadership not be taken lightly. As flight leads, we have the potential and the responsibility to help our respective squadrons grow and mature into effective, professional fighting units. We can't wish it into being; there's a personal cost: it entails involvement, interaction, discipline, genuine concern and credibility. It's up to us to make each sortie a learning situation, a tactics discussion, if you will.

Some years ago, I was impressed when a strong flight lead ended a 2-v-2 briefing by saying, "We'll enter the fight as a team and exit as a team." His words relayed a feeling of mutual confidence and respect for the abilities of the flight. It motivated me to do my part to win. After all, isn't that what we're training for? ➤

FLEAGLE SALUTES



Technical Sergeant Richard W. Morrison, 33d Equipment Maintenance Squadron, 33d Tactical Fighter Wing, Eglin AFB, Florida, was conducting a building inspection following the completion of a construction project. He noticed that electrical lines were going into the same outlet as the telephone lines. He immediately declared the area off limits, posted hazard warning signs, and contacted the appropriate agencies. His ability to detect an out-of-the-ordinary situation saved someone from getting a 200-volt shock.

Captain David F. Mitchell and First Lieutenant James R. Lee, 68th Tactical Fighter Squadron, 347th Tactical Fighter Wing, Moody AFB, Georgia. While leading a bombing mission on a nearby range, the aircrew had to shut down one of their F-4's engines because of a fire warning light. En route to the divert base, the aircraft also lost utility hydraulic pressure. Despite severe control difficulties, Captain Mitchell successfully landed from a 230-knot no-flap approach. Captain Mitchell and Lieutenant Lee's skillful coordination in handling one of the most serious F-4 emergencies prevented the possible loss of the aircraft.

Major Stephen G. Long, 421st Tactical Fighter Squadron, 388th Tactical Fighter Wing, Hill AFB, Utah. Major Long was flying his F-16 with gear and flaps down at 160 knots about 5,000 feet above ground during a functional check flight. When he advanced the throttle to regain airspeed and climb, the engine experienced a severe compressor stall. Major Long pulled the throttle off, turned the jet fuel starter on, and selected back-up fuel control (BUC) for an airstart. By patiently waiting for the engine to wind up before advancing the throttle, he avoided a hot start. His excellent systems knowledge and application saved a valuable fighter aircraft.

Staff Sergeant Clifford R. Lee, 37th Component Repair Squadron, 37th Tactical Fighter Wing, George AFB, California, developed such an excellent motorcycle safety program that the squadron had no motorcycle accidents for the year. Sergeant Lee personally contacted each rider to determine experience and to check that each rider had a valid state driver's license and MM-12 card (AF Form 483). He scheduled training for those who needed it including motorcross training for motorcross riders. Five months into his program, Sergeant Lee had registered and arranged training for over 80 motorcycle riders. Sergeant Lee believes that in an accident the motorcycle rider is the loser, right or wrong; continual training and practice are the keys to survival.

