

# *TAC ATTACK*

FEBRUARY 1987

Tac Attack

Task Saturation... Pg.4

Task Saturation... Pg. 4

KELVIN TAYLOR



# ANGLE OF ATTACK

**W**e recently received new guidance making the use of seat belts by military members in DOD-registered privately owned vehicles operating off base mandatory. It also made the wearing of a protective helmet while riding a two-wheel vehicle off base mandatory.

As always there will be several different opinions regarding these new rules. Naturally, there will be arguments surrounding the issue of individual rights and the infringement thereof. But



Photo by Ann Kathleen Cartwright

that's always been healthy, i.e., being able to express your opinion by taking the pro or con side of an issue and arguing it till you're blue in the face.

But as I see it, we don't need to choose sides this time because the wearing of seat belts and helmets just makes too much sense. There aren't any cons to this issue when you consider everything that's involved and what's at stake.

As our boss sees it, he is trying his best to preserve his most important resource—people. It's that simple. Take a look. In 1986, we had 166 TAC troops injured in off-duty private motor vehicle (PMV) mishaps; 16 were fatalities and were not wearing seat belts. We had 136 of our people hurt while riding two-wheelers; 18 were not wearing a helmet and one life was lost. Need I say more?

Of course, there will be a few more who will disregard the intent and scream for rights of the individual. Oh, they have a right to scream; but I'll never understand the reasoning. And I'll bet you a nickel on the grass the same people who won't wear a seat belt or helmet for whatever reason (besides being insane) will be the ones yelling the loudest at the scene of a mishap that the medics are too slow getting them to the hospital.

With every preventable injury or loss that occurs, however, we lose a vital link to our readiness. That slack must be made up by someone, somehow. The screamers don't think of that, but our leaders do. More than that, they care.

As I've said many times before, if we do things the smart way, safety will take care of itself. Wearing seat belts and helmets is smart. In fact, the records for on- and off-duty mishaps show exactly how smart.

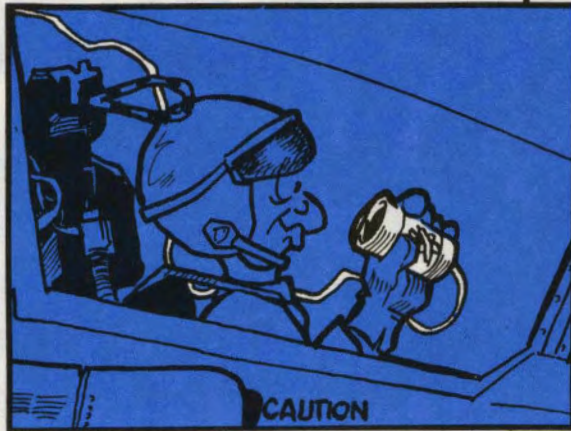
Those of us at TAC Safety are going to use this initiative to renew our campaign to emphasize the importance of seat belts and helmets. With your help we can champion the cause for awareness in off-duty mishaps. We think that's a good angle of attack. What's yours?

EDSEL J. DE VILLE, Colonel, USAF  
Chief of Safety

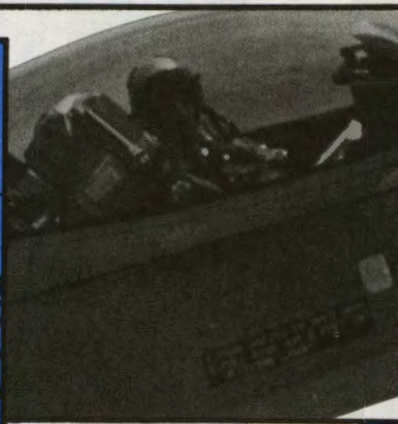


# TAC ATTACK

DEPARTMENT OF THE AIR FORCE



10



14



28

## FEATURES

### 4 Task Saturation: Everybody's Ballgame

It's all about keeping your priorities in order.

### 10 F-4 Crew Coordination: WSO Style

It's very easy to Monday-morning-quarterback aircrews who don't recover malfunctioning jets. Instead of throwing stones, how about checking your crew coordination procedures.

### 14 Don't Stick Your Neck Out

Neck injury is a very real problem in today's high-G arena.

### 18 TAC High-G Centrifuge Training—Just That!

There are a lot of rumors around about the Brooks centrifuge and what it's all about. Here are some ungarbled words on its purpose—training you to fly and fight better.

### 24 Learning Is the Key to Handling Stress

Stress plays a major role in the American lifestyle. Learning how to handle stress instead of avoiding it is the only solution.

### 28 Winter Driving

Snow, slush and ice. All the pleasures of driving in winter and here's a few thoughts on how to cope with them.

## DEPARTMENTS

- 7 Aircrew of Distinction
- 8 TAC Tips
- 9 Ground losses
- 13, 20 Safety Awards
- 16 In The Center
- 21 Fleagle Salutes
- 22 Chock Talk
- 26 Down to Earth
- 30 Short Shots

### TACRP 127-1

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# TAC ATTACK

FEBRUARY 1987



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# ATION

## YBODY'S LLGAME



**Maj Randy May**  
**HQ USAF/XOOTT**

**T**ask saturation" is one of those buzz words that has crept into the fighter pilot lexicon. The term itself is very colorful and evokes images of a pilot inundated by flashing lights, confusing radio chatter and a myriad of tasks. The scenario progresses to the point where the pilot's data bank becomes overloaded and he either ejects, crashes or makes an error in judgment, which a mishap board chalks up to task saturation. Nine times in the past two years task saturation has been identified as causal in Class A mishaps.

"Task saturation" has become a code word, a subtle way of saying inadequate training. Task saturation has become a rationale—indeed almost an excuse—for accepting or at least explaining poor airmanship as a result of poor preparation or poor training.

In reality, task saturation itself never hurt anyone. We have all been task saturated during our flying careers. Think back to that first flight in UPT—trying to remember switch positions, what the gauges meant, radio calls, landmarks, airspeeds, altitudes, checklists, listening to the instructor, the tower, ad infinitum. It seemed like there were a million things to do all at once. That was task saturation. It is not the abundance of available tasks that causes mishaps. Incorrect task prioritization is the real culprit. All tasks are not time critical and do not have the same relative importance. The ability to focus in on the prime task and filter

out the peripheral tasks is a critical fighter pilot skill. Call it situational awareness, the "big picture," task management or any term you like. The correct perception of what is important *now* is essential to successful fighter employment.

Here's a case in point. An element lead performs a level jettison pass for his final delivery, initiates a 4-G, 120-degree turn off target, safes the master arm switch, begins looking over his shoulder to monitor his wingman's rejoin and flies into the ground. This pilot's incorrect prioritization of tasks diverted his attention from the most important task—avoiding the ground at low altitude.

A look to the future shows that the TAF is fielding some task intensive systems—LANTIRN, IIR Maverick, single-seat laser designators and AGM-130. As with any task intensive system, the potential exists for too much "head down" time and channeled attention resulting in a breakdown in situational awareness. The ability to sort out and prioritize what's essential and what isn't is crucial to survival and effective employment of future weapon systems.

How do pilots develop a correct perception of which tasks are important? The basics preached since day one of pilot training are still valid:

1. Maintain aircraft control (i.e., fly the jet).
2. Analyze the situation and take proper action (think, then execute).

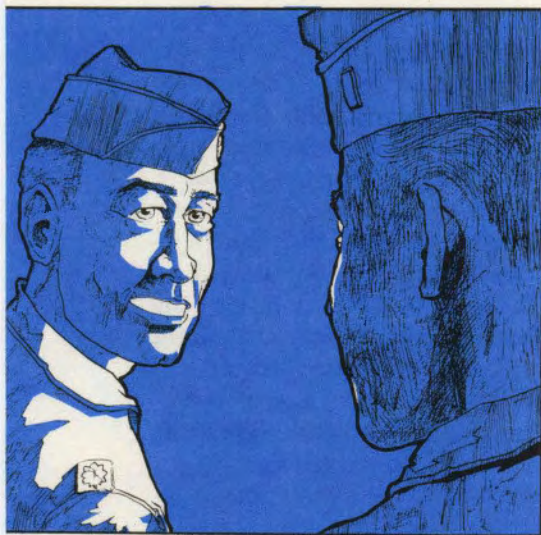
These basic precepts are as valid in flying fighters as they were in UPT.

Back when the F-4 was the workhorse of the TAF, the common practice was to pair a new





# TASK SATURATION



guy with an old head. The old head helped guide the fledgling aviator, sharing experience and creating a mental pacing or cadence of what was important as the mission progressed. The voice of experience from the other crewmember helped mature many young flyers. In single-seat fighters, the TAF no longer has that luxury. That means supervisors, instructors and flight leaders need to assume that "voice of experience" role and teach not only the mechanics of how we do tasks, but also why and, most importantly, when we do tasks. The pacing of a mission is vital in maintaining situational awareness.

The flight briefing is an excellent place for establishing priorities to help focus the flight's attention on what is important. Since so many mishaps occur in the low altitude

arena, let's look at how low altitude task prioritization could be briefed:

1. The top priority is to **FLY THE AIRCRAFT**. That means clear your flight path: avoid rocks, trees and other aircraft.
2. The second priority is to **FLY THE BRIEFED FORMATION**.
3. The third priority is to **CHECK YOUR LEADER'S SIX**.
4. If you can fly your aircraft, fly the briefed formation and check your leader's six, then you can move to the fourth priority: **USE ON-BOARD AVIONICS/SYSTEMS** to counter threats, locate targets, update nav-aids, etc. Anytime situation awareness starts to deteriorate, move back up the list of priorities and then work back down as time/task management allows.

