

TAC ATTACK

AUGUST 1989



ANGLE OF ATTACK

Sumptuous bacchanal dining for a fighter pilot has for many years been considered to be a coke and a candy bar. I must admit that I have dined on that meal many times myself. However, with the missions we fly and the increased G-capability of our airplanes, our physical capability is now a major limiting factor to maximum aircraft performance. Therefore, we need to improve the quality of fuel we put into our bodies to enable us to get the best performance from our jets. It can even be counter productive to dump a candy bar and a coke on an empty stomach. This normally causes a rapid increase in the blood sugar level which, in turn, triggers the release of insulin into the blood stream. Not every time, but in some instances, this can lead to a borderline or even low blood sugar level. The problem can be compounded when your adrenalin gets pumping because adrenalin stimulates the utilization of sugar to produce energy for "flight or fight." This lowers the blood sugar level even more and can result in dizziness, weakness, sweating, and/or decreased alertness. No, eating a balanced diet won't make you Top Gun or get you a direct appointment with the Thunderbirds; but along with adequate rest and exercise, it will increase your G-tolerance and your alertness while flying.

One place some extra G-tolerance and alertness comes in handy is during dive recovery. Any of you who have headed down hill and decided to change direction know that your speed, weight, and Gs have a serious impact on how fast you will stop your descent and either level off or start climbing. But there are many times we don't really take into consideration all the things that can happen or have happened which change our planned recovery and may cause us great bodily harm. One example of this comes from a dive bomb pass with wall-to-wall MK-82s. You know your pickle altitude, safe escape altitude, and you pickle and pull. But what happens to the wings if the bombs don't come off? If you planned and executed correctly, you get a chance to do it again. But if you get into the habit of pressing—oh, just a little bit, because it is no big deal when you drop practice bombs, will you suddenly find it's a big deal with a live heavy weight drop? Another example would be a high speed dive recovery. Have you thought through the process? Do you know what combination of speed brakes, throttle, G, AOA, airspeed, etc., will give you the most miss distance from planet earth? Or what difference the terrain



altitude makes in the equation? Or passed what parameters is it time to get out? One good place to initially try out some of your combinations would be on the ground in the sim.

Which brings me to what's happening back here on the ground. We have gotten past the initial shock of having the kids home from school. Of course you know as soon as we get used to the kids, they will do something completely new and unusual that will make us wonder if they will make it to their next birthday. Will we make it to our next birthday? We are past the shock of the hot July weather. We think we are now acclimated to this hot temperature routine. Does this sound like complacency to you? But don't let summer complacency bite you! We still need to watch out for heat stress while we are on the flight line, out jogging, or even cooking out. While sitting in traffic the temperature of our car engine not only raises, but so can the internal temperature of our body as well. Try to take along some cool nonalcoholic beverages for just such occasions as when the Interstate becomes the world's longest parking lot.

For really long delays (the Hampton tunnel is closed or you are tenth in line for the only road service truck, etc.), you may want to bring along some paper and jot down a "There I was..." or other story for *TAC Attack*. When it is published as a feature article, we will send you an original "Fleagle" sketch as our way of saying "thanks pardner."

Jack Gawelko
JACK GAWELKO, Colonel, USAF
Chief of Safety

TAC ATTACK

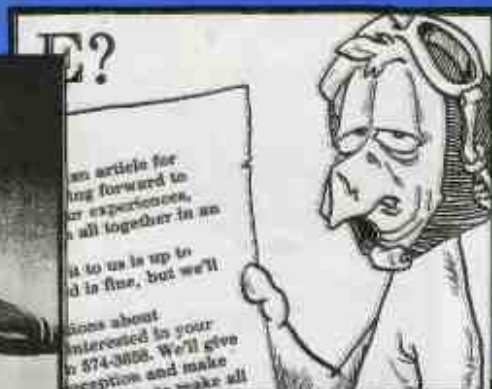
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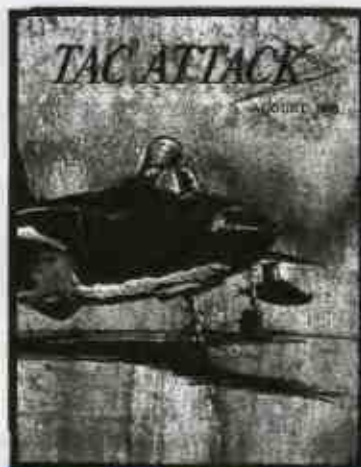
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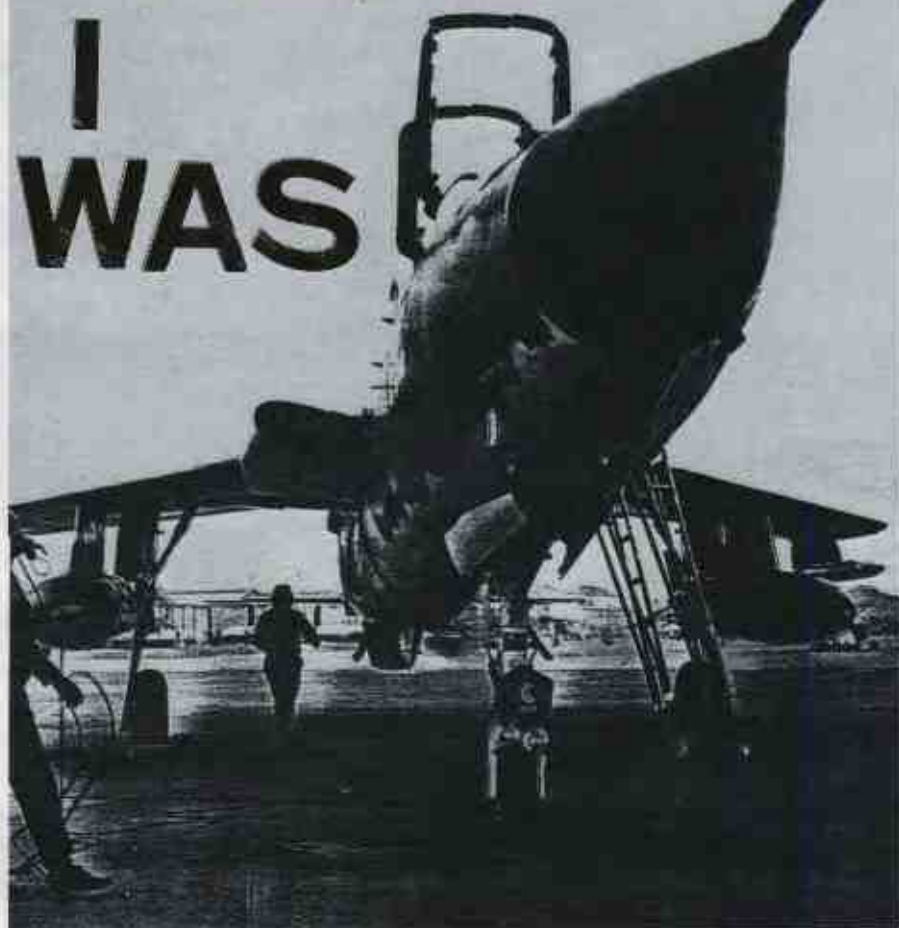
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THERE I WAS



1st Col Mel Zernow
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"There I was!" We've all heard that expression. It's usually followed by some hair-raising story (for those who still have hair) about a close call during this or that flight.

My "There I Was" stories are somewhat dated. The two experiences I'm about to share happened almost half a career and two staff tours ago, back when I was a young (relatively speaking) captain EWO in the

I'm convinced the lessons I learned then still apply today.

Perhaps by telling you about them, I'll help you avoid an unwelcome surprise and keep you from busting your butt.

F-105G "Thud" Wild Weasel. I'm recalling them now because I'm back in the cockpit again, this time in the F-4G Wild Weasel. I'm convinced the lessons I learned then still apply today. Perhaps by telling you about them, I'll help you avoid an unwelcome surprise and keep you from busting your butt.

Both stories involve low altitude flying. Most of us do it. Here at George Air Patch, Weasel crews are generally cleared down to 300 feet. A few are checked out to 100 feet. Most of my time in the Thud, I was

**What almost bit us
(besides bad tactics)?**

Visual misperception.

**Gary was totally unaware
we were in a descent.**

**In his mind, we were
level at about 150 feet.**



legal down to 100 feet.

Enough introduction.

Story one takes place over a large, white, dry — and very flat — desert lake bed. My nose gunner (Gary) and I began traversing the lake bed en route to an EW range. We hadn't intended to cross the lake bed; tactically, it wasn't very smart, but we ended up there anyway and wanted to get across quickly. As I recall, we began our traverse at around 150 feet and planned to stay there until we crossed. I remember noting the sun at our high right two o'clock position, then looking at our shadow at our low left eight o'clock. At the same time, I noticed our shadow was subtly getting larger and closer to our aircraft. I told Gary to level off, but the shadow kept growing larger and closer. I finally ended up screaming at him to pull up. By then the shadow was barely visible under us and slightly to the left side. I was reaching to pull back on the stick when Gary finally stopped our descent and started a gentle climb. To my relief our shadow began shrinking as it moved away from beneath us. I'm guessing at our lowest point, we were about 15 feet AGL.