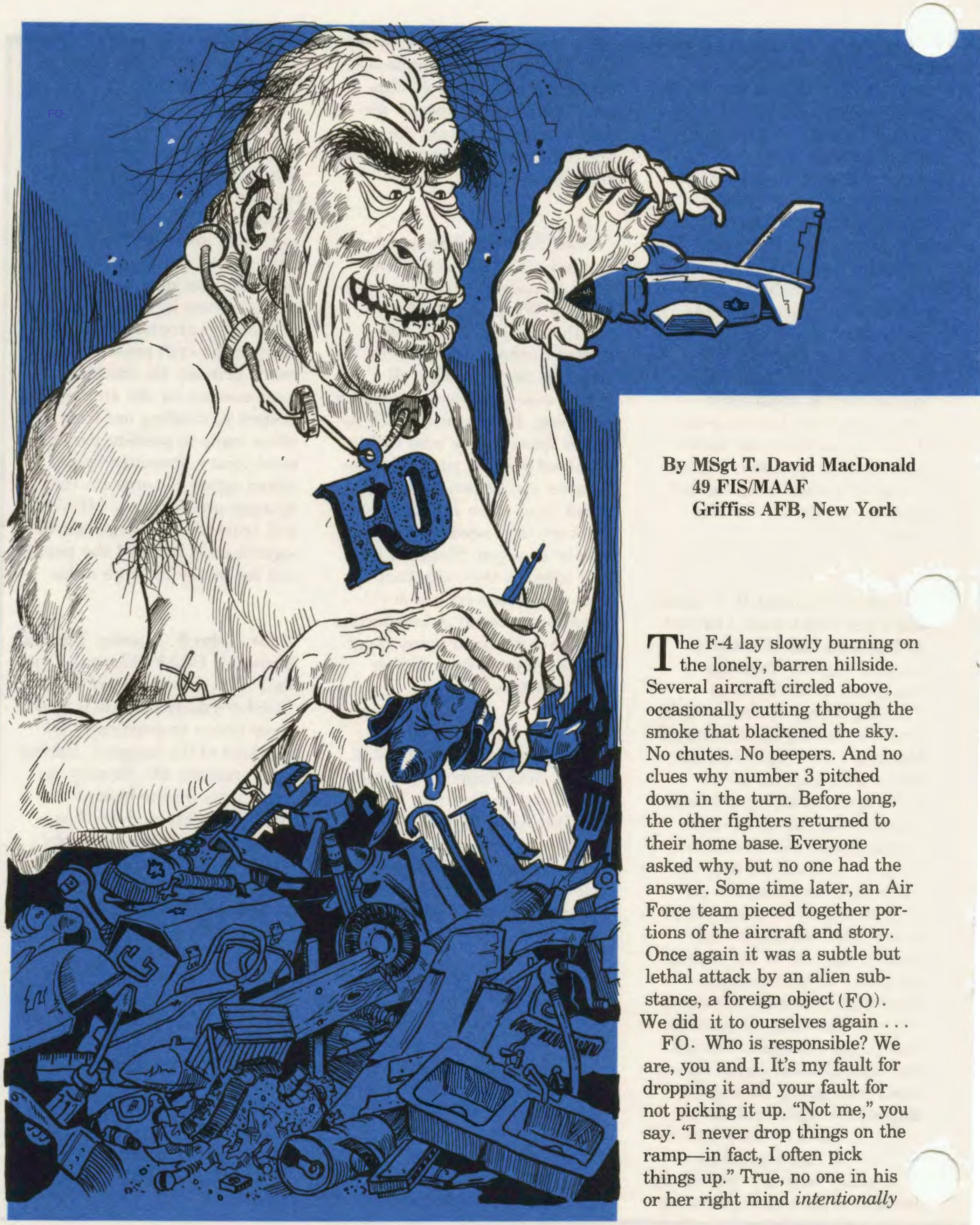
Captain Reginald D. Fennell and First Lieutenant Abdullah Al-Marzoog (RSAF), 425th Tactical Fighter Training Squadron, 405th Tactical Training Wing, Williams AFB, Arizona. During Lieutenant Al-Marzoog's first night solo surface attack mission in the F-5E, his aircraft experienced an electrical fire in the nose compartment. Self-protection features isolated the fire, but not before rendering the aircraft nearly without electrical power. The lieutenant cautiously rejoined on his instructor pilot's aircraft using a flashlight to monitor airspeed. Once on the wing, he used the light to give Captain Fennell the international signal for serious emergency. Seeing the unplanned rejoin and the absence of lights on his student's F-5, the IP coordinated an emergency recovery. He led the lieutenant on a straight-in, no-flap, no-landing light approach. The flight leadership of Captain Fennell and superior airmanship of Lieutenant Al-Marzoog prevented the loss of a valuable aircraft.

Staff Sergeant Thomas A. Gorrell, 363d Aircraft Generation Squadron, 363d Tactical Fighter Wing, Shaw AFB, South Carolina. As an integrated combat turn (ICT) instructor, Sergeant Gorrell trains and qualifies everyone in the wing. Prior to each ICT, he briefs those people who will be involved making sure safe procedures are known and understood. And when something in the tech data needs to be clarified or changed, Sergeant Gorrell submits the suggestion. The procedures he has developed have proved to be effective and have received many favorable comments from higher headquarters.

Airman First Class John R. Duval, 56th Supply Squadron, 56th Tactical Training Wing, MacDill AFB, Florida. Airman Duval was sent to defuel an F-16 aircraft located in the fuel cell repair area. The maintenance crew hadn't arrived yet, so Airman Duval shut down the R-5 refueler. When the crew got there, he tried to start the refueler, but it wouldn't turn over. Then he noticed smoke coming from under the cab. He jumped out and tilted the cab forward; flames were coming from the battery electical cables. He grabbed a nearby fire extinguisher and put out the fire. To prevent any further hazards, Airman Duval also disconnected the battery cable from the post.

Mr. Michael J. Fogtman, 405th Equipment Maintenance Squadron, 405th Tactical Training Wing, Luke AFB, Arizona, has made several contributions that make his shop safer. He designed and installed a new lighting system in the shop around equipment such as the drill press and bench grinder. He installed foam corners on the air conditioners protruding out from the office walls to prevent possible head injury. Recently he initiated action to correct a fuel leakage problem on a MHU-83 B/E trucklift. Mr. Fogtman has significantly reduced the potential for injury in these areas.

Mr. John F. Stanley, Medical Materiel, USAF Hospital, Tyndall AFB, Florida. Part of Mr. Stanley's daily routine is to deliver linens to practically all portions of the hospital. During these rounds, Mr. Stanley is constantly on the lookout for possible safety and fire hazards. Many of these hazards are corrected on the spot by Mr. Stanley while others are reported to individual section chiefs or to safety for correction. Some of the hazards he's identified include cords that could be tripped over, crumpled walk-off mats, fire extinguishers due inspection, poor lighting, improperly operating elevators, and fast-closing or slow-opening automatic doors. Mr. Stanley is an excellent example of safety awareness, attention to detail, and desire to prevent accidents.



By MSgt T. David MacDonald
49 FIS/MAAF
Griffiss AFB, New York

The F-4 lay slowly burning on the lonely, barren hillside. Several aircraft circled above, occasionally cutting through the smoke that blackened the sky. No chutes. No beepers. And no clues why number 3 pitched down in the turn. Before long, the other fighters returned to their home base. Everyone asked why, but no one had the answer. Some time later, an Air Force team pieced together portions of the aircraft and story. Once again it was a subtle but lethal attack by an alien substance, a foreign object (FO). We did it to ourselves again . . .