Thus, task prioritization should establish priorities between flight leaders and supporting wingmen. The priorities help define what's most important for a given phase of flight.

Task saturation doesn't confine itself solely to the time between strapping on the jet and climbing back down the ladder. It also occurs daily in the squadron. Supervisors need to be aware of the abundance of tasks facing aircrews. Leadership which emphasizes the importance of being prepared to fly and smartly employ weapon

systems helps aircrews realize that flying is the primary mission.

Supervisors also need to take a close look at the scenarios used in training from a task saturation standpoint. A realistic scenario with attainable objectives can promote correct task prioritization and situational awareness. An overly ambitious scenario on the other hand can snowball into "mission impossible" and lure an aircrew into an arena where priorities and objectives become clouded and the potential for errors in judgment is high. A sound, realistic training program coupled with the right leadership emphasis can help aircrews identify and focus in on the key tasks.

When you hear the term "task saturation" you should—in every case—translate that phrase into "inadequate training."

The days of a simple airframe piloted by an aviator clad in a brown leather jacket, goggles and a scarf flapping in the breeze are gone. To fly, fight and successfully employ today's complex systems requires pilots to move up and down the priority ladder in order to accomplish the most important tasks at the proper time. Task saturation really has never killed anyone—failure to properly prioritize tasks certainly has. As the old adage goes "sight is life," so is task prioritization. ➤



# AIRCREW OF DISTINCTION

**1**st Lt Charles D. McBroom, aircraft commander; and Capt Joseph Reynes, Jr., instructor pilot, were doing an extension maneuver in their F-4E at 18,000 feet MSL and 400 KIAS during a BFM upgrade sortie when the aircraft violently rolled nose low and departed controlled flight. After the aircrew neutralized the flight controls and unloaded the aircraft, it recovered to controlled flight.

Captain Reynes quickly determined that they had a hard-over rudder which was confirmed by their wingman. They were able to keep the aircraft under control until the angle of attack reached 14 units but then the aircraft would make an uncommanded roll to the right. The crew completed all applicable checklists, disengaged all augmentation and pulled the ARI circuit breaker without effect. Unknown to them, an improperly installed flight control bolt was causing the jammed rudder condition.

The two pilots transferred controls frequently to minimize fatigue from the excessive flight control forces required to maintain level flight. During a

controllability check, they found that lateral control ran out at 190 KIAS.

They flew an approach with the left engine in idle and the right engine at a high power setting to counter the right roll, planning for an approach-end arrestment. Lieutenant McBroom flew the first phase of the approach, then Captain Reynes took over during the final portion and landed the aircraft on the left side of the runway short of the barrier. The hook skipped so Captain Reynes maintained runway alignment by using left aileron and left brake until he brought the aircraft to a full stop on the runway.

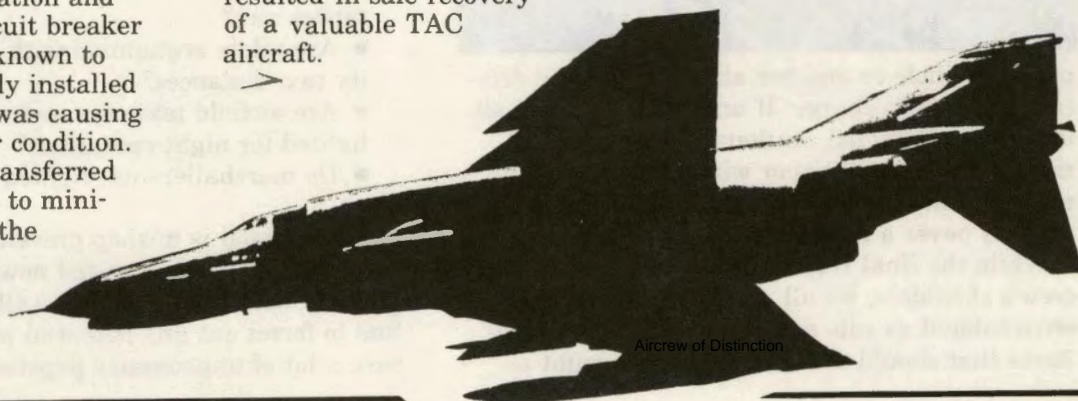
The outstanding crew coordination and superior airmanship demonstrated by Lieutenant McBroom and Captain Reynes resulted in safe recovery of a valuable TAC aircraft.



**Capt Joseph Reynes, Jr.**  
347 TFW, 68 TFS  
Moody AFB, Georgia



**1st Lt Charles D. McBroom**  
347 TFW, 68 TFS  
Moody AFB, Georgia



Aircrew of Distinction

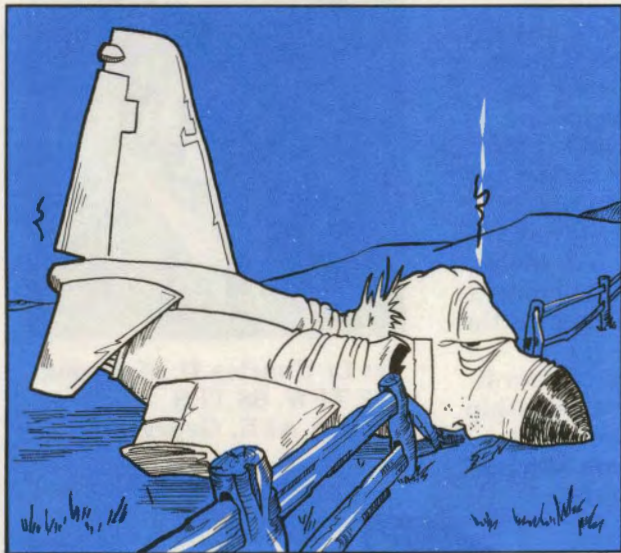


# TAC tips

INTERESTING ITEMS,  
MISHAPS WITH MORALS,  
FOR THE TAC AIRCREWMAN

## Taxi accidents

**T**he ancient problem of aircraft taxi mishaps appears to have resurfaced over recent months. In several instances, there were contributing circumstances such as strange airfields, confusion with taxi lines, absence of marshalling personnel and structures built relatively close to the ramp. None of those factors, however, is an excuse for driving an aircraft into a fence, a



parked vehicle or another aircraft. The guy driving the jet is in charge. If uncomfortable taxi situations are handled cautiously, using airfield markings, marshallers or wing walkers when necessary and following correct taxi procedures, there is never a reason for a taxi mishap.

While the final responsibility rests on the aircrew's shoulders, we all want to make our taxi environment as safe as possible. Here are some items that should serve as food for thought to

help eliminate future taxi incidents:

- Are taxi procedures addressed in orientation briefings and inflight guides for alert detachments, training sites, deployments and exercises staging from strange fields? Will the ramp markings accommodate the size of your aircraft?
- Will your ramp markings accommodate larger support aircraft?
- Do airfield markings and obstacles meet clearance? When was the last flight line siting accomplished?
- Do you know what aircraft the wing tip clearance is based on when using the yellow taxi line?
- Is AGE equipment properly positioned in the vicinity of aircraft? Does the equipment interfere with taxiing aircraft?
- Do refueling tankers interfere with taxiing aircraft? Are proper wing tip distances met? Are fuel servicing safety cones honored?
- Are maintenance/ops support vehicles parked on the flight line so they don't interfere with taxiing aircraft? Are proper wing tip distances met?
- Are pilots acquainted with wing tip proximity taxi distances?
- Are airfield taxiways and ramps properly lighted for night operations?
- Do marshallers use lighted wands at night?

Safety's goal is mishap prevention, not mishap reporting. An hour invested now talking over the problem with the pilots and walking the flight line to ferret out any potential problems could save a lot of unnecessary paperwork later.



## OFF-DUTY MISHAPS

Automobiles



Motorcycles



Drowning

Sports/  
Recreation

Private airplane



Gunshot



Asphyxiation



## ON-DUTY MISHAPS

Industrial



Traffic





# F-4 CREW COOR



## Maj. Vandy Vandenberg TAC Flight Safety

**T**akeoff in your Phantom is normal; but shortly afterwards, you lose intercom in the rear cockpit. Since you have three tanks, you mentally note that it'll be over an hour before you land. The configuration of your instrument panel prevents passing visual signals/notes to the pilot. Later in the mission, you notice that the left aileron is down 3 inches in level flight. What are you going to do?

Realizing that the aircraft has a rig problem or, more likely, an outboard tank that didn't feed, the major problem is informing the pilot. Assuming that you've checked all your connections and tried all the positions on the intercom panel, why not try talking on the radio? The pilot or a ground agency may be able to

hear you. Moving the radar acquisition symbols or bit checking the RHAW gear may alert the pilot and, if you've talked about it, prompt him to investigate further. As a last resort, transfer aircraft control (as prebriefed) at a safe altitude and make a straight pull on the stick; the subsequent heavy wing drop will reveal the problem. Of course, performing a straight-in approach automatically after intercom failure isn't a bad plan, either.

It's very easy to "Monday-morning-quarterback" aircrews who don't recover malfunction-

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**It's very easy to "Monday-morning-quarterback" aircrews who don't recover malfunctioning jets.**

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ing jets. However, it takes a lot more thought to say with any certainty what one would have done in a similar situation without warning. The purpose of this article is not to throw stones, but to generate thinking on crew coordination. While drawn from the backseater's perspective, the ideas apply to both cockpits.

For normal operations, the basics of crew coordination/responsibility are in TACR 55-4. This is supplemented by various other publications, including phase manuals and MCM 3-3. Crew coordination is taught in LIFT, WSO Lead-In and RTU. Still, many crew coordination specifics are learned only through experience. But experience can give us a false sense of security: missions become standard, habit patterns become routine, you develop trust (sometimes too much) in your abilities and those of the



# DINATION: WSO STYLE

pilot. See the hook coming? Under stress, the bad habit patterns and the complacency of either crew member can lead to disaster.