What almost bit us (besides bad tactics)? Visual misperception. Gary was totally unaware we were in a descent. In his mind, we were level at about 150 feet. None of his outside references over that flat, dry lake bed told him anything else. He was fat, dumb and happy, oblivious to the fact we were moments away from hitting the ground. Only Gary's screaming pitter saved us that day. What about a radar altimeter? The Thud didn't have one. Does your fighter have one? If it does, would you necessarily be cross-checking it? Can it



THERE I WAS



cross-check you (Voice Warning System (Betty))? Our formation spacing had temporarily broken down, so our wingman didn't see how low we had gone. We were on our own.

Story two—Red Flag. Our mission: Support an A-7 four-ship in the western ranges. Outrigger/close escort was a common Thud Weasel tactic and our two-ship soon found itself about 1500 feet directly overhead and almost 180 degrees out from our A-7 friends. Fortunately, the Thud could chase almost anyone down without much effort. We eased into our escort role with our aircraft on the right side of the A-7s, our wingman about three miles away on the A-7's left (see a trend?). The A-7s were at 100 feet and, soon, so were we. Gary was concentrating on terrain avoidance while I was "running the formation." Gary was feeling pretty comfortable avoiding the rocks and decided to also cross-check the formation for a few seconds. When he looked up front again, he suddenly discov-

Gary was feeling pretty comfortable avoiding the rocks and decided to also cross-check the formation for a few seconds.

When he looked up front again, he suddenly discovered we had encountered gradually rising terrain.

ered we had encountered gradually rising terrain. What had been 100 feet below us was about to meet us. We were moments away from scraping off near the top of a low, gently rolling ridge. I felt a sharp tug upward as Gary yanked on the pole. We didn't climb much, but it was enough. We cleared the top by about 20 feet. Once again, visual misperception and a wingman too far away to help us almost got us.

We fly low altitude because of the threat. The threat doesn't

always force us down; but when it does, we have to be proficient down there. Food for thought: I haven't yet studied an "I wish you were dead" threat. As good as some of the new Soviet systems may be, they're still going to have a tough time shooting us down. On the other hand, the ground Pk does equal 1.0. You hit it, you're a dead man. It's that simple. Know the ground threat like you know any other surface-to-air or air-to-air threat. You just may keep your rear end intact. ➤



WEAPONS WORDS

Habit pattern bites

A weapons load crew was directed to load an F-111 static display aircraft with an inert MK-82 Air Inflatable Retard (AIR), a GBU-10 and a GBU-12. They loaded the MK-82 without any problems. The load crew failed to switch the extender from the center rail to the forward rail before the second bomb (GBU-10) was moved on munitions chocks towards the rail extenders. As the bomb was subsequently rolled onto the edge of the trailer, it contacted the aft extender and tilted nose down, striking the ramp and damaging the GBU-10 forward adapter.

This weapons load crew was attentive to the job at hand, but they still failed to notice the potential for a problem with the extender not being attached to the proper rail. Apparently, they were too used to performing loading operations with an established habit pattern of loading the same type bombs off only one type of munitions trailer. When you're doing the same task over and over again, watch out for complacency. When you're doing a task you're not used to, watch out

for problem areas that you are not familiar with. When in doubt, step back to take a look at "the big picture" and follow the tech data.

Unsure footing

A weapons load crew had just begun the upload portion of an F-15 integrated combat turn (ICT) and had completed the first missile. As they lifted the second missile from the trailer and stepped back, the number three man's foot slipped and he went down to his knees. The other two members of the crew were able to hold on to the missile, but the fins dropped far enough for the rollerons to hit the ramp, damaging both the rollerons and the guidance and control unit.



There were some pools of standing water present in the area where the ICT was taking place and the crew member's shoes were probably wet as a result. A successful weapons load operation requires you to be aware of the environment in which you'll be working. Whether it's water from winter's melting snow or the aftermath of spring rains, be aware of anything in your area that could cause you to slip or trip.

WHERE IS YOUR ARTICLE?

Take a second and look at our masthead on page 4 where our magazine's staff is listed every month. You'll notice that there are no staff writers assigned to us here at *TAC ATTACK*. That's because most of our writers are located out there in the field—those of you who read the magazine. We rely on you to help us put the magazine together on a monthly basis. We need your inputs to make *TAC ATTACK* relevant, timely and interesting for you, your daily needs and your co-workers throughout the TAC workplace; whether it's the flight line, the cockpit, the avionics shop or the office.

I know a lot of you have thought about writing an article for us, but just never seemed to get around to it. Let me encourage **you** to take the time **now** to put your thoughts and experiences down on paper so we can share them with everyone else in TAC. You'll be glad you did and we certainly will as well.

What kinds of articles are we looking for? You name it and

we're looking for it. We can use your "There I Was" accounts of personal experiences where you or someone you know learned a valuable (and sometimes painful) lesson from which the rest of us can benefit. But, we're not just looking for the "bad news" type of experiences. Have you ever found yourself in a situation that was rapidly going downhill and you were able to prevent a potential mishap by breaking the chain of events? Tell us about it. Your personal experiences put real flesh and bone details around the principles of working and flying safely that we talk about each month.

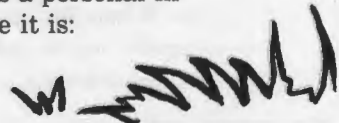
For example, we need to hear from you maintenance types about how you operate in and around the flight line on a daily basis in all kinds of readiness conditions and weather. What standards of excellence do you operate by that prevent you from having some of the kinds of mishaps we write about in "Chock Talk"? How do you relate to all the other activities around the ramp that get the mission done in a safe and ef-

ficient manner? Tell us how you go about maintaining aircraft, launching sorties, loading ordnance, repairing avionics and all the other factors vital to accomplishing our mission.

For you fighter jocks, pilot, WSO, EWO or whatever) we need your thoughts on how and where we can fly tactically smarter (and safer as a result). Don't assume that what you're doing right is common knowledge to everyone else in the command. There are a lot of good ideas being used on a daily basis that will serve as a good reminder for some of us and as new insights for others.

No one in TAC should feel left out from our "unofficial" staff of writers. I wouldn't even attempt to list all the career fields that are a part of the TAC team. If you haven't found an article in the magazine that hits your area of concern, it may be because you haven't written an article for us.

Finally, if what you've been waiting for is a personal invitation, here it is:



RTICLE?

Dear (Your name),

Why haven't you written (an article for TAC ATTACK)? We're looking forward to hearing from you. Take your experiences, your insights and put them all together in an article for us.

The format for sending it to us is up to you. Typed, double-spaced is fine, but we'll also take handwritten.

If you've got any questions about whether or not we'd be interested in your ideas, call us at Autovon 574-3658. We'll give your article a friendly reception and make every attempt to use your efforts to make all of us smarter.

Sit down and write something for us today. We're waiting to hear from you.
Sincerely

Harp Tucker
The Editor
TAC ATTACK



NIGHT DRIVING



You may have heard that the best rule for night driving is not to over drive your headlights. But this advice is confusing. No matter how fast you go, the headlights still shine in front of the car. What you should do is drive slowly enough so that the headlight beams will pick up objects in the road ahead of you in time for you to react. You should be able to stop in the area that is lighted by your headlights. The most important rule for driving at night is to always remain within the speed limit. Go even slower in bad weather. If you find yourself wondering

whether it's dark enough to turn on your headlights, it is. Remember, your headlights not only help you see better, they also help other drivers see you. Driving with lights on at twilight makes your car much more visible.

Oddly enough, one of the problems of driving at night can be too much light. Glare from oncoming bright headlights can momentarily blind you, or force you to look away from the road. Avoid this by focusing on the right margin of the road, or on the lane markers. You'll be able to see the road, and avoid the worst of the glare.

It is important to adjust your rearview mirror for nighttime driving. After flipping to nighttime use, give yourself a few seconds to adjust to the change. The first thing you'll see in your mirror will be your back seat — but once your eyes adjust, the mirror will show you the road behind, and cut down a great deal of glare from following cars' headlights.

You can avoid interior glare by dimming the indicator lights on your dashboard. Of course, it's common courtesy to turn down your brights when you see another car approaching or when you come up behind another car. It's also common sense. Look at it this way: Your bright lights can blind an oncoming driver. How safe would you feel if the other driver really was blind, and not just blinded by your headlights?

Your eyes will need time to adjust to evening or nighttime driving after you leave a building or brightly-lighted area. Before driving off, give yourself a few minutes to prepare. Wait about five minutes (or longer if your eyesight isn't what it used to be).