FO. Who is responsible? We are, you and I. It's my fault for dropping it and your fault for not picking it up. "Not me," you say. "I never drop things on the ramp—in fact, I often pick things up." True, no one in his or her right mind *intentionally*

FORGOTTEN/OVERLOOKED

leaves foreign objects around to become famous objects. But unintentionally . . .

An aircraft was returning from a long cross-country mission. The back-seater reached down into his map case for a letdown book but couldn't find it. The case was full of empty sandwich wrappers and other trash from lunch. Some of the wrappers scattered on the cockpit floor. He didn't think much of it. Someone else would clean it up later. Besides, it was a matter of lowering the seat and maybe even unstrapping. Too much trouble. Apparently, he forgot about the cockpit pressure regulator behind his seat; if the trash lodged there, he'd know it. And the missing book—if the pilot unloaded the aircraft, it could have found its way on top of the ejection seat and interfered with the canopy interlock cable, interdictor pin, or banana links.

After the long process of troubleshooting an autopilot discrepancy, a bad wire was found inside the forward control stick. A new stick was installed, checked, and inspected, and the aircraft was released for flight. The aircraft flew well for several days. Then an aircrew flying an air-to-air mission discovered the control stick's movement was restricted. They declared an emergency, and with both crew members on the controls, they brought the aircraft back home. Several more hours troubleshooting turned up a bolt lying in the stick well, previously overlooked during the FO inspection. Maybe we aren't looking hard enough. Maybe we aren't looking like someone's life depends on it.

FO-lookout is not just the aircrew or crew chief's job. An aircraft was towed back to the flight line from the phase dock where extensive maintenance had been performed. Two maintenance specialists were working in the cockpit installing and ops checking some equipment when one of them dropped a small screw. Despite a thorough search, it wasn't found. The specialists didn't keep it a secret; they informed the flight-line expeditor. Even though it caused extra work, the crew searched until the screw was found. In the process, they found a washer left over from another job.

Foreign objects can hide in countless places in fighter aircraft before they become famous objects. And there are many stories of how each one ended up in its temporary lodging. But we all know that when they decide to show themselves, it means problems. Despite various prevention efforts and programs, foreign object damage routinely destroys Air Force equipment and sometimes hurts and kills Air Force members.

How do you think the aircrew feels having to handle a blown tire during takeoff roll because someone forgot/overlooked a harmless bolt somewhere along the taxi route? How would you like to spend three days changing an engine only to see it ingest a screw while running on the trim pad?

It's my fault for dropping it and your fault for not picking it up. Forget everyone else. Let's you and I do something about it. ➝

Sergeant MacDonald has worked on and around aircraft since he entered the Air Force in 1969. He is currently an interceptor flight superintendent with the 49 FIS, Griffiss AFB, New York.

DOWN TO EARTH

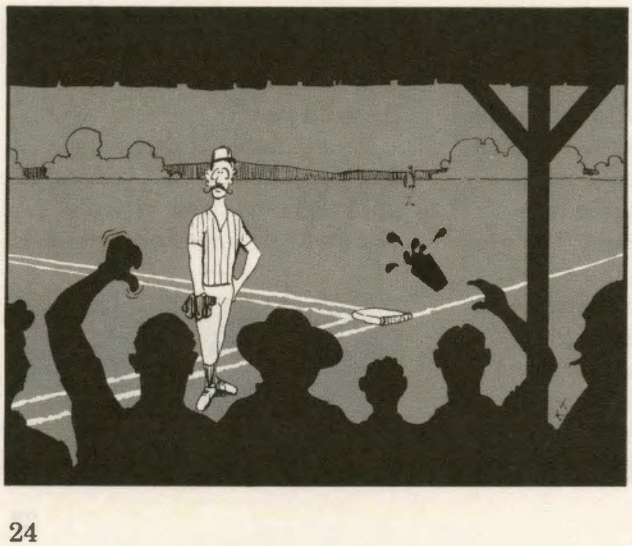
Bravado battles common sense

By Lt Col Patrick J. Stajdel
Safety Office
McGuire AFB, New Jersey

Baseball was born in Cooperstown, NY, in 1847. It was a barehanded game then, played with a wooden bat and a rock-hard ball similar to the one we know today.

The broken hands and fingers received during games were a testimony that "here was a baseball player." There was no protection for the hands or any other part of the body.

It wasn't until 1875 that Charlie Waite of the New York Nine, having just suffered his third broken wrist, came on the playing field wearing a thin leather glove. The audience was outraged. "Get that sissy out," they cried. Charlie, a great first baseman, left the field, never to return to baseball.



Five years passed before another first baseman endured the ridicule of the crowd by wearing a glove. Slowly, however, the baseball glove was accepted as part of a first baseman's equipment. It took another three years before Arthur Irwin, also suffering from a broken hand, popularized the glove for infielders.

Pitchers refused to have anything to do with such cowardly safety practices until 1900.

Disfigured catchers were common until a player named "Cuppy" devised a catcher's mask in 1883. Fractured skulls caused by "bean balls" were common until the little leagues started using hard hats. Today, some hockey players still resist wearing them.