When an engine "hiccups" or the Master Caution light comes on, WSO actions play a large part in the safe recovery of the jet. No matter whether the pilot is an inexperienced lieutenant right out of RTU or the 2000-hour ops officer, the WSO must be ready to assist the pilot in handling the situation.

During an emergency, the first consideration has to be *aircraft control*. The most knowledgeable WSO in the world will still be a mort if he lets the pilot hit the ground looking at the telelight panel. Ensure the pilot maintains aircraft control and assist as necessary before reaching for the checklist. Back up the pilot on the bold face and the "Knock-it-off" call as required. The initial phase is usually where aircrews get behind. If the pilot is task saturated, help him out; but don't overload him with information. A simple directive, such as "Get some airspeed and climb," may be all that's necessary.

Once you reach a safe altitude and the aircraft is under control, get into the checklist and help the pilot analyze the situation. Make sure both crew members understand the emergency. If it's unclear or you think the pilot has misinterpreted something, somebody is confused. Ask questions

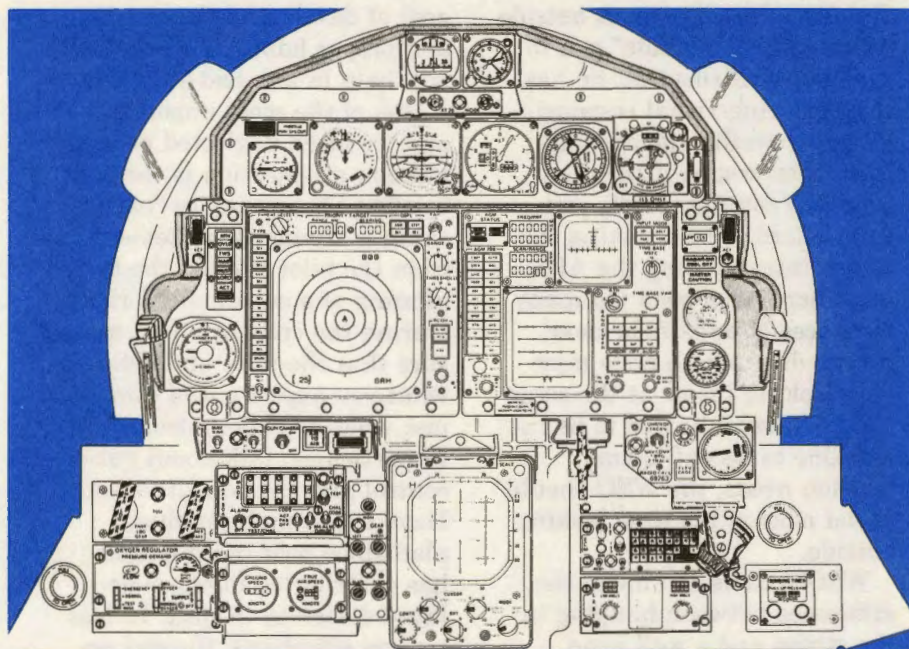
or give ideas until both of you are satisfied.

While the standard "challenge and response" procedures are done, you must also *monitor attitude, airspeed and altitude*. Handle the critical items first, then move on to the less critical steps. WSO prompting of the proper *task prioritization* may be required if the pilot gets behind. Above all, communicate with each other and don't assume anything. If the pilot doesn't respond correctly, challenge again.

Ensure the recovery game plan is correct and covers your actions all the way back to engine shutdown. There are a multitude of factors to consider: severity of the problem, fuel remaining, distance to home base, possible alternates,

weather, etc. Complete all required checklists and contact the appropriate agencies to inform them of your plan.

There are lots of human factors to guard against; some have already been mentioned. Channelized attention can happen at any time; focusing on one action (like an airstart) can cause the crew to miss more critical events (loss of safe airspeed and altitude). Habit continuation, such as "When I get to this point on takeoff, I turn right," can affect aircraft control if the emergency situation requires you to fly straight ahead to preserve energy and altitude. Perceptual distortion (visual illusion) can make you think you did or saw something, when in reality it's different. Many of these factors



F-4G REAR COCKPIT MAIN PANEL





# F-4 CREW COORDINATION: WSO STYLE

can be eliminated or minimized by forcing yourself and your pilot to use an emergency "mind-set," and by being critical of the situation, what you see and your planned course of action.

The proper mindset is a player during normal operation, too. Monitoring position, fuel, airspeed, altitude and so forth will help the crew maintain better situational awareness. Excessive variance from prebriefed parameters should get your attention, such as being off altitude 500 feet or being 50 knots slow. If your front seater's crosscheck is that slow, he deserves a gentle reminder from the pit.

Another important part of normal crew coordination is the division of inside versus outside duties. An "I'm inside" call to the pilot confirms that he has total clearing/visual responsibility for traffic and/or wingmen. Conversely, if the pilot says he's coming inside, you can't afford to be checking the radar, interrogating the APX, etc. There have been too many instances of midairs or near misses due to both crew members looking inside at the same time. Unless required to be inside due to deconfliction/mission needs, the WSO should spend most of his time looking outside.

WSO actions can mean the difference between hanging in the straps and a well done award. But if you're not pre-

pared, chances are that your performance will be less than ideal, degrading the situation. Both crew members need to know aircraft systems cold and should put that knowledge to use in simulator scenarios.

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## WSO actions can mean the difference between hanging in the straps and a well done award.

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Simulator training is a wonderful thing; but if the time isn't used effectively, you might as well be somewhere else. Each sim is a chance to handle a range of emergencies with the goal of developing the mindset and proper habit patterns that will help in any bad situation.

One of the most important and too often neglected parts of mission preparation is the crew briefing. Accepting an "everything is standard" statement from the pilot is often the beginning of a substandard ride. During the crew briefing, make sure that the pilot understands what you expect out of him, not just what he expects from you. In particular, talk about out-of-control and ejection situations. Have a thorough comm-out plan since poor coordination has contributed to many delayed decisions to eject. In less serious situations, the gap on the left side of the rear cockpit

instrument panel allows visual signals and note passing. To get the pilot's attention, a quick flutter on the rudder pedals or the RHAW bit check will work. In a TERC RF-4C or F-4G Wild Weasel, however, you don't have the gap and should resort to other means. The important thing is to have a prebriefed plan to use in an intercom-out situation.

WSOs may be saying, "I know all this stuff"; yet we continue to see mishaps where proper crew coordination would probably have saved the crew and/or the jet. On the positive side, most emergencies don't progress to Class A or B mishaps because the crew was ready. A more common Class A scenario is a relatively minor problem followed by too much attention/time being devoted to analyzing the problem at the expense of aircraft control. Conversely, there have been many instances where the WSO was instrumental in getting the crew on the right track. Could you do the same?

This has not been an all-inclusive "Here's how we crew coordinate" article. Given the findings of several recent mishaps, you should already be evaluating your crew coordination techniques. If you use these ideas in your mission preparation, the 10 minutes it took you to read this article will be worth it during your next emergency. ➤



# TAC Outstanding Achievement in Safety Award



**SrA Timothy A. Madl**

**Sgt Angel L. Gonzalez**

**SSgt Robert M. Hunter**

**4 AGS, 4 TFW  
Seymour Johnson AFB,  
North Carolina**

**A**ccording to their squadron commander, SSgt Robert M. Hunter, Sgt Angel L. Gonzalez and SrA Timothy A. Madl are prime examples of the perfect weapons load crew. They were selected to receive this award because of their sustained superior performance: the crew always follows the tech data, doesn't take shortcuts and maintains the desire to do an excellent job—a real team effort.

Considering the large number of munitions the crew is certified to load and their addi-

tional tasking as an aircraft weapons system maintenance crew, their expertise and safety-oriented attitudes have enabled them to achieve an outstanding record.

They received zero discrepancies during a quarterly weapons load evaluation and during the evaluation of an integrated combat turn. In addition to these accomplishments, the crew participated in two monthly and one quarterly weapons loading competitions. Not only did they win, but they again excelled by achieving a

perfect 1000-point rating while loading Mk-82 high drag bombs.

Their vast knowledge of the F-4E weapons system recently enabled them to troubleshoot and repair a weapons release problem that had eluded another maintenance crew for over one week. Maintenance actions of this type are invaluable.

Sergeant Hunter, Sergeant Gonzalez and Airman Madl are considered the best weapons load crew in the 4th Tactical Fighter Wing.



# DON'T STICK YOUR NECK



**N**eck injury is a very real problem in today's high-G arena. From a survey I recently completed involving several TAC bases to determine the frequency and severity of this problem, the initial impressions verify that neck injury is much more common in the Eagle and Falcon than in the F-4 or F-5 and appears to be more common among F-16 drivers. So the word is "Heads up and necks in."

Neck injury may take several forms ranging from slight to severe. The least severe and most common injury is the muscle strain or sprain; it usually causes mild to moderate discomfort and lasts from a day to a few days. A more severe injury is a tear in any of

**Maj. Roger D. Vanderbeek**  
Brooks AFB, Texas



# OUT

the small ligaments that stabilize the spinal vertebrae in the neck.

The most severe injuries include fracture of a vertebra or a herniated (slipped) disk. These are not junior varsity injuries. They **will** get your attention.