You can spend the time checking your lights. Be sure that your headlights, taillights and directional signals are working. See if your windshield needs cleaning. Remember, the better you see, the better your chances of avoiding a crash. ➤

(Adapted from article by M. James Belger, *Family Safety & Health*, Spring 1989)



TAC AIRCREW OF DISTINCTION

TAC Aircrew of Distinction

Captain Ricky A. Davis took off from Nellis AFB leading a two-ship of F-16s, BUBBA 3/4, on a night instrument training sortie to Palmdale Airport, CA. At Palmdale, the flight completed two instrument approaches and began a climbout to return to Nellis. Four miles north of Palmdale Airport, at 10,000 feet MSL, Capt Davis experienced a violent compressor stall and RPM rollback while operating near mil power. Capt Davis immediately retarded the throttle to idle to clear the stall and started a right turn toward Palmdale Airport. At idle, the engine recovered, but with severe vibrations. Capt Davis informed BUBBA 4 of the problem, who then assumed a chase position. At this time, BUBBA 4 informed Capt Davis that he had a fire and flaming debris coming from his engine. Capt Davis confirmed that the fire light was out and noted his FTIT at 550 degrees centigrade. As he selected 100 percent oxygen, Capt Davis made a call on Guard telling Palmdale Tower that he would be landing with an emergency. Setting the throttle at 80 percent RPM, Capt Davis managed to fly over the runway despite it being obscured by the Palmdale production plant's lighting. As he began an SFO, Capt Davis spotted a Navy P-3

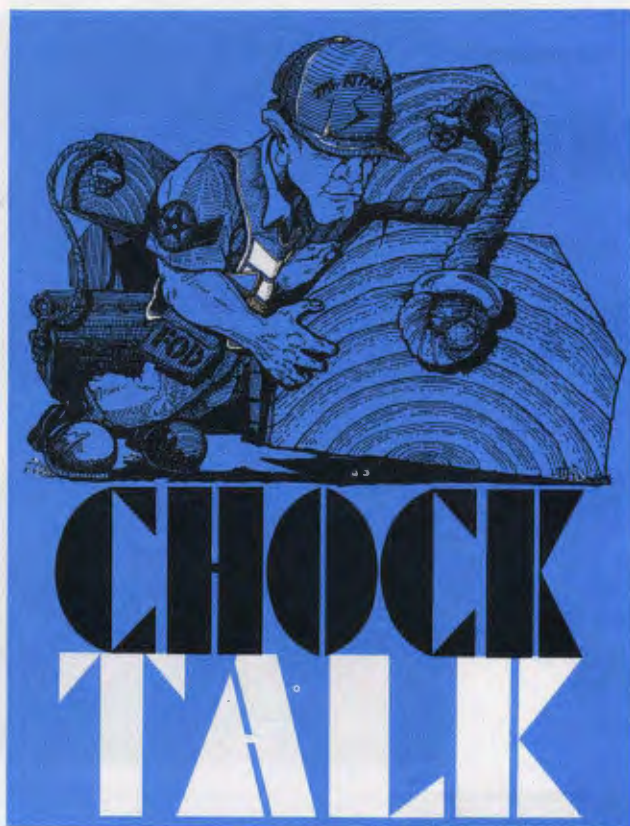
Capt Ricky A. Davis
428 TFS, 474 TFW
Nellis AFB, NV



on final approach and made several Guard calls (along with BUBBA 4) to break the P-3 out of the pattern. Approximately 100 degrees through the SFO pattern, the hydraulic/oil pressure warning light illuminated. Because of the glare from the production plant's lighting, Capt Davis used a hand-held flashlight and found his engine oil pressure gauge was reading zero. At the 180 degree point, at 300 KIAS, Capt Davis retarded the throttle to idle, opened the speedbrakes, and lowered the gear.

The SFO, an emergency procedure never practiced at night, was successfully completed as the aircraft landed 1,000 feet down the runway. Five thousand feet later, with the aircraft stopped, Capt Davis emergency ground egressed, and the fire department extinguished the engine fire.

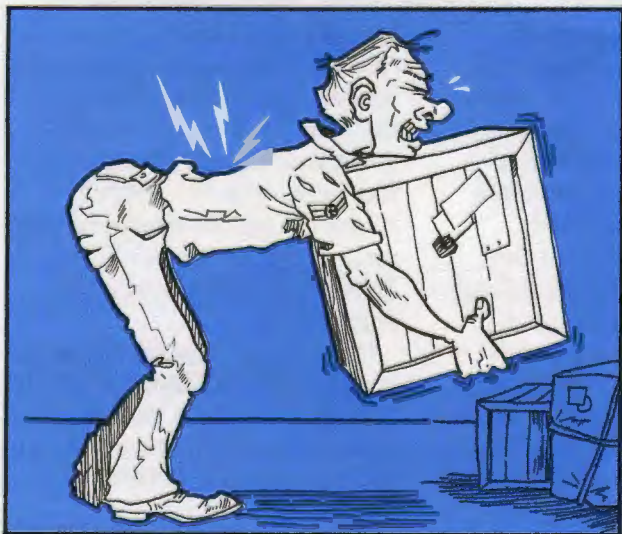
Capt Davis' superior airmanship and skillful handling of this emergency saved a valuable TAC combat aircraft and earned him the TAC Aircrew of Distinction Award.



chock talk

Oh, my aching back

Do you know anybody in your workplace that complains of an aching back? An overwhelming number of back injuries are attributed to improper lifting methods. The most disturbing fact is that, in almost every case, these injuries were preventable. In order to stamp out the likelihood of our TAC people hurting their backs, supervisors



Incidents and Incidentals with a Maintenance Slant

must pay close attention to detect early signs of problems and, if necessary, seek medical evaluation for those folks who complain of back pain.

You and I must practice proper lifting techniques and seek help when lifting items that exceed personal capabilities or recommended safe lifting specifications. We are getting better in this area; however, we need to work together throughout our maintenance and support areas to wipe out back injuries.

To emphasize again, the keys to fighting this problem are proper lifting techniques and knowing your limits. If you have a history or often complain of back pain, seek medical help before you experience a serious disabling injury.

The right size is important

An engine run crew placed an AT-38 on the power check pad to investigate an oil pressure malfunction problem. During acceleration from idle to military power, the number one engine compressor stalled. The throttle was immediately retarded to idle, then shut down because the engine was rumbling.

Detailed maintenance inspection of the aircraft found a screw missing from a panel near the left intake. Further investigation revealed that the nutplate underneath the missing screw had deteriorated, losing its locking ability. Could someone have prevented this foreign object damage (totaling over \$11,000 in repairs) through greater attention to screws and fasteners as well as checking receptacles for serviceability every time a panel was removed? You bet!

Aerosol verses Aerospace

There, that just about does it. Just a little more and I'll have the best looking jet on the flight line. OK, that didn't take long. Time to button it up and call it a day.

The next morning, I had the jet ready and waiting when the crew arrived. Preflight and engine start were all normal, and I popped the pilot a smart salute as he taxied out towards the arming area.

What, an IFE (in-flight emergency) and returning early? Boy, the crew really looks pale. My aircraft is impounded—a physiological mishap. The crew is whisked off to the flight surgeons and things are still sketchy at this point. Let's see, the EWO (electronic warfare officer) said he began to feel "different" about 30 minutes into the flight. He was not airsick, but felt hot and slightly lightheaded. But he attributed it to not having flown for three weeks, so he selected 100% oxygen. His condition didn't improve, nor did it degrade further. The pilot was aware of the situation and they both agreed to press on.

Later during a low-level portion, the EWO began to notice his G-tolerance was decreasing. About ten minutes after that, the pilot began making small mistakes, his fingers began to tingle, and he felt lightheaded. He selected 100 percent oxygen with no improvement noted. The pilot aborted the mission and the EWO activated the emergency oxygen system, and both crew members felt slightly better. During the RTB (return to base), the pilot felt confused and had difficulty performing routine tasks. The EWO began to notice that his own condition had improved enough to realize that the pilot's performance was degrading further. The pilot was having difficulty making radio transmissions and his eyes began to sting. The pilot stated that the approach and landing required a concentrated effort. After landing, the pilot still felt sluggish, lightheaded, and very tired.