During World War I, it was not considered brave to wear steel helmets when going off to fight. In fact, one British general issued an order to his division stating, "Any soldier in my command found wearing a tin hat will be court-martialed for cowardice in the face of the enemy."

It takes time for protective equipment to catch on, even when it's the smart thing to do. How many lives have been saved due to bullets deflecting off helmets?

In 1917, an Army colonel told his aide, "I will not appear as a coward to my men by wearing a steel helmet." When General "Black Jack" Pershing presented the colonel his 12th Silver Star, he insisted the man wear a steel helmet. At the time, the helmet was becoming part of the uniform and all the other colonels were already wearing them.

That colonel's name was Douglas MacArthur.

Today, you won't see many construction workers without hard hats. Wearing them is not only common sense, it's their badge of distinction.

How about our old friend and enemy, the family car? Remember the battle we had, and still have, getting people to wear safety belts? Some day a future generation will comment on how ridiculous it was not to wear them when they were available.

It just takes some people a little longer to catch on.

Courtesy AF News Service

The SHAPE of things to come

By Col Rich Pilmer
HQ ARRS/SG
Scott AFB, Illinois

Can you answer these questions correctly (according to current life science evidence)?

1. Which of the following is the best way to meet the standards of an enhanced exercise fitness program?

S Exercise daily for at least thirty minutes.
H Trim your body by fasting if you don't have time for exercise.
A Work out daily and gradually improve your running times and sit-up repetitions to meet new standards for your age group.
P Overtrain so that you have markedly reduced blood pressure.
E Get your workouts at a bar.

2. Which of the following is a commissary nutrition program designed to improve cardiovascular wellness?

S CARE program.
H Two-for-one diet soft drink promotion.
A Healthy Heart.
P Two-for-one wine promotion.
E None of the above.

3. Which of the following provides the best nutritional means of keeping your genes uptight and flying right?

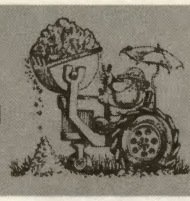
S Keep some whole grains and fiber in your daily diet.
H Eat only foods that come in neat square boxes and colorful round cans.
A Eat leafy vegetables and liver to provide building blocks for red and white cells to help prevent anemia and maintain general resistance.
P Eat anything but supplement your diet with large doses of nutritional tablets.
E Overeat to resolve life's frustrations; then seek medications to drastically reduce.

4. Americans have been hit over the head with reports on the hazards of smoking, yet about 31 percent still smoke. What's safe?

S Smoke rarely.
H Smoke a pack of cigarettes a day.
A Smoke nothing.
P Smoke to relax and unwind on a bed or couch.
E Smoke substances not presently linked to lung cancer.

5. After eliminating smoking, which of the following is second most important to promoting general health (according to a report in the *New England Journal of Medicine*)?

S Eat a balanced diet.
H Control weight by drinking more than four cups of black coffee per day.
A Avoid excess calories.



P Prepare your own organically grown vegetables and use no salt (NaCl) whatsoever in their preparation.

E Self medicate.

6. In 1984, the Air Force had approximately 145 private vehicle fatalities in which nearly 60 percent were alcohol-related. Which of the following is the most correct practice?

S Always drink moderately before driving.

H Drink three or more drinks daily to relax the coronary vessels.

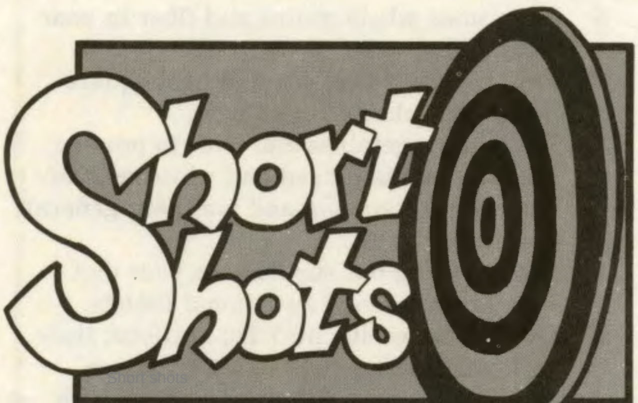
A Drink nothing alcoholic within twelve hours (ten hours in some commands; eight hours by FAA rule) before flight duty.

P Drink early in the day to control the shakes and don't admit that you need help.

E Carry alcohol in your car or aircraft but be very careful about when you use it.

That's it. If you selected only the A's, you'll be OK. How many of you marked all the A's but are not always practicing them? The simple things we rationalize, overlook, or dismiss as unproven can negatively affect our well-being. The simple plan is don't smoke, do exercise, and practice good nutrition.

Most of the quiz distractor S's are basically positive factors but not optimal. H's represent unsound practices that may lead to chronic health problems if not resolved. P's represent things that you see a minority of people doing that can lead to poor performance or accidents. And if you selected any E's, better shape up.



So How Was Your Last Ski Trip? On your last trip to the ski slopes, did you have nausea, headaches and trouble getting to sleep? If so, you probably had acute mountain sickness (AMS). Because you're at a higher altitude, the blood vessels in the brain expand to let in more oxygen, then become leaky and allow fluids to pass out into the area between the cells, causing swelling. You can combat AMS: drink plenty of fluids, but not alcohol; eat regularly and don't exercise heavily.