All neck injuries have the potential to cause irritation to the nerve roots as they exit from the spinal column, and this may lead to inflammation and pain. A mild strain or sprain that resolves over a day

or two is of little concern. However, the following signs may indicate a more serious injury and *should* make you think about a quick trip to the flight surgeon:

1. Tingling, numbness or pain in the forearm, hand or fingers
2. A neck or shoulder pain that does not follow an expected course for a mild strain or sprain, or one that persists for several days
3. Any problem with coordination or movement of your arms, hands or fingers.

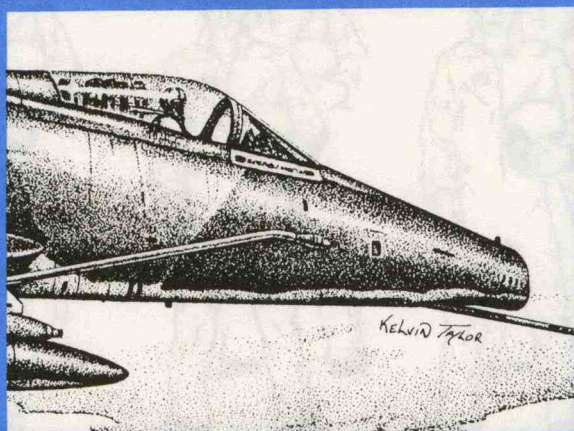
The best prevention for neck injuries is a good conditioning program for the neck muscles and a good warm-up before the fight. If you seem to hurt your neck more often than other jocks, you need to start on a

dedicated strengthening program or improve your current workouts. There may already be a good program at your base. If not, ask your flight surgeon for information.

If you torque your neck during the fight and it doesn't improve in a couple of days, or before your next high-G mission, **don't stick your neck out.** See your flight surgeon, let it heal, then work on strengthening it for future protection. Your neck will be appreciative during later years when you try to act out an old dogfight with your grandson on your knee.

Bio: Major Vanderbeek is a resident in aerospace medicine at Brooks AFB. He has over 1000 hours in the F-4, F-15 and F-16.

## HEADS UP



Next month, in the

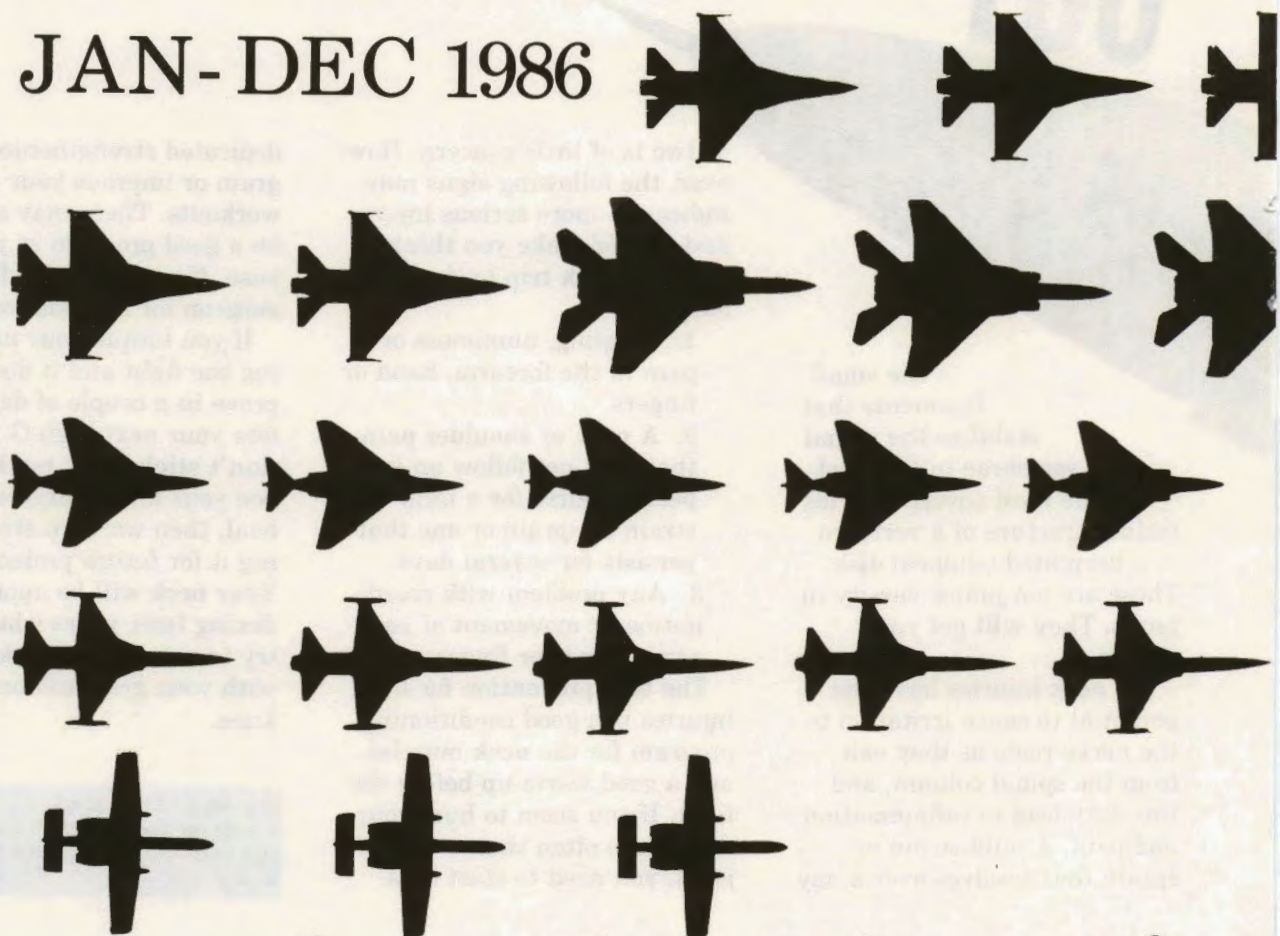
## MARCH

issue of *TAC Attack*, you will see Sgt Kelvin Taylor's stipple drawing of the F-100D  
**IN THE CENTER.**



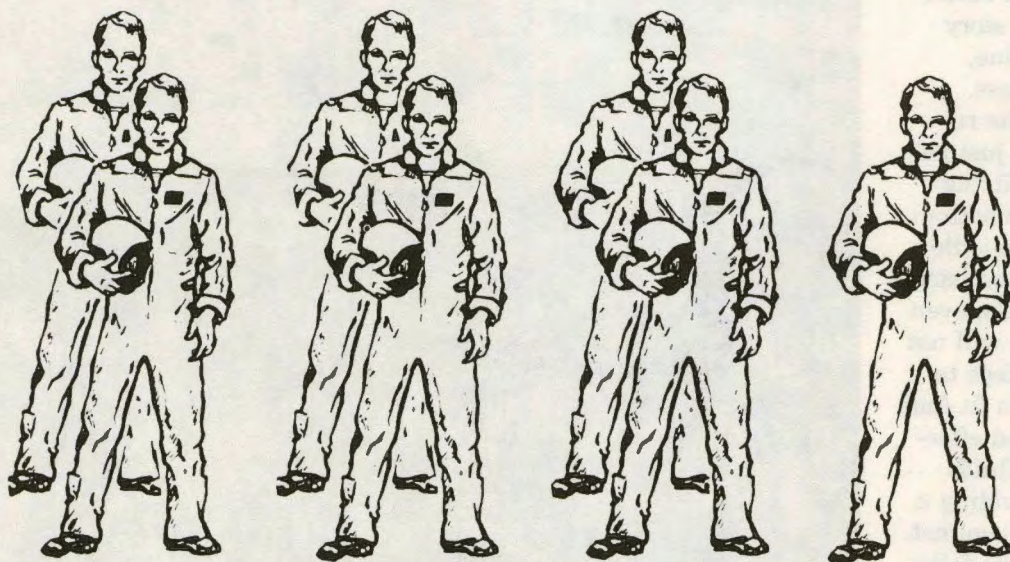
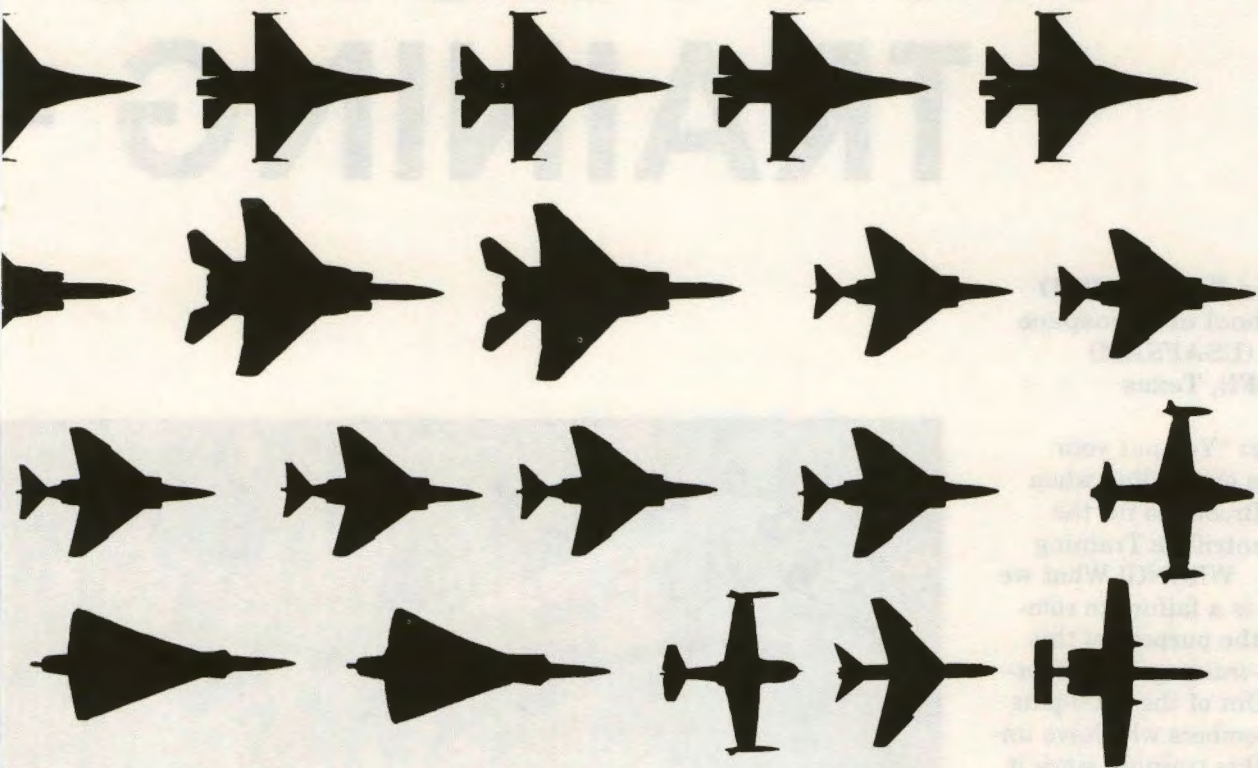
# OUR TAC AND TAC-GAINED