Some other maintenance folks volunteered to sit in the cockpit with the canopies down. After a while, they noticed the smell of paint and admitted to developing some lightheadedness and headaches. The base environmental engineers



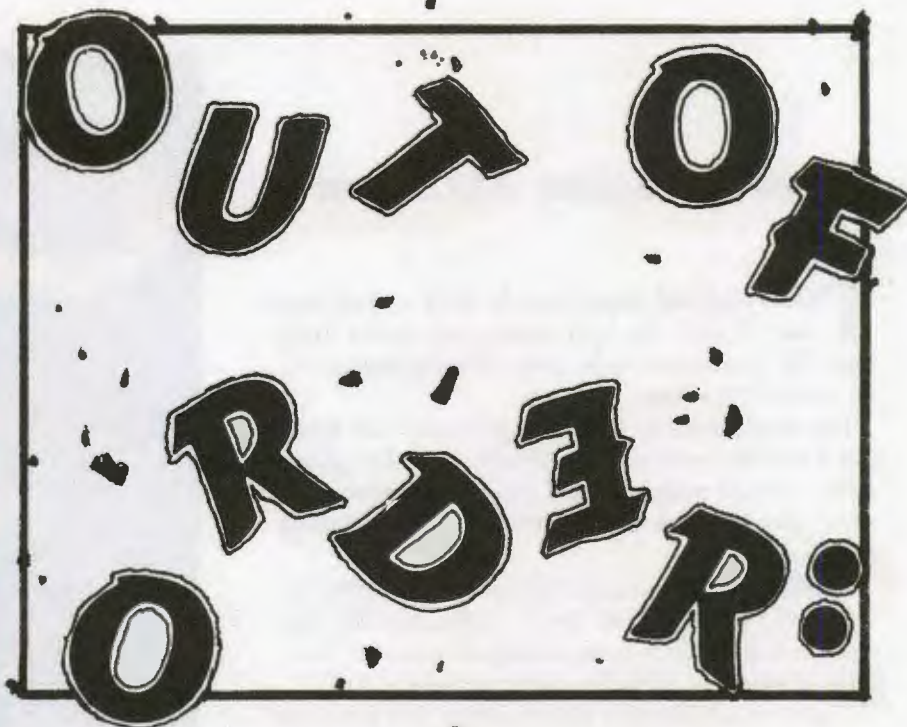
took air samples from the closed cockpit and found low levels of the chemicals found in cleaning substances, paints, and paint thinners. Air samples which would be taken the next day would be negative.

Well, to shorten the story so I can get back to work, the investigation ruled out the following as possible causes. The aircrews—their past 72 hours were normal. The aircraft air conditioning system—it was confirmed okay by an engine test run.

The following clue helped to pinpoint the problem: "The floor of aircraft appeared to be freshly painted."

"Why sure I repainted the floor last night," I told the investigator. I wanted my jet to look and be the best. I knew the paint was dry, but I did not realize the dry paint could still give off harmful chemicals. Nor did I realize that the aircrew normally breathes a mixture of air from both the oxygen system and the cockpit, and not just pure oxygen.

Best looking jet—you bet, but now I ensure that there is plenty of time for all the "harmful" chemicals to dissipate before I paint the inside of the cockpit. Some good times are during phase or at the start of a three-day weekend. Good ventilation—i.e., leaving the canopies open (if possible) helps to decrease the curing time.



GETTING YOUR PRIORITIES STRAIGHT

Maj Don Rightmyer
Former Editor, *TAC Attack*

Between my first tactical fighter experience of over 1,000 hours (and three MAJCOMs) in the F-4 and the beginning of my upgrade training as an F-111 crew member, I spent several years in non-flying duties due to a medical problem thinking about how I had operated as a flyer. As I quickly found myself immersed in the myriad of subjects

I read through the entire emergency procedures section time after time, paying particular attention to the Warnings, Notes, and Cautions.

I made a point of noticing those important items of information in the aircrew manual that aren't repeated in the checklist; hence, not available to me in the air unless I already knew them.

covered in a TX training course such as aircraft general, operating limitations, normal procedures, tactics, etc., etc., I decided that there was one subject area that I definitely intended to know — the emergency procedures.

Certainly, by the time I actually strapped into a real Aardvark for my first sortie, I had already gone through countless hours of procedural trainers, classroom instruction, and simulator experience. All of that was designed to bring me to the point where that first sortie (and all succeeding ones) would not only be profitable training, but also safe experiences. But, I also knew that any and every emergency known to the aircraft might well greet me on that first flight. That's the thing about aircraft emergencies — you never know when they might occur, and Murphy's Law says it will probably be when you least expect it, or are ready for it.

To get myself up to speed on the topic of emergencies and how to handle them, I cloistered myself in a quiet place, sat down with the Dash One and the aircrew checklist, and began to study. I read through the entire emergency procedures section time after time, paying particular attention to the **Warnings, Notes, and Cautions**. I made a point of noticing those important items of information in the aircrew manual that aren't repeated in the checklist; hence, not available to me in the air unless I already knew them. Obviously the checklists (both normal and emergency) are not intended to be encyclopedic in the information they provide to

you in the air; merely a guide to the steps which you should follow in accomplishing certain airborne tasks, or handling an in-flight emergency.

If you haven't invested the necessary time, thought and effort into learning and knowing your emergency procedures, then your priorities are out of order.

I attempted to "what if" every possible equipment malfunction and in-flight problem reflected in the zebra-

to ensure that I had the "big picture" of how things should flow.

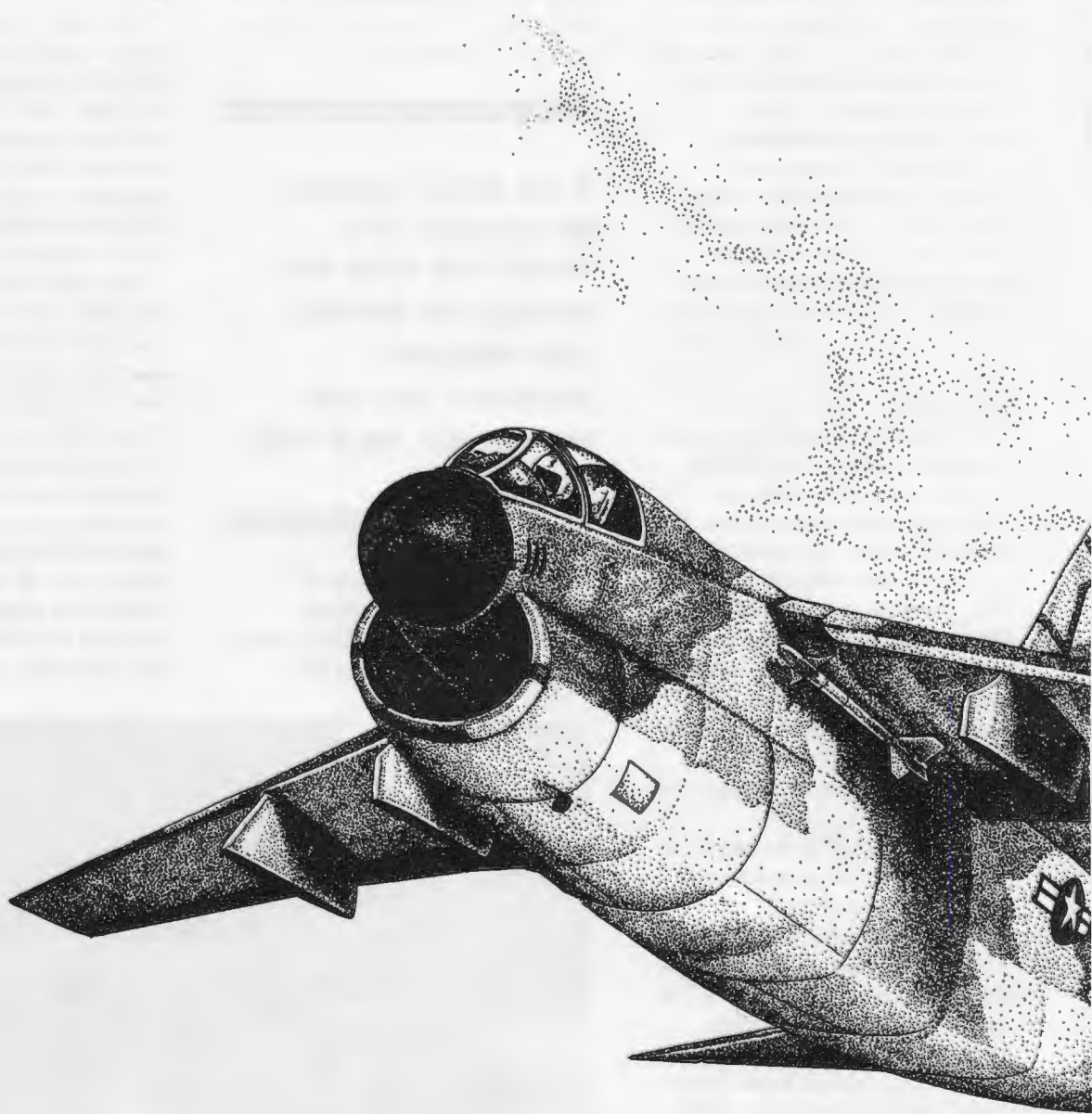
This may sound like a lot of work — and it is. It's not the kind of reading that will make the *New York Times* best seller list, but it's absolutely essential to ensure that you're fully equipped to get you and your aircraft into the air and back on the ground again safely.