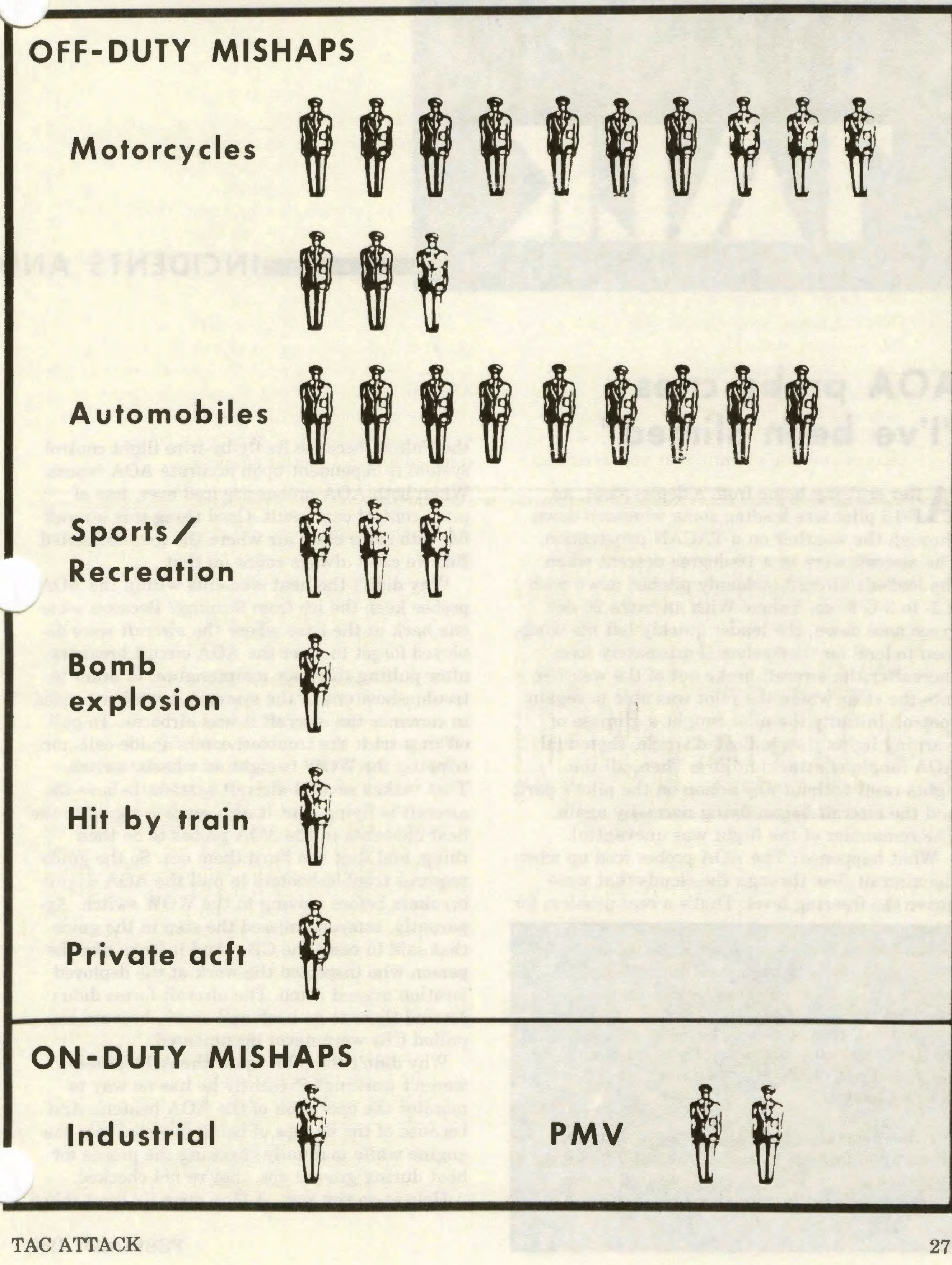
Try the "Match Test." Periodically test your natural-gas furnace to make sure the flue pipes and chimney are clear. A good method is the "match test" (the furnace should be operated at least five minutes before the test): hold a lighted match at the edge of the draft hood. If the flame is drawn upward, everything is OK. If the flame is blown away from the opening or if the match goes out, it's time to have the chimney and vent system checked by a professional.

Un-Can Canned Juices. The next time you open a can of juice, put the juice in a nonmetallic container before you refrigerate it. The lead solder used to seal the can contaminates the juice (after it's been opened), and can cause a dangerously high lead level within five days.

Hypothermia. Temperatures of 60 to 65 degrees F can trigger hypothermia in some people, especially the elderly. Look for symptoms of uncontrollable shivering or a complete lack of shivering, slurred speech, shallow breathing, confusion, drowsiness, sluggishness and lack of coordination. If hypothermia is suspected, warm the person first, then call a doctor immediately.

Want to Become a Centenarian? Arthur N. Schwartz, PhD, a gerontology researcher at the University of Southern California, says the key to living to be 100 is *moderation.* Centenarians "didn't overeat or undereat. They worked conscientiously, but they were not workaholics. Throughout their adulthood, they were walkers rather than staunch five-mile-a-day joggers. In effect, they lived by the words of the old song 'Que sera, sera.'"