## JAN-DEC 1986





# UNITS' LOSSES IN THE AIR





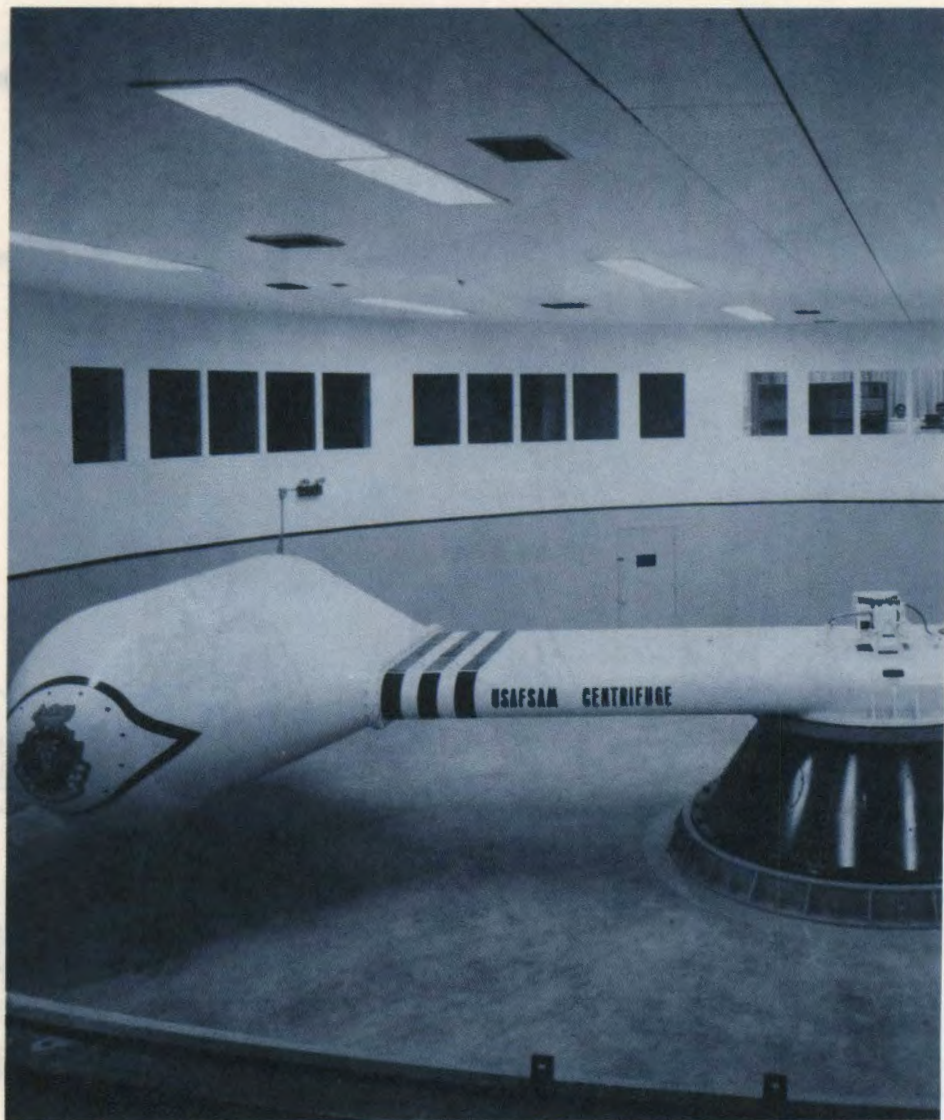
# TAC HIGH-G TRAINING -

Maj James T. Webb, PhD  
USAF School of Aerospace  
Medicine (USAFSAM)  
Brooks AFB, Texas

**R**umor: "You put your wings on the line when you go to Brooks to fill the High G Centrifuge Training square" . . . WRONG! What we have here is a failure to communicate the purpose of this program—*training*, and *training only*. Out of the 1100-plus aircrew members who have undertaken this training since it began in January 1985, all have successfully completed it. Admittedly, a few stayed over another night to get some good sleep and inevitably did better the next day. Same old story about self-induced (airline, schedules/taxis/etc.) stress.

I don't know where the rumor originated, but it's just as false as the one about fitting your G-suit tight at the bottom and loose around your middle so it will "milk" the blood back up to your brain. At 9 Gs, even a properly fitted G-suit will not pump blood from your legs to your head. A snug, even fit (not tight) is comfortable and effective at keeping excess fluids out of the legs and providing a good platform to strain against.

Question: If the Brooks folks don't get their jollies by





# CENTRIFUGE! — JUST THAT!

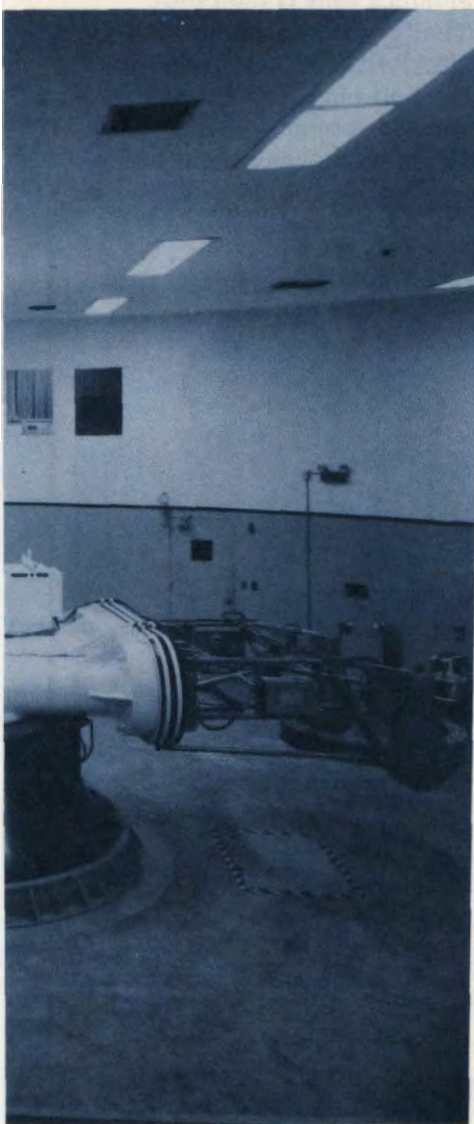
grounding people in the program, what *do* they do? Answer: We 1) talk for approximately 1½ hours about the physiological and mechanical problems and solutions related to high-G and high-onset rates; 2) provide the opportunity for students to practice the L-1 maneuver without such distractions as airspeed, altitude and impending debrief of your skill and cunning at ACM. The actual rides in the centrifuge take about 10 minutes per person and usually produce at least some fatigue, *petechiae* (G measles, which go away in a couple of days and are good for a little sympathy even though they don't hurt) and muscle soreness in the arms, not unlike tennis elbow.

In case you are curious, G-induced loss of consciousness (GLC) episodes that occur during this training are not reported except as total numbers or a percentage. When a GLC happens, we just press on and complete the training—no big deal. Since the rider can terminate the ride at any time, as can those of us observing the rider in our 1-G control room, the percentage of riders who GLC during training has been kept down to about 11 percent. Those who have lost consciousness on a centrifuge training

profile have usually done so by relaxing prematurely during the deceleration from one of the rides. It only takes a second or two of relaxation at 7 to 9 Gs to result in an unauthorized nap on government time.

We try to avoid GLCs by stressing continued straining after reaching the upper limit of the ride and by emphasizing the visual warning signs of grayout and tunnel vision during the gradual-onset run (GOR). The first ride is gradual enough (0.1-G per second without G-suit pressure) to allow visual symptoms. Blackout is VERY close to GLC, and we don't recommend pressing yourself that far before terminating the ride. After the first loss of peripheral light to the GOR (relaxed tolerance), you begin your L-1 straining maneuver; and the peripheral vision will return . . . for a while. When the loss occurs again, you can stop the ride by releasing a handheld switch while CONTINUING TO STRAIN. If you were to reach 9 Gs (about 40 percent do), the ride will automatically stop.

The second and remaining rides are rapid-onset runs (RORs) for 6 Gs for 30 seconds (practice L-1); 8 Gs for 15 seconds, 9 Gs for 15 seconds and 9 Gs for 10 seconds with your







# TAC HIGH-G CENTRIFUGE TRAINING

head turned left in a check six position. Continuing the strain at the termination of each of these rides is critical because at these G levels and onset rates there may be no visual warning prior to GLC. Those of you who have experienced a GLC while flying can attest to the physiologically normal but sneaky nature of GLC during rapid-onset or relaxation while at high G.