Why am I sharing these few thoughts on how I've personally gone about learning aircraft emergency procedures? Well, from the trends noted in some of our flight mishaps, some TAC aircrews haven't made that information just as important a part of their flying gear as their helmet, G-suit, gloves, etc. If you haven't invested the necessary time, thought and effort into learning and knowing your emergency

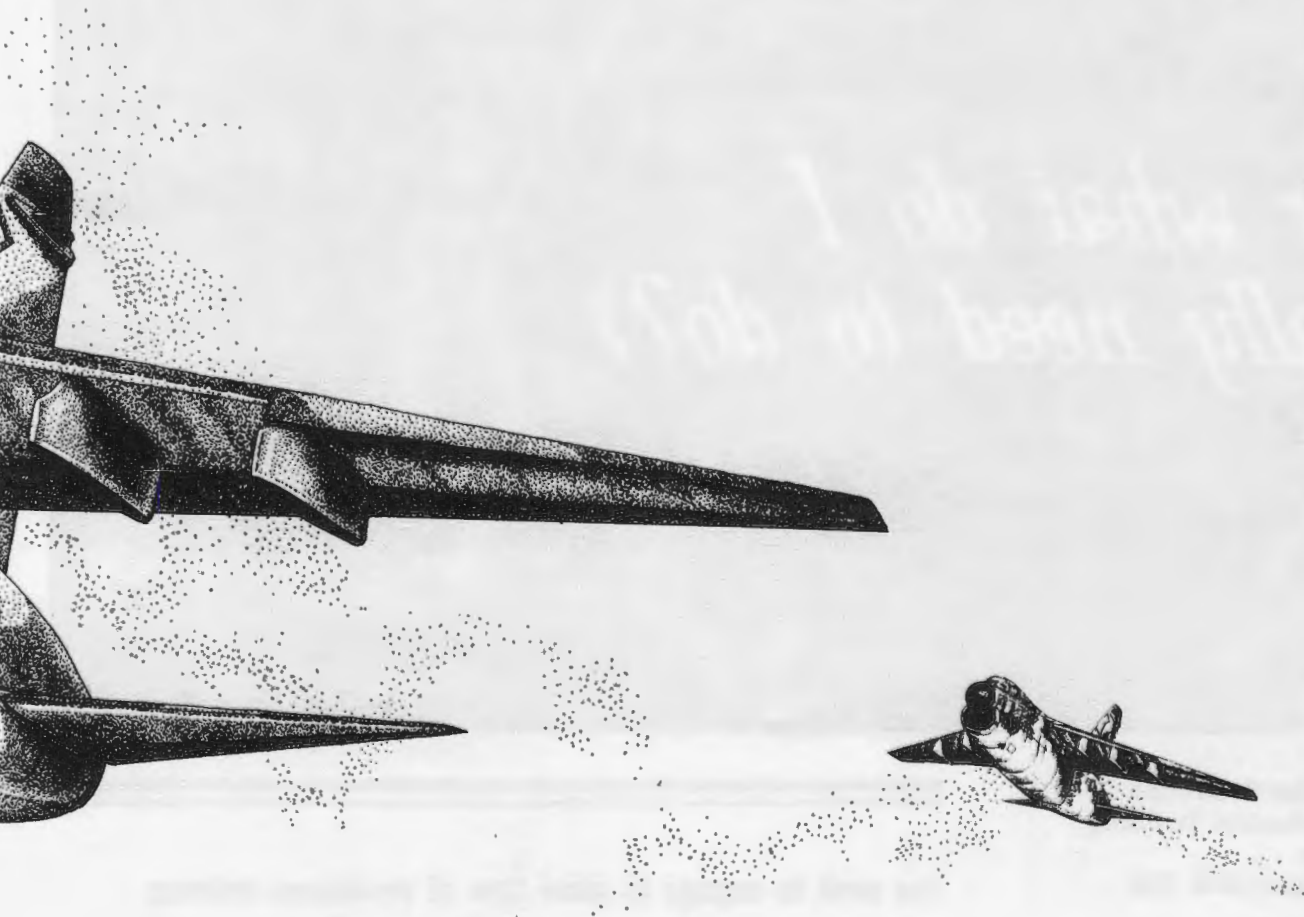


striped pages, so that the first time I thought about it wouldn't be in the air. I also paid special attention to the cross-references between different emergency checklists and the normal procedures section

procedures, then your priorities are out of order. Be honest with yourself. If you don't know your EPs and your aircraft systems like you should, hit the books and get up to speed before you "slip the surly bonds" again. ➤



A-7 CORSAIR



PHYSICAL TRAINING & G-TOLERANCE

*(or what do I
really need to do?)*

physical training & g-tolerance (or what do I really need to do?)

Col John R. Greene
Physiological Training
Center
Holloman AFB, NM

In the last decade, a lot of information has been presented to the fighter aircrew population concerning the need for physical training to improve G-tolerance. Much of this advice is based on careful scientific study, but much more has

You need to engage in some type of resistance training.

It doesn't matter which system you use (free weights, hydrafitness, etc.), they all do the job.

originated from word of mouth at the base or squadron gym.

The result has been much confusion and even controversy over

the types and quantities of physical training necessary to achieve optimal condition for flying fighters. In this article, I don't plan to reiterate studies, but share with you some of the lessons learned from personal observation of nearly 2,000 aircrew undergoing centrifuge training. So for what it's worth, here's my "nickel on the grass."

A moderate aerobic training program is necessary for rapid recovery between engagements or, to some extent, during extensions.

(Moderate means about 20-30 minutes two to three times/week.)

More is not necessary and may be detrimental.

First observation. Those who train regularly with resistance equipment (free weights, stack weights, hydrafitness, etc.) generally have the highest relaxed G-tolerances. Second, those who train only with very heavy weights, low repetitions and few sets appear to have the highest peak tolerance; but those who mix their training with one or two days/week of lower weights, higher repetitions and many sets not only reach peak strength, but also have more straining endurance

than the bulk builders.

Conclusion. You need to engage in some type of resistance training. It doesn't matter which system you use, free weights, hydrafitness, etc., they all do the job. Additionally, you should mix your workouts to include, as a minimum, two days of strength training (heavy resistance), and one day of endurance training per week.

Second observation. Those who train only aerobically (running, cycling, etc.) tend to have lower blood pressures and heart rates and, consequently lower relaxed G-tolerances. This is especially true for those who have a long history of heavy aerobic training. In contrast, those who train aerobically, recover the quickest between runs on the centrifuge and after.





PHYSICAL TRAINING AND G-TOLERANCE, (OR, WHAT DO I REALLY NEED TO DO?)



Heavy aerobic training may reduce relaxed G-tolerance, but current studies and our observations indicate that it does not make an individual more likely to experience a G-induced loss of consciousness. What it does mean is that proper performance of a good anti-G maneuver is much more critical for these folks. There is little or no room for error. **Conclusion.** A moderate aerobic training program is necessary for rapid recovery between engagements or, to some extent, during extensions. (Moderate means about 20-30 minutes two-to-three times/week.) More is not necessary and may be detrimental.

The bottom line is that you must do something to enhance your physical capabilities to be optimally prepared to perform with today's weapons and in today's combat arenas.

Third observation. Those who train with resistance equipment and engage in aerobic exercise appear to perform the best, both in endurance at peak and rapid recovery. In addition, relaxed G-tolerance is not reduced. **Conclusion.** The most effective program is a mix of aerobic and resistance training; however, the most important component is resistance training.



In summary, what I have presented is nothing new, but may be better defined than in the past. The bottom line is that you must do something to enhance your physical capabilities to be optimally prepared to perform with today's weapons and in today's combat arenas. You comprise a warrior society. In that light, you are no different than warriors of ages ago. You train with the weapons to develop and hone the skills of employment. You study to improve tactical knowledge of weapons employment. You prepare physically to provide the optimum strength to employ those weapons. The only changes in thousands of years are the weapons. ➤

TAC OUTSTANDING ACHIEVEMENT IN SAFETY AWARD



Master Sergeant Clifford E. Cunningham and Technical Sergeant Howard R. Schussler were catalysts in identifying and initially resolving a safety issue that impacted SAC, TAC, PACAF, MAC, and civilian aircraft refueling procedures. The problem impacted a fleet of 115 R-12s, Hydrant Servicing Vehicles (HSV), employed to provide refueling support for a variety of USAF and commercial wide-bodied aircraft requiring on-station refueling at SAC, TAC, PACAF, and MAC bases. Normal use of the HSV is coupled with a high-pressure and large volume refueling system with delivery of 600 to 1,200 gallons per minute, dependent upon the airframe supported. Specific aircraft being refueled at the location the deficiency occurred were KC-10s.