Our TAC Losses on the Ground JAN - DEC 84



CHOCK TALK

Chock talk

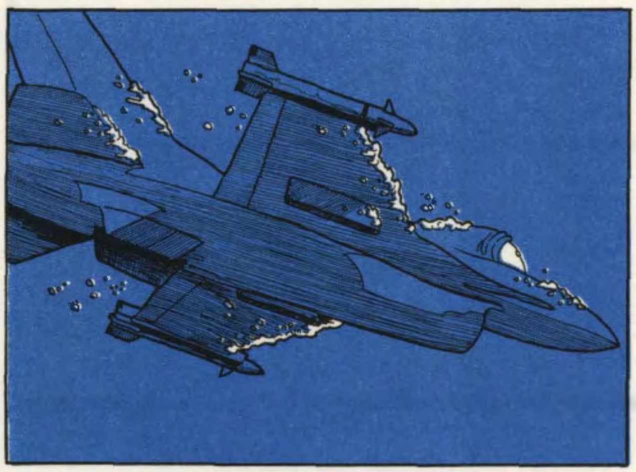
Incidents and

INCIDENTS AND

AOA probe cries "I've been slimed"

After cruising home from a deployment, an F-16 pilot was leading some wingmen down through the weather on a TACAN penetration. The aircraft were in a 10-degree descent when the leader's aircraft suddenly pitched down with a 2- to 3-G force. Yahoo! With an extra 20 degrees nose down, the leader quickly left his wingmen to fend for themselves. Fortunately soon thereafter, the aircraft broke out of the weather into the clear where the pilot was able to regain control. Initially the pilot caught a glimpse of warning lights that indicated single, then dual AOA (angle of attack) failure. Then, all the lights reset without any action on the pilot's part, and the aircraft began flying normally again. The remainder of the flight was uneventful.

What happened? The AOA probes iced up when the aircraft flew through the clouds that were above the freezing level. That's a real problem for the Falcon, because its fly-by-wire flight control system is dependent upon accurate AOA inputs. When both AOA probes are iced over, loss of pitch control can result. Good thing this aircraft fell into some clear air where the ice sublimated. But we can't always count on that . . .



Why didn't the heat elements within the AOA probes keep the ice from forming? Because someone back at the base where the aircraft were deployed forgot to reset the AOA circuit breakers after pulling them for maintenance. In order to troubleshoot one of the systems, a worker needed to convince the aircraft it was airborne. To pull off that trick the troubleshooters' guide calls for tripping the WOW (weight on wheels) switch. That makes several aircraft systems believe the aircraft is flying. But it also sends a signal to the heat elements in the AOA probes to do their thing, and that can burn them out. So the guide requires troubleshooters to pull the AOA circuit breakers before moving to the WOW switch. Apparently, someone missed the step in the guide that said to reset the CBs. And it looks like the person who inspected the work at the deployed location missed it too. The aircraft forms didn't remind them to go back and check, because the pulled CBs were never documented.

Why didn't the pilot know the AOA probes weren't working? Presently he has no way to monitor the operation of the AOA heaters. And because of the danger of being ingested into the engine while manually checking the probes for heat during ground ops, they're not checked.

Help is on the way. A long term fix (probably 2 to 5 years away) is the addition of a monitor in the cockpit to advise the pilot when an AOA heater isn't operating. A shorter range interim solution that is being evaluated is a handheld infrared sensor. It can be directed at the AOA probes from outside the 25-foot danger area around the Falcon's engine intake. Such a device may have other uses such as helping detect hot brakes.

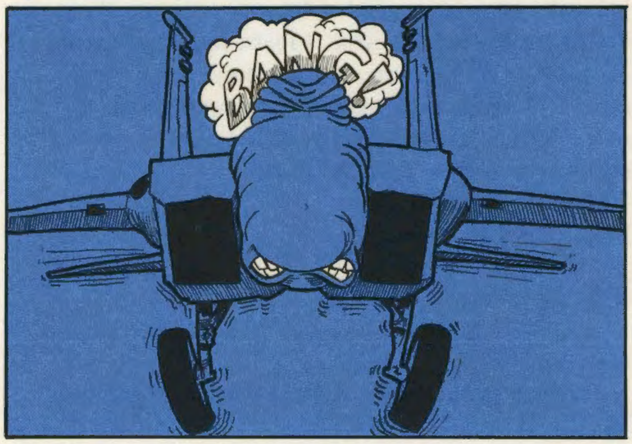
Meanwhile, a surefire way to prevent intentionally pulled circuit breakers from disabling the AOA heater circuits is to follow the tech data. This practice has many other beneficial applications too.

Whodunit

Maybe it was a tall, thin, short, fat, balding man with curly hair. It really doesn't matter who; what matters is that we all learn the lesson.

Some egress specialists removed the ACES II ejection seat that had a part due for a time change from the rear cockpit of an F-15B. They weren't too far into the job when they noticed the firing pin to the interdictor initiator was disconnected. Then they saw the rapid deflagration cord (RDC) had been fired.

Just three months before, the same inspection was performed on the seat, and no discrepancies were found. Apparently at some time during those three months, someone in the cockpit raised the restraint emergency release handle.



Then he heard a BANG as the primer cap on the RDC line fired. The startled, embarrassed handle puller then looked around to see no one was looking, tucked the handle back down and split the scene leaving no evidence of a damaged ejection seat. That's pretty scary.