The benefits of learning and using the L-1 maneuver properly include: less fatigue (stay in the fight longer), greater tolerance (more intensity with each fight) and better recovery (more engagements), not to mention fewer incidents of GLC. Balanced weight training and aerobic training will also aid your straining capability and lessen the rate of fatigue.

As you will be told when you are requested to attend, you may bring a 3/4-inch VTR tape to record your efforts for the

grandkids. You may also be happy to know that no leads, such as those nasty EKG wires, will be allowed to touch your steely skin. At present, I am the only USAF pilot who regularly rides our centrifuge with EKG leads. As part of the "subject" panel of riders, I help provide feedback on methods to enhance your G tolerance. That's the main reason the USAFSAM centrifuge exists in the first place—to enhance your performance and training in the high G environment. ➤

## TAC Outstanding Achievement in Safety Award

**A**n A-7D aircraft ground aborted after the pilot discovered he did not have full forward travel of the control stick during flight control checks. While the crew chief was "feeling" the stick, the restriction broke free and no further restrictions could be felt.

MSgt Gerald G. Ellyson was assigned the task of troubleshooting the problem. After inspecting the control system through all normal access points, the binding problem could not be located and it could not be repeated. Not satisfied with these inspection results, Sergeant Ellyson then started removing other aircraft panels to expose covered route-of-control rods. This additional effort revealed the problem. The 90-degree cable clamp on the upper anticollision light

cannon plug had made contact with the pitch control or connecting link. The rivet securing the arm assembly to the rod made enough contact to drastically bend the bracket.

Recognizing a potential flight mishap situation, Sergeant Ellyson initiated a fleet inspection of all assigned aircraft. This inspection revealed that 12 of 24 aircraft showed evidence of the problem.

Subsequent review of tech data revealed that installation procedures did not address the need to insure that the anticollision light cannon plug and wiring is installed to ensure clearance for the pitch control link and cable located in the immediate area. An Emergency AFTO Fm 22 was submitted and an interim TCTO and interim safety supplement were

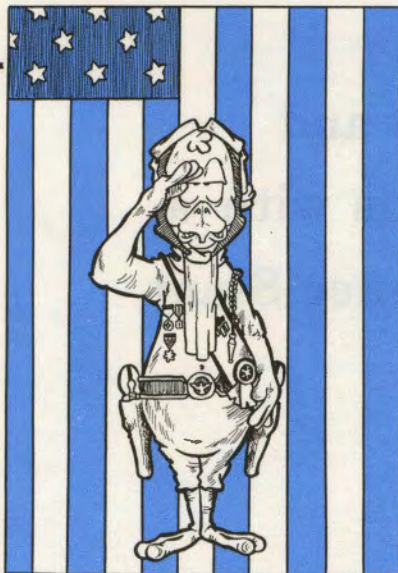


**MSgt Gerald G. Ellyson**  
192 TFG (ANG)  
Sandston, Virginia

issued for all A-7 units to inspect their aircraft for this potential flight safety problem.

Sergeant Ellyson's dedication to professional excellence in performing his duties above minimum requirements has earned him this award.





## FLEAGLE SALUTES

**Sgt Leslie J. Baxley**, Transient Alert Mechanic, 27 TFW, Cannon AFB, N.Mex., is consistently a safety asset in the challenging and demanding flight-line environment. Recently, her section was tasked with turning 7 F-111s. The aircraft were parked in two rows and a normal turn started. The pilot in her aircraft had stored his helmet bag behind his headrest. Sgt Baxley spotted the bag moving and had the pilot shut down the aircraft. The bag was blown up into the air and onto the aircraft. She then retrieved the helmet bag and completed the launch.

**Capt Theodore A. Bale**, 2d Lt **Ricky A. Ragland**, Sgt **Timothy J. Carazo** and A1C **Michael L. Hulin**, 405 TTW, Luke AFB, AZ, were conducting upgrade training when their UH-1 helicopter experienced a severe high frequency vibration with an audible grinding noise. Capt Bale im-

mediately initiated an emergency descent to an open field and had the helicopter safely on the ground within fifteen seconds after the first indications of a problem. He and 2d Lt Ragland then performed an emergency shutdown while the flight engineers positioned themselves to fight any resulting fire. Almost immediately after the throttle was rotated to the off position, the helicopter drive train seized. The crew's proper assessment of the situation and quick actions saved a valuable TAC aircraft.

During a recent exercise, an A-10 returned to base with a jammed gun. The end-of-runway dearm crew safed the external munitions and pinned the 30mm gun but failed to ensure that the gun was cleared of live 30mm ammunition. The aircraft was then mistakenly taxied to the flight line with four live 30mm rounds in the gun. This was done under the assumption that the gun was already cleared of live 30mm ammunition. **SSgt Steve G. Soper**, 23 AGS, 23 TFW, England AFB, La., and his crew were dispatched to clear the gun jam and make necessary repairs. When he discovered the live rounds still in the gun, he took immediate action to correct the situation. SSgt Soper's concern for personnel safety and his knowledge of the weapons system prevented a serious mishap.

**A1C David C. Sandusky**, 21 TASS, 507 TAIRCW, Shaw AFB, S.C., has expended a considerable amount of time and effort in improving the explosives safety program of the

squadron. His accurate maintenance record boards reflect the status of munition items at all times and provide an outstanding way of tracking all explosive lot numbers. During the absence of the squadron additional duty weapons safety NCO, A1C Sandusky assumed his responsibility and ensured all explosives safety standards were in compliance when the life support shop was relocated.

**SrA Clinton L. Smith**, 355 AGS, 355 TTW, Davis-Monthan AFB, Az., had launched and recovered his A-10A aircraft uneventfully. His aircraft was scheduled to fly a second sortie that day. While the pilot was performing his before engine start check, Airman Smith was visually checking the empennage area. With the auxiliary power unit (APU) running, the starting sequence on the number one engine was initiated. Airman Smith noticed a clear fluid draining from a fuselage panel just forward of the APU compartment. The pilot confirmed that the air conditioning was on, which can cause water to drain overboard. Still not satisfied, he smelled the liquid and determined that it was jet fuel. Airman Smith immediately notified the pilot to begin emergency shutdown procedures and to turn battery power off to remove any chance of a spark. Fuel cell maintenance was notified of the situation and found a leaking fuel manifold. Airman Smith's thorough troubleshooting and attention to detail in this emergency situation prevented a serious mishap.



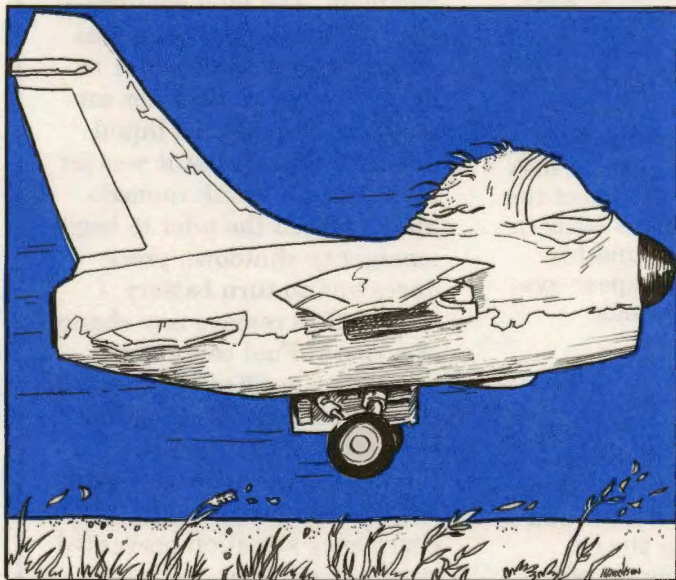
# CHOCK TALK

## Incidents and Incidentals with a Maintenance Slant

### Not enough friction

**F**ollowing refueling of an A-7, the crew chief replaced the fuel cap and the pilot checked that it was in place during his preflight. During the postflight inspection, the crew chief noticed that the cap was missing. The probable cause was a worn cap which lacked sufficient tension and vibrated off during the flight. Three other aircraft were discovered with similar loose fuel caps.

Identifying and replacing worn or loose aircraft parts is one of the ways we can easily cut down on dropped objects. If you notice a loose cap or panel, replace it then. Don't wait until it falls off somewhere between takeoff and landing.



### Only the shadow knows

**T**he F-4 crew chief and his assistant, a 3-level cross utilization trainee, had readied their aircraft for an early morning launch during a local exercise. The crew chief began the engine intake inspection just as the aircrew arrived and finished the left intake when the pilot was climbing into the cockpit.

As the crew chief exited the intake, his assistant asked some questions about prelaunch servicing checks and the crew chief accompanied the trainee to the aft underside of the aircraft. Unfortunately, the crew chief forgot the black 6-volt flashlight he left lying about 8 inches inside the mouth of the engine intake.

Following a normal start of the number two engine, the crew chief saw pieces of something flying out of the number one engine exhaust as it cranked up. The pilot immediately shut down the engine and they discovered considerable damage to the engine as a result of the foreign object.

Simple human error was the predominant cause of this mishap, but there were also several factors contributing to this mishap which could have been prevented. The tool accountability practices were inadequate. The crew chief's usual habit pattern for accounting for his flashlight was broken due to the wearing of the chemical ensemble. His normal practice was to exit the intake, remove and fold the coveralls used and place his flashlight on top of them next to his tool kit. Since the coveralls weren't big enough to fit over the chemical suit, his usual reminder to check for the missing flash-



light wasn't there.