After establishing flow at approximately 1,000 to 2,000 gallons and delivery of 3,000 to 10,000 gallons of jet fuel, visible sparking was observed by personnel and aircrew members. Sgt Cunningham and Sgt Schussler coordinated a controlled environment test which duplicated the visible sparking. The hazards that potentially existed were catastrophic. They ranged from



MSgt Clifford E. Cunningham



TSgt Howard R. Schussler

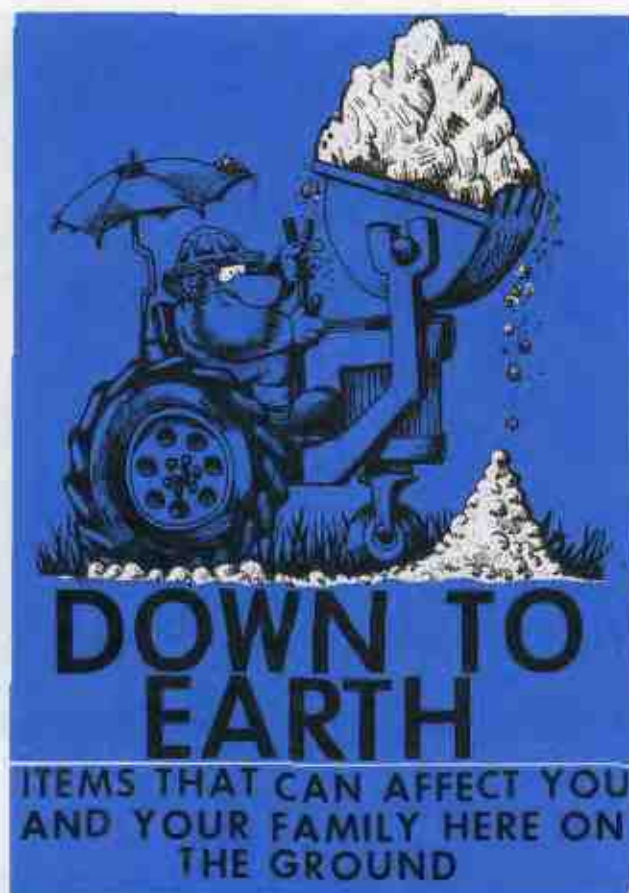
4 SUPS, 4 TFW
Seymour Johnson AFB, NC



flash fire during refueling to aircraft loss due to fire. Immediate notification was provided to affected MAJCOMs. Based on their efforts, temporary limitations were placed on in-service HSVs; only rear hoses were to be used. A joint evaluation team composed of HQ TAC, HQ SAC, and HQ AFLC technical experts were sent to Seymour Johnson AFB. Based on findings, the type

of hose currently being processed by the USAF will be changed.

Sergeants Cunningham's and Schussler's efforts not only eliminated an immediate hazard, but also prevented future hazards by changing the specifications for future refueling equipment. Their efforts have earned them the TAC Outstanding Achievement in Safety Award.



Choose the right bike

Bicycle safety begins with choosing the bike — it must be the right size and adjusted for the person who will be using it. It must also be the correct kind for the purpose for which it will be used.

Parents should check all parts of each family bike regularly to make sure that the parts are not loose, worn out, broken or improperly adjusted.

Here are some things to look for:

- Is the saddle tight and at the proper height?



- Are the reflectors clean, unbroken and positioned to pick up headlight beams?
- Are the tires firm, properly inflated and free of cuts and cracks?



- Are the pedals wearing out?
 - Do they have reflectors?
 - Is the front wheel properly seated and tightly bolted in the fork?
 - Are the handlebars tight and set at the right height for the user?
 - Are any spokes bent or broken?
 - Are the tire valves straight and free of leaks?
 - Are the headlight and taillight bright enough to be seen at night from 500 feet away?
- Check your state and local regulations for mandatory use.
- Does the bike have a horn or bell that sounds loudly and clearly?
 - Is the chain snug, without broken or damaged links?

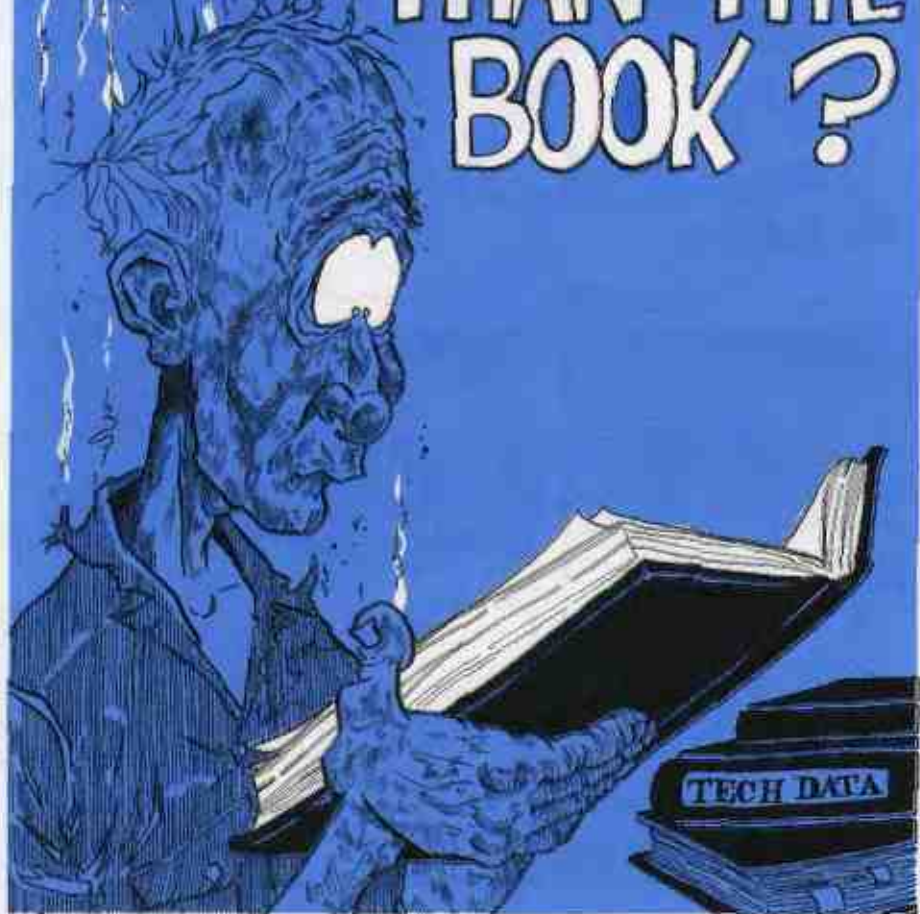


- Do the brakes — whether coaster or hand — stop the bike quickly and smoothly? With hand brakes, check the shoes to make sure they grip the rims.

(Adapted from article by Robert Overend, *Family Safety & Health*, Spring 1989.)



ARE YOU SMARTER THAN THE BOOK?



I've done this job so many times before that I don't need the tech data!" How many of you have heard or even said that?

Every year too many mishaps are reported that were caused by people either not using or not following tech data. For example, two individuals were assigned to remove the aft seat from a fighter aircraft. One went directly to the airplane, but the other was delayed in the hangar. The person at the aircraft started the task,

violating the long-standing practice of two people performing an operation involving explosives. The survival kit mode selection switch was placed in the manual position, the piston motor kit activated, causing the survival kit lid to open.

In another incident, the loading crew was unloading BDU-33 practice bombs on a multiple ejector rack. Thinking the bomb had been locked into place, one of the workers released his hold to reach for the

over-center tool. However, the bomb wasn't locked into place. The bomb fell, hitting the ground and breaking the firing plunger off. Fortunately, the BDU safety block prevented the spotting charge from functioning.

You may be thinking these two mishaps are minor because no one was hurt and there was very little damage done to Air Force resources. Well, read on! Three maintenance workers were tasked to troubleshoot a leaking canopy actuator on a fighter aircraft.

While dearming the ejection seat catapult gun, it fired and sent the technician and the ejection seat through the canopy. The technician died as a result of injuries sustained from this mishap. Tech data was available; unfortunately, it wasn't being used — they were performing the task from memory.

Tech data and checklists were written so we won't leave out some of the more important steps. Use of tech data doesn't add time to your operation if you're familiar with its use and routinely use it. It only adds to the task if you have to muddle through it. The little bit of effort needed to follow the tech data could save you a lot of personal embarrassment, or even your life!

Don't put yourself into a position where your memory might fail you — do your work by the book. It's the smart way to get the job done!

TAC P.S. If you don't think the Book is correct, let's change it.

(Adapted from article by MSGT Ron Kunkle, USAF Safety Journal, March 1986)



TAC OUTSTANDING ACHIEVEMENT IN SAFETY AWARD

Staff Sergeant Steven Orlosky consistently displayed a safety-conscious attitude while performing F-15E acceptance inspections. He found a #1 engine Rear Compressor Variable Vane (RCVV) feedback cable chaffing on a fuel line because of an improperly installed clamp. If the fuel line had chaffed through, an engine bay fire could have resulted. While performing another acceptance inspection on an F-15E, he noticed a left Airframe Mounted Accessory Drive mount with the wrong type of bolt installed and the inner bushing missing. This would have caused excessive wear, vibration and possible engine shutdown. He also found the #2 engine mount pin bad. This

problem could have caused the engine to shift, resulting in airframe damage, vibration, and engine shutdown. During another inspection, an improperly installed jet fuel starter exhaust duct was discovered. This condition would have caused an overheat or fire indication light and subsequent engine shutdown. He immediately notified his supervisor, Quality Assurance, and grounded the aircraft. Sgt Orlosky's keen inspection techniques prevented what could have possibly resulted in the loss of an aircraft.