If the culprit had raised the handle a little higher, there would have been plenty of evidence that someone had tampered with the seat — the lap belts and shoulder harness straps would have fallen free into the seat. As it was, however, only the individual's conscience was after him.

A lot of us have jobs that require us to climb around on airplanes, inside and outside the cockpit. And we're a curious bunch. But intentionally pulling knobs, switches and handles (particularly those protected by safety pins) that we don't know anything about isn't a mistake and isn't bad judgment — it's downright dangerous.

Failing the common sense test is bad. Failing the test of integrity when we screw up is even worse.

LETTERS

Dear Editor

I have read and enjoyed *TAC Attack* for many years. It's really informative and helpful.

Reading December's issue, I found myself wondering about the origin and some of the history of our friend, Fleagle. A short article would be of interest to me as it may to others. Many a good point has come across that otherwise may have gone unnoticed.

Keep up the good work.

MSgt Robert D. Walton
192 Camron, Virginia ANG
Byrd IAP, Virginia 23150

Dear Sgt Walton

Excellent suggestion for a future edition.

ED

Dear Editor

We just finished reading your "ECM (PTooey) Pod and Donuts" article (TAC Tips, page 10, Nov 1984). We were quite honestly surprised and dismayed by your *TAC ATTACK* on ECM pods.

Part of our present duties include briefing the AN/ALQ(V)-119 ECM pod to visiting VIPs. These VIPs have included Mr. Orr, Secretary of the Air Force; Gen Creech, former TAC Commander; USAFE, PACAF, and TAC wing commanders; and EWOs, ECPs, and ECCs. During the past four years we have conducted approximately 125 of these briefings, and we have never described the TAF's frontline-defense electronic warfare (EW) pod as an "800-pound electronic drag device." Unfortunately several of the frontline personnel who are directly associated with the pod share your negative attitude towards the 119 EW pod. Here at the Tactical Air Warfare Center we are very fortunate and proud to have the honor of working with an elite group of professional pilots, EWOs, and Wild Weasels who have used the 119 pod for more than an 800-pound electronic drag device. We work as a team to help improve the TAF's electronic combat capabilities, and our single most difficult task is to try and improve the negative attitude that has developed towards ECM pods; the same attitude that your article promotes in just a few short lines. We don't know where you developed your attitude or where you get your information about EW pods, but we would like to take this opportunity to invite you to come and visit the Tactical Air Warfare Center and allow us to present you with the real EW story.

We sincerely hope that you print this letter and lend your support to help us accomplish our vital mission of increasing the aircrew's and aircraft's survivability. If you have any questions concerning the 119 pod, please don't hesitate to call us.

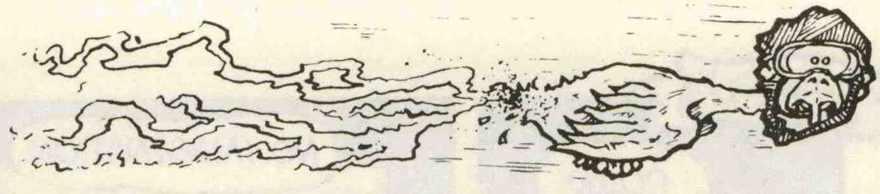
Electronic Warfare Systems Maintenance Personnel
UASAFTAWC/EWEST
Eglin AFB, Florida

Dear Personnel

Seems we struck a nerve. Sorry our humor offended you. It's certainly not our intention to make anyone's job harder. Rather, we're trying to highlight a (cable/pod collision) problem so some of the many bright people out there in TAC can help find the solution. We fully support the great work being done by all of our electronic combat folks who are actively turning that 800 pounds into combat effectiveness.

ED

TAC TALLY



	TAC DEC	TAC THRU DEC 1984	TAC THRU DEC 1983	ANG DEC	ANG THRU DEC 1984	ANG THRU DEC 1983	AFR DEC	AFR THRU DEC 1984	AFR THRU DEC 1983
CLASS A MISHAPS	1	23	26	1	8	10	0	1	1
AIRCREW FATALITIES	1	17	11	1	3	9	0	0	1
TOTAL EJECTIONS	0	16	25	0	7	9	0	2	0
SUCCESSFUL EJECTIONS	0	14	22	0	6	4	0	2	0

TAC'S TOP 5 thru DEC 84

TAC FTR/RECCE class A mishap-free months		
40	58 TTW	LUF
29	405 TTW	LUF
23	1 TFW	LFI
22	33 TFW	VPS
20	23 TFW	AEX

TAC AIR DEFENSE class A mishap-free months		
143	57 FIS	BIKF
96	5 FIS	MIB
93	48 FIS	LFI
52	318 FIS	TCM
43	87 FIS	SAW

TAC-GAINED FTR/RECCE class A mishap-free months		
152	188 TFG(ANG)	FSM
144	138 TFG(ANG)	TUL
143	917 TFG (AFR)	BAD
121	114 TFG(ANG)	FSD
110	183 TFG(ANG)	SPI

TAC-GAINED AIR DEFENSE class A mishap-free months		
126	177 FIG(ANG)	ACY
92	125 FIG(ANG)	JAX
75	119 FIG(ANG)	FAR
59	107 FIG(ANG)	IAG
50	147 FIG(ANG)	EFD