How's your tool accountability? Is there a fool-proof method to account for tool kits, TOs and flashlights that you use around the aircraft? How do your habit patterns change during exercises and simulated chemical conditions? Do you allow any unsafe practices to sneak in undetected?

## There's a right way and a wrong way

Capt. Allan Muller  
325 AGS  
Tyndall AFB, Florida

**T**he sign says "Wet Paint—Don't Touch," yet many people will still touch it. The radio station warns of slippery driving conditions and suggests we drive slower—some will, some won't. It seems that no matter how logical, how intelligent or obvious "old wisdom" appears, we are continually tempted to test for exceptions to the rule. Apparently, we feel that those who have gone before us just weren't inquisitive enough to question those old standard signs and warnings. We continue to revalidate the warnings.

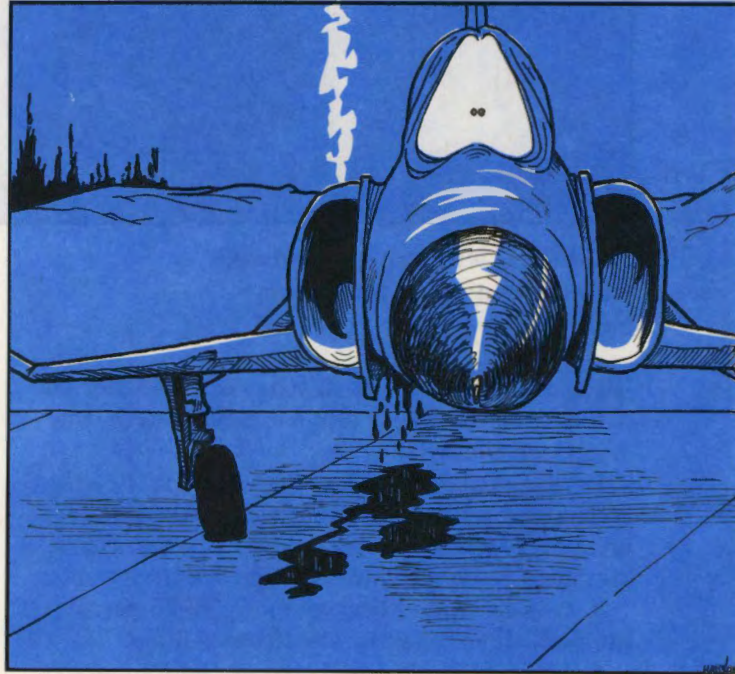
Notes and warnings in tech data are often treated the same way. Example: an NCO breaks one tooth and chips two others when his speed handle slips and strikes him in the mouth. But the rule said, "When cranking a speed handle, always keep your face out of the line of fire." Or An NCO uses a pocket knife as a tool, the blade closes on his finger and the resulting cut requires minor surgery.

Trust the wisdom of warnings and the experience of others. There's no need to rediscover their hard-learned lessons.

## An unfinished job

**D**uring an F-4 transition sortie, the instructor in the front seat noticed flickering right generator and bus tie lights. The right engine also showed low oil pressure. The pilot brought the throttle back to idle and shut the engine

down because sufficient pressure couldn't be maintained. The crew brought the aircraft back to base and landed from a single-engine approach. Postflight inspection of the aircraft revealed excessive oil on the right underside and afterburner section of the jet.



The loss of oil in flight was traced back to maintenance that had been done to fix a static oil leak on the number two engine. The TO steps for reconnecting the scavenge filter return line required 300 to 500 pounds torque to secure a B-nut on the return line. Because of the location of the B-nut, a special use torque wrench, which had to be checked out from the CRS engine shop, was required. The tool was never checked out for this job.

Although there was no apparent oil leak during the engine test run, inflight stresses of vibration, heat and high power settings resulted in the under-torqued B-nut backing off and causing an oil leak and the subsequent loss of an engine.

Whenever the TO calls for a special tool, *there is a special reason*; and in almost 100 percent of the cases where a shortcut was taken (substitute tool used), a potential or actual mishap occurred. Plan ahead. When you need a special tool or part, let someone know so that everything is available to ensure that you can do the job correctly.





**Capt (Dr.) William A. Gradwell**  
**Chief, Behavioral Medicine**  
**Eglin AFB, Florida**

**M**uch of the stress in today's life cannot be avoided. Stress plays a major role in the American lifestyle.

Dr. Edward A. Charlesworth and Dr. Ronald G. Nathan, two leading authorities in the field of behavioral medicine, cite some rather startling statistics related to stress. Consider these facts:

- It is estimated that as many as 75 percent of all medical complaints are stress-related.
- A recent study conducted at the University of Tennessee showed that more than half of all hospital admissions could be prevented by changes in lifestyle.
- American industry loses \$15 billion per year because of stress-related absenteeism.

The initial step in any successful stress management program is to enhance your awareness of stress. Most people aren't aware of being under stress until they begin to experience significant symptoms such as frequent headaches or insomnia. In many of these cases, less serious signs of stress could have been detected earlier.

Each of us needs to pay more attention to how we react when stressed. Do we increase our food consumption or smoke more cigarettes? Do we begin to withdraw from social interaction or become irritable with others? Do we become forgetful or have trouble maintaining our concentration? Often these earlier signs of stress are signals to take action before more serious symptoms develop.

The 20th Century is often referred to as the

"age of anxiety." We're bombarded daily with numerous, potentially stressful stimuli. People are not clones who respond equally to the same stressor. We are actively processing incoming data and responding based upon our interpretation of the information.

One employee, for example, may react to the boss's displeasure by showing a minimal response while a co-worker responds by worrying about being fired.

Such tendencies are not that unusual among people with stress problems. It is not uncommon for many people who suffer from significant stress disorders to place unrealistic demands on themselves. Their vocabulary is filled with "shoulds" and "musts." As expected, these people eventually are unable to meet their unrealistic goals, and then view themselves as failures. Obviously, such distorted thinking only serves to fuel the flames of stress.

### **Controlling Stress**

If we can't make the stress go away, what can we do to cope with it and manage it more effectively?

Scanning your body and behavior for early symptoms is very important. In addition, examine your thinking which is often driving the stress response. Questions such as Am I making a mountain out of a mole hill? Am I worrying about something I have no control of anyway? Are my expectations realistic? can prove to be helpful.

Exercise and physical activity can have extremely beneficial effects. Frequently, the body is all charged up and prepared to fight or run away



# LEARNING IS THE KEY TO HANDLING STRESS

from the stressors. Unfortunately, such direct responses are not always available.

Physical activity often allows the individual to burn off this accumulated tension in an indirect manner. A regular physical activity program may serve to defuse tension and avert a serious medical problem.

People under stress often withdraw from social interaction. Being with other people often takes one's mind off problems or at least puts a different perspective on things, particularly if others in the group are experiencing stress. Companionship also affords the opportunity to talk out one's problems. As long as the other person is a good listener and respects the confidentiality of the individual, such talks can be quite productive.

## Relaxation Techniques

Learning relaxation techniques can be an extremely valuable lesson in managing stress. Unfortunately, many people equate relaxation with laziness, goofing-off or doing nothing. This is not the case.

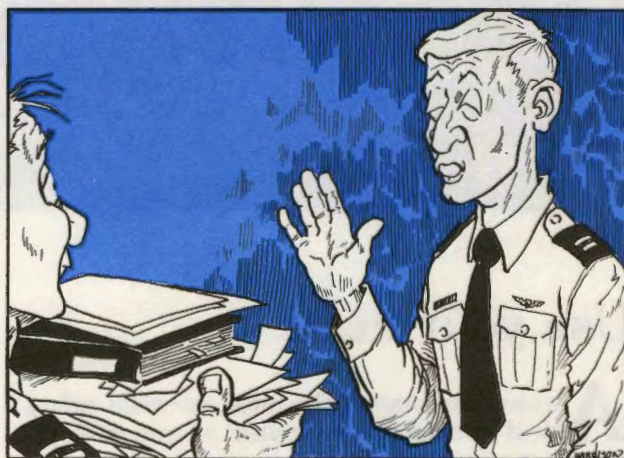


Relaxation techniques are specific skills which require regular practice to be effective. Many relaxation techniques have been around for ages, but only recently have they received acceptance

and recognition by the medical community. Obviously, if what a person thinks can have a negative consequence on the body's function, then it is reasonable that we can train ourselves to use our mind in an equally potent but adaptive rather than maladaptive manner.