Sergeant Orlosky's professionalism and alertness on the flight line have earned him the TAC Outstanding Achievement in Safety Award.



SSgt Steven Orlosky
4 AGS, 4 TFW
Seymour Johnson AFB, NC



TAC tips

INTERESTING ITEMS, MISHAPS WITH MORALS, FOR THE TAC AIRCREWMAN

You never know when

An A-7 was part of a three-ship surface attack sortie with BDUs loaded on TERs on stations 2 and 7. During the delivery passes, the bombs on station two would not release, so an aux jettison was attempted on the last pass. The flight then re-joined for RTB and the wingman confirmed two hung bombs. A hung bomb pattern was flown on return to home station. At touchdown, the RSO saw a practice bomb depart the aircraft and impact the runway. Fortunately, the BDU did not detonate, and it was retrieved safely from the runway. The pilot confirmed that all cockpit switches had been in the safe position, and the maintenance folks in the dearming area confirmed that the carts had fired. From the available evidence,

the ARD 863-1 cartridge had failed to produce enough pressure to open the TER locks and release the BDU-33 practice bomb.

The A-7 pilot had done all he could to prevent any potential problems from this hung bomb situation. This scenario just provides an opportunity to highlight the importance of keeping your flight path well clear of people, buildings and vehicles to make sure you don't bomb them inadvertently. All you know in the air is that the bomb didn't come off; you don't know why. The safest approach is to treat your bomb-laden aircraft like a loaded gun—because it is.

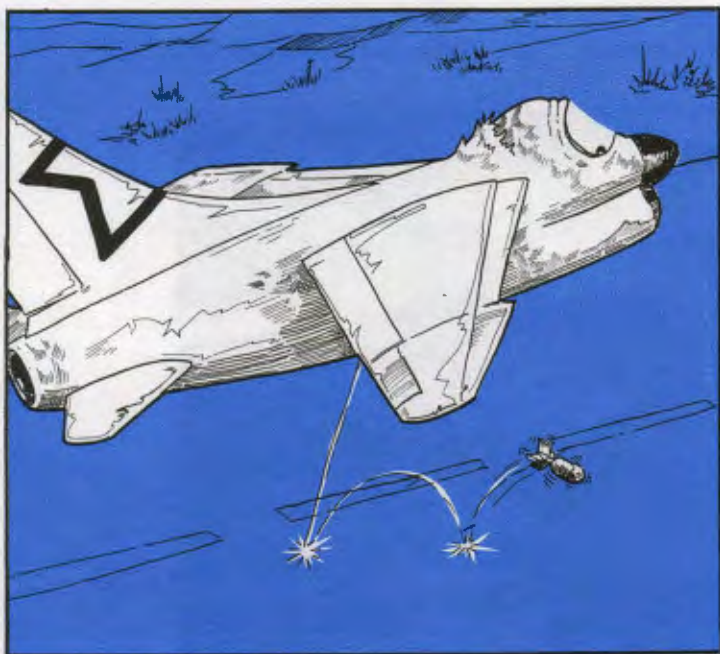
I preflighted my switches, or did I?

An F-16 pilot had cranked up the aircraft engine when, during the start checks, a flare was jettisoned onto the parking ramp. The jet was taxied forward with no damage occurring to the aircraft or other equipment.

The pilot's chaff/flare switches were in the following positions:

CHAFF/FLARE – TEST
CHAFF – OFF
FLARE – SINGLE
JETTISON – OFF

When the maintenance technicians inspected the chaff/flare system, the sequencer was found to be faulty. **But**, the pilot had failed to check his chaff/flare switches to ensure they were in



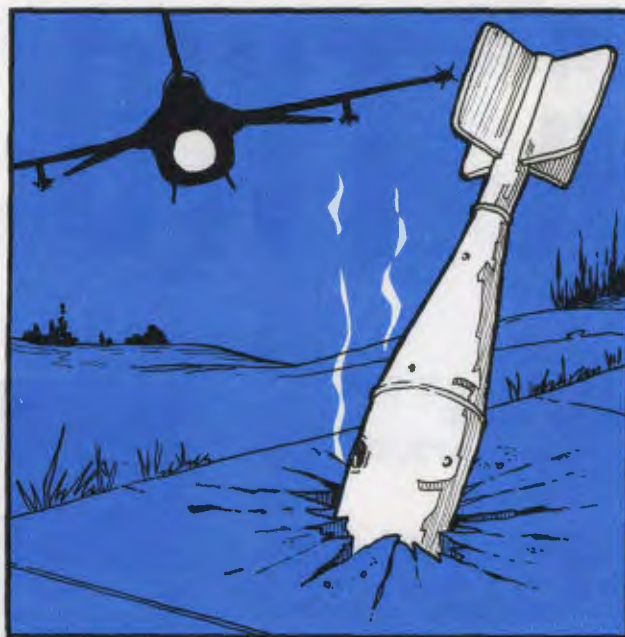
the "Off" position before engine start. So an equipment malfunction was able to eject a flare while the aircraft was still sitting on the ground.

Don't shortchange your cockpit and aircraft "Before Power" checklist. You can't assume that the switches are in the position they should be. You don't know what sort of maintenance and other checks have been done by someone else before you arrived at the jet. The aircraft is yours now for the duration of the sortie. You signed the 781. Make sure your switches are where they are supposed to be.

Watch where your finger goes

Two incidents of the inadvertent off-range release of BDU-33 practice bombs recently occurred when F-16 pilots were trimming their aircraft in preparation for a bombing pass. Fortunately little damage was done to objects on the ground; but when an off-range release is inadvertent, you don't know what might be hit.

Both pilots involved in these incidents were experienced fighter pilots who had recently transitioned to the F-16. All tactical fighter aircraft, except the F-16, have a standard stick grip with the position of the weapons release button not only recessed in relation to the trim button, but also located at a different angle to the trim button. On the F-16, however, the weapon release button is located on the same flat surface as the



trim button. Therefore, it can easily be actuated by a small thumb movement in the same plane of motion.

In both of these incidents, the habit pattern developed by years of flying using the same type of weapons system hardware resulted in identical, inadvertent pickle button actuations.

Both of these incidents occurred in a relatively benign environment — a controlled range with practice munitions; however, in a combat situation, where task saturation is the rule, "unscorable at six" due to a switchology error could be disastrous. It pays for us to be aware of the human engineering changes that may be very critical when we transition from one aircraft type to another.



A TWO DOLLAR

A two dollar disaster

**TSgt Francis S. Gore
67 TRW/SEW
Bergstrom AFB, TX**

Nothing could be done. It was all over in 30 seconds. A centerline fuel tank was dropped and a serious explosion resulted. How could this have happened? What could have been done to prevent this disaster? Who was at fault? The sequence which finally ended in the explosion started two months prior. The armament shop improperly performed a scheduled maintenance inspection of a bomb rack and sent it out to be installed on aircraft 480. What nobody realized, at the time, was that a very important safety switch was out of adjustment.

Two months later during the employment phase of a locally generated wing exercise, on a dark, cold, windy and rainy night, a weapons load crew was dispatched to perform an external fuel tank jettison check on aircraft 235 which was parked on spot 30. When the crew arrived at the aircraft, they started preparations for the check, but were unable to complete it because the crew chief was not finished installing the fuel tank. Rather than waste precious exercise time, the crew went to the next aircraft on their list.



DISASTER

A short while later, the crew was notified that aircraft 235 was now ready for the check. The NCO in charge of the crew drove to the area and parked in front of aircraft 480 which was parked next to the correct job. The crew disembarked and went to work on what they assumed was the right aircraft. The aircraft forms had been checked earlier, so the crew decided there was no logical reason to repeat the check. Since they knew exactly where they had stopped in the checklist earlier, they elected to start again at that point. This was their first opportunity to realize that they were working on the fully loaded, fueled and armed aircraft number 480. One man went to the cockpit and the other went to the right external fuel tank. Neither looked at the tail number. There went the second chance to break the rapidly developing chain of events. The individual at the tank set up his equipment before looking at the cartridge breeches and nodded to the individual in the cockpit to energize the system, thus missing the third chance to break the chain. He turned to the tank, saw the cartridges installed and realized the tank was armed. He scrambled to notify the individual in the cockpit, but the button had already been pushed. The

The sequence of events described above actually happened. The only difference is that we were extremely lucky.

improperly adjusted safety switch did not break the circuit and the electrical impulse reached the jettison cartridges installed in the centerline tank bomb rack. The resulting explosion caused the damage described in the paragraph above.