TAC/GAINED Other Units class A mishap-free months		
185	182 TASG(ANG)	PIA
169	110 TASG(ANG)	BTL
165	USAFTAWC	VPS
157	84 FITS	MER
99	552 AWACD	TIK

CLASS A MISHAP COMPARISON RATE

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

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	1984	3.4	4.3	3.3	2.5	2.9	3.8	3.3	3.2	3.1	3.3	3.3	3.2
TAC	1983	6.9	5.3	3.4	3.8	4.0	3.8	4.5	4.1	3.9	3.7	3.8	3.7
ANG	1984	0.0	2.3	1.5	2.2	2.6	2.1	1.8	2.1	2.3	2.5	2.7	2.8
ANG	1983	9.1	7.0	4.4	4.3	3.4	4.2	4.8	4.2	4.7	4.3	3.9	3.7
AFR	1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.7	2.5	2.3	2.1
AFR	1983	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.1	2.8	2.5	2.3	2.2

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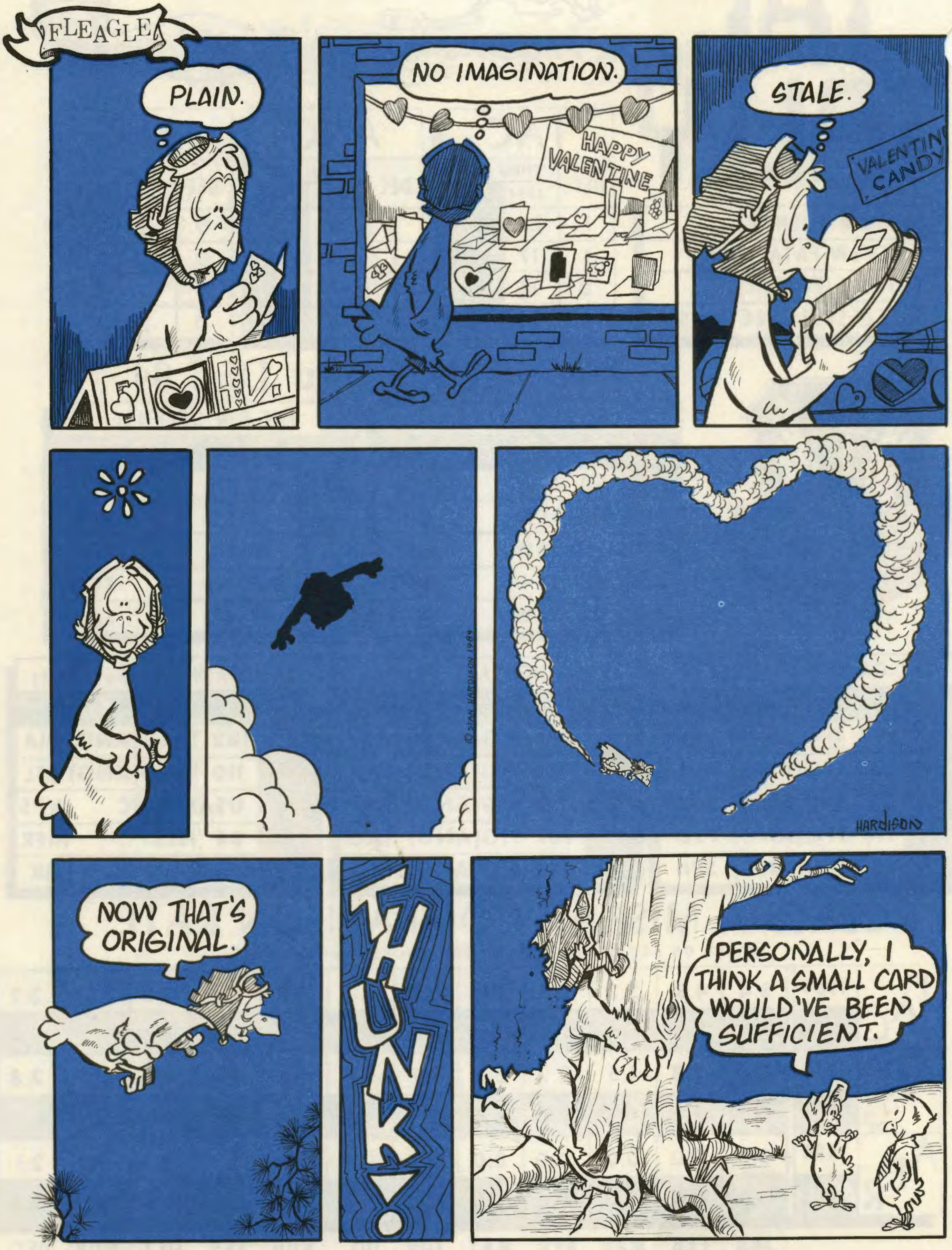
FLEAGLE
PLAIN.
NO IMAGINATION.
HAPPY VALENTINE
STALE.
VALENTINE CANDY
© STAN HARDISON 1984
HARDISON
NOW THAT'S ORIGINAL.
THUNK!
PERSONALLY, I THINK A SMALL CARD WOULD'VE BEEN SUFFICIENT.