Sounds unreal, doesn't it? The sequence of events described above actually happened. The only difference is that we were extremely lucky. The important safety switch that was out of adjustment allowed the electrical impulse to reach the cartridges and they functioned as designed. The explosion did not take place because the safety pin was installed and the tank did not jettison. These cartridges, at a relatively low cost of \$1.79 each, could easily have

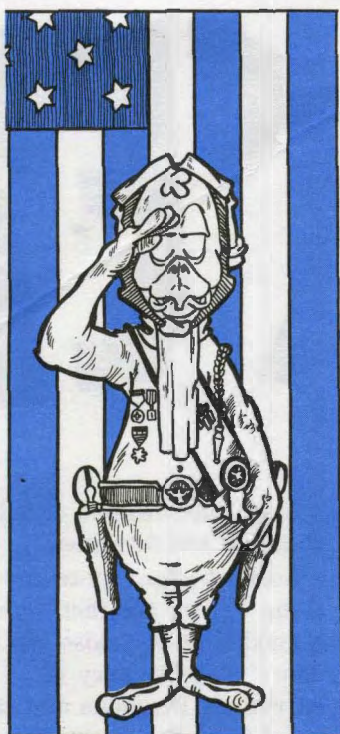
Look at your day-to-day operations. "After the fact" is never a good time to "close the barn door."

caused the millions of dollars of damage and fatalities.

Look at your day-to-day operations. "After the fact" is never a good time to "close the barn door." Complacency is extremely insidious and seems to be the bane of the experienced. No one would ever be complacent by choice, but no one has a natural immunity to this incapacitating disease. There is no existing inoculation to prevent it. There are usually no obvious visual symptoms for an outsider to detect until a mishap occurs. The effects are almost always long lasting.

How comfortable are you with your job? If your answer is "very comfortable," then you are a risk. Always look at your coworkers with a critical eye. Can you detect complacency in others? The answer is a resounding "yes." But, you can only see it when you actively look for it. Don't ever let your guard down and don't ever allow your coworkers to let theirs down either. If anything out of the ordinary happens during a routine job, be extra vigilant and follow the checklist from the beginning. Train your subordinates, watch your coworkers, and observe your supervisors. You might not get a second chance. Good luck involves superb planning. ➤

FLEAGLE SALUTES



Major John H. Gaymon, 169 TFG, McEntire ANGB, SC, was just completing a low level spacing turn in an F-16 at 2,000 feet AGL, when he felt an unusual thump and left yaw. He immediately started a wings level climb and noticed an unusually rapid decrease in airspeed. He quickly noted that all cockpit indications were normal. An airframe check revealed that the left leading edge flap had failed. Approximately five feet of the inboard leading edge was missing, and the remaining portion of the flap was rotated 90 degrees up and into the airstream. Maj Gaymon immediately declared an in-flight emergency and turned his aircraft in the direction of home base. During consultations with the SOF, it was determined that the left external 370 gallon fuel tank should be jettisoned to improve handling characteristics. After a successful tank jettison on Poinsett Bombing Range, a controllability check was performed. During the check, as aircraft speed was

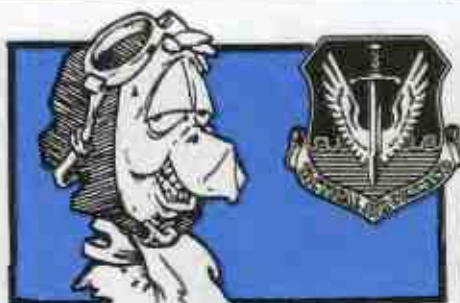
reduced to near 200 KCAS and eight degrees AOA, Maj Gaymon noted dramatic increases in buffet and left roll and yaw. He decided to fly a visual straight-in approach at 210 KCAS. The landing approach was compounded by a light drizzle and a wet runway. Maj Gaymon flew a shallow approach with minimum flare, and touched down 600 feet down the runway at 180 KCAS. He smoothly lowered the nose and used rudder and differential braking to maintain directional control. The aircraft stopped short of the barrier.

Maj Gaymon's quick and correct assessment of his aircraft's condition and his superb flying skills prevented the loss of a valuable combat aircraft and possible injury or loss of life, earning him a Fleagle Salute.

TSgt Michael E. Little, 4507 CAMS, 507 TAIRCW, Shaw AFB, SC, was overhauling an OV-10A aircraft brake assembly when he noticed that the technical order did not provide dimensions for checking the brake piston cavity. It gave the maximum in-service wear tolerance for the cavity's size, but there was no standard starting point to check it against. Sgt Little researched all applicable technical directives on this inconsistency, but could not find the desired data. Sgt Little then contacted the appropriate depot engineer about the problem who, in turn, checked with the brake manufacturer and returned a call to Sgt Little, giving him the necessary dimensions. With this information, Sgt Little was able to completely overhaul the brake assembly and, subsequently submit an AFTO Form 22 to incorporate the data into the appropriate technical order. Sgt Little's keen eye for detail

and initiative in correcting substandard conditions eliminated a potentially unsafe condition that could have resulted in a series of OV-10A aircraft brake failures, earning him a Fleagle Salute.

Technical Sergeant Bernard Davis, 325 AGS, 325 TTW, Tyndall AFB, FL, sets the standard as a professional aircraft maintainer. After completing dedicated crew chief and F-100 engine training through Rivet Workforce only five months ago, Sgt Davis exhibits the skill and systems knowledge of a much more experienced crew chief. Aircrews have cited his professionalism and systems knowledge as contributing factors to flight safety. Because of his thorough inspection procedures, he prevented potentially unsafe flights on many occasions. Of special note, Sgt Davis was performing a routine thru flight inspection of his F-15 aircraft when he discovered a foreign object in the number two engine exhaust area. This aircraft had returned from an uneventful flight with no abnormal engine indications. The object was the number four engine bearing oil return line air pressurization tube which had become lodged in the engine's flame holder. Fortunately, no damage was done to the engine, but had this discrepancy gone undetected the aircraft may have experienced a massive oil leak, possible engine failure and loss of a valuable aircraft. Sgt Davis' attention to detail and emphasis on quality maintenance allowed his aircraft to fly over one hundred sorties with no major mishaps or air aborts over the past four months. His outstanding commitment to safety has earned him a Fleagle Salute.



TAC TALLY

CLASS A MISHAPS
AIRCREW FATALITIES
• IN THE ENVELOPE EJECTIONS
• OUT OF ENVELOPE EJECTIONS

• (SUCCESSFUL/UNSUCCESSFUL)

Total			TAC			ANG			AFR		
JUN	THRU JUN		JUN	THRU JUN		JUN	THRU JUN		JUN	THRU JUN	
	FY 89	FY 88		FY 89	FY 88		FY 89	FY 88		FY 89	FY 88
1	19	26	0	13	17	1	6	6	0	0	3
0	6	14	0	4	11	0	2	2	0	0	1
1/0	14/5	18/0	0/0	8/3	12/0	1/0	6/2	5/0	0/0	0/0	1/0
0/0	1/1	0/5	0/0	1/1	0/4	0/0	0/0	0/1	0/0	0/0	0/0

TAC'S TOP 5 thru JUN 1989

1st AF	
CLASS A MISHAP-FREE MONTHS	
106	318 FIS
41	57 FIS
20	48 FIS
1	325 TTW

9th AF	
CLASS A MISHAP-FREE MONTHS	
76	33 TFW
49	507 TAIRCW
24	1 TFW
20	4 TFW
16	347 TFW

12th AF	
CLASS A MISHAP-FREE MONTHS	
39	474 TFW
31	37 TFW
27	49 TFW
21	24 COMPW
18	355 TTW

ANG	
CLASS A MISHAP-FREE MONTHS	
223	110 TASG
198	138 TFG
180	177 FIG
175	114 TFG
139	155 TRG

AFR	
CLASS A MISHAP-FREE MONTHS	
106	482 TFW
96	924 TFG
84	906 TFG
58	507 TFG
45	917 TFW

DRUs	
CLASS A MISHAP-FREE MONTHS	
153	552 AWACW
23	USAFTAWC
15	USAFTFWC
9	28 AD

CLASS A MISHAP COMPARISON RATE

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

TAC	FY 89	1.7	2.7	3.0	3.2	2.6	2.4	2.3	2.9	2.6			
	FY 88	6.4	3.4	3.0	2.7	2.6	3.3	3.0	3.1	3.3	3.2	3.0	3.4
ANG	FY 89	0.0	0.0	1.5	2.3	2.8	3.1	3.2	2.8	3.0			
	FY 88	0.0	0.0	0.0	0.0	0.9	2.2	2.5	2.7	2.9	3.0	3.5	3.2
AFR	FY 89	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	FY 88	0.0	10.6	7.7	5.9	9.5	7.9	6.7	5.8	7.5	6.8	6.0	5.5
Total	FY 89	1.2	1.8	2.5	2.8	2.5	2.5	2.4	2.7	2.6			
	FY 88	4.3	2.9	2.4	2.2	2.5	3.2	3.1	3.1	3.4	3.3	3.3	3.5
MONTH		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