## Learn to say No

In addition to these relaxation skills, people also need to manage their time more effectively. Many stressful situations could be averted if we could only learn to say no effectively and tactfully. Frequently, people will do things for others



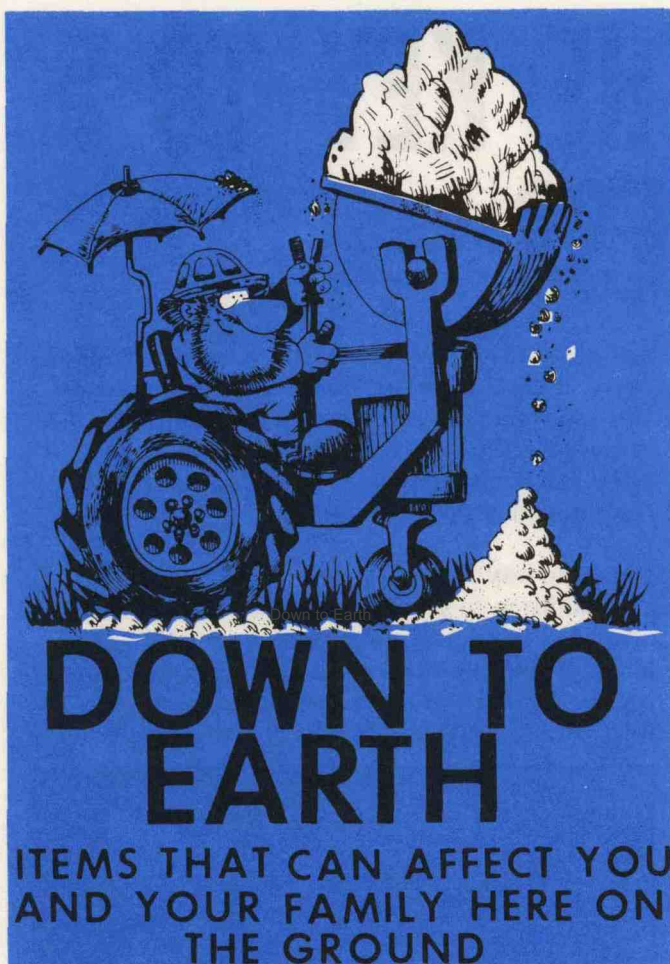
when they don't have time to meet their own needs. Many people with stress react like Smokey Bear, stamping out forest fires rather than establishing and addressing their own priorities.

In short, stress management requires action. We need to learn to understand stress, learn the skills to manage stress and put these skills into practice.

Don't wait for the development of an illness or anxiety reaction to learn self-regulations and stress management. People must learn to take responsibility for their own health and learn to manage stress so that health is not just a happy accident—it's a choice. ➤

*Courtesy Family News*





## Use your head

**A**nyone can master the most essential safety skill in riding motorcycles: all you do is put a helmet on your head.

In 1975, all but three states had laws that required mandatory use of motorcycle helmets. Then, between 1976 and 1979, 27 states repealed or relaxed those laws.

In those same years, motorcycle registrations rose by less than 1 percent, but motorcycle deaths jumped almost 50 percent — from 3312 in 1976 to 4850 in 1979. A disproportionate number of deaths occurred in the 27 states that repealed or relaxed their helmet use laws.

Today, only 16 states and the District of Columbia require that all motorcycle riders wear helmets. Six states have no helmet-use laws at all. (Read "Angle of Attack" in this magazine for the new DOD policy.)

The rest of the states require only motorcyclists

under a specific age—usually 18 years old—to wear helmets.

But older riders may be more likely to wear their head protection. In a recent study by the Safety Helmet Council of America, about one-fourth of the accident victims saved by their helmets were in their 40s, even though this group owns only 10 percent of all U.S. motorcycles.



In many accidents reported in the helmet council study, motorcyclists suffered no serious injury to any part of their body because they landed headfirst and their helmets absorbed the impact. Sometimes a helmet cracks in two, or its protective surface scrapes off. Better the helmet than your head.

Unfortunately, most motorcyclists ride in warmer weather, when some helmets may be uncomfortably warm. But check out new models: recent improvements in shell material and better interior ventilation have increased the comfort.

It may be time for a new helmet anyway. A helmet normally retains its protective value for about three years. After an accident's impact, or even constant rough treatment, the helmet's protective liner compresses, losing its ability to absorb impact; then you must replace the helmet.

Reprinted with permission from *Family Safety & Health*, a National Safety Council publication

## Simon says

**R**emember the game "Simon says." You know how it works: someone plays Simon and tells the other players what to do; but if Simon doesn't say "Simon Says" and you do it, then you're out of the game.



Well, we had two people deer hunting last year. They were both in a deer stand about 11 feet off the ground when they decided to go home.

One of the hunters told the other one to climb down to the ground first so he could hand the rifle down to him. But when the hunter that was still up in the stand started to hand the first rifle down, he jammed the hammer of the rifle into a support beam, which caused the rifle to discharge.

Here's where Simon must have said, "Hand me down a loaded rifle," because the hunter who did it is now out of the game.

## Don't misuse microwaves

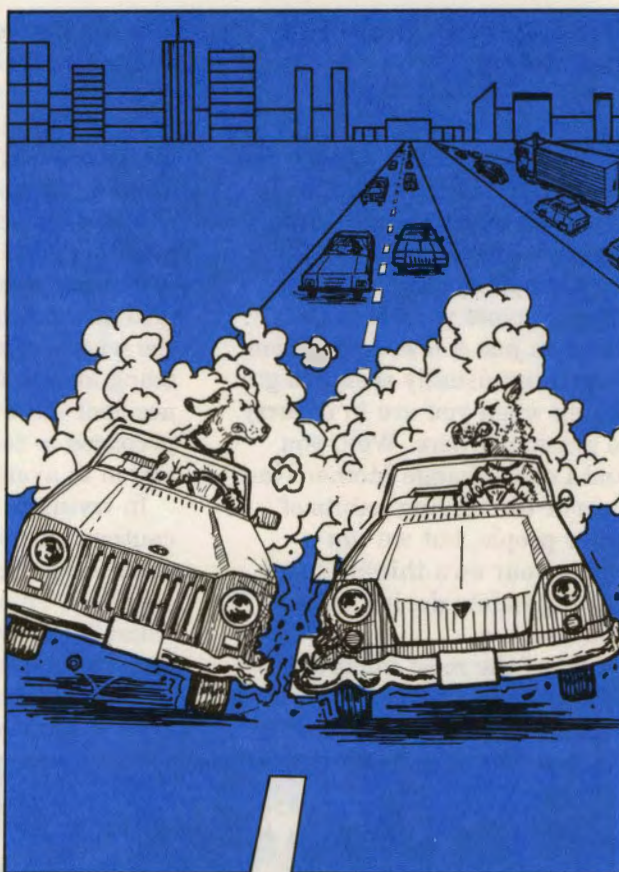
**M**ore than 90 percent of microwave oven users have been burned by food that's been heated in the microwave, according to Burn Care International and the Institute for Fire and Burn Education. The two burn groups said that people didn't read the warnings in their owner's manual and overheated the food. The most common cause of these burns is overheated liquids; some cases involved infants whose parents overheated baby formula. Another common cause was jelly-filled pastries. The burn groups say that just 30 seconds in a microwave can heat the jelly in a donut to more than 200°F, more than enough to burn the mouth.

## Courtesy

**SSgt Steven J. Schultz**  
**TAC Ground Safety**

**H**ow many times has this happened to you? You're driving in your car in heavy traffic when you come upon someone who is driving slowly in the other lane with their turn signal on, obviously trying to get into the lane you're in. But no one will give him a break and let him in the other lane. Will you be the nice guy and let him in? You think of the times you've been in the other guy's place, and decide to let him in your lane.

Courtesy is an important part of our lives.



Without it, this would truly be a dog-eat-dog world. We say good morning to people and wave at our friends to show them we're amiable and unhostile; but we seem to lose those traits when we get behind the wheel of an automobile. And that is one of the contributory causes of auto mishaps.

Let's stick with my example. If you won't let the guy in the other lane come into your lane, he just might be inclined to force his way over. And so the other guy ends up hitting your car. Now he's really ruined your day. Why? All you (or any of those other folks) had to do was let that guy over.

Courtesy costs nothing and pays back greatly. I'm not advocating we all go out tomorrow and look for other people to let in our lane; but just think of all the occasions we have to do something nice for someone else, especially when we're in our cars. Courtesy just might prevent you from becoming one of the daily mishap statistics. By the same token, if someone's been nice enough to give you a break while you're driving, don't forget to wave a thank you back to him. He'll know his courtesy was appreciated and he might be kind to someone else again. The next time you're on the road, be nice; you could save a life.



**SSgt Eugene J. Ondechek**  
**TAC Safety**

**D**riving in snow and ice can be full of frustrations. You see other folks going too fast or too slow, spinning their tires, stopping too quickly or sliding across your lane, to mention just a few. In addition, something usually seems to go wrong when you are in a hurry to get somewhere. Well, you and I can't change Mother Nature or the driving habits of other people, but we *can* change our own thinking and driving habits during inclement weather.

One of the most important aspects of safe winter driving is **being alert**. This is especially

true during bad weather when you can't afford to let your mind drift for even a few seconds. Being alert means being aware of what other vehicles around you are doing. Pilots call this "situational awareness"—a good idea whenever you're out there in public. It also means looking ahead to see what's coming your way, being able to detect potential accident situations and being prepared to take appropriate action to avoid them.

In trying to be more alert or cautious during adverse driving conditions, some people tend to tense up. This is one of the worst things you can do. Instead of helping you drive better, being tense may keep you from controlling the vehicle at

a critical moment. So, when you catch yourself with a death grip on the steering wheel, make a conscious effort to relax. One quick way to do that is by taking a couple of slow, deep breaths.

Always have an escape route. By looking ahead *and* around you, you can mentally prepare yourself to take the actions necessary to keep yourself out of trouble. For example, you can slow down a little sooner when you see traffic backed up in poor conditions. Now, if a car pulls out in front of you, you will be able to judge whether to veer left or right to avoid it if you can't stop (NEVER hit your brakes hard in icy or snowy conditions). In any case you need to be con-





stantly alert to what is going on in the traffic flow. Try to stay in the right-hand lane as much as possible and use the left-hand lane to pass slower moving vehicles. That usually makes it easier to find an escape route when faced with a dangerous situation.

"Patience is a virtue"—especially when driving in bad winter weather. Start by planning your trips in advance and by giving yourself extra time to get where you're going. Sometimes, no matter how much time you allow, conditions may put you behind your schedule. Take it easy! You may arrive late, but that's better than having an accident.

Here's a word for 4-wheel-drive operators (of which I'm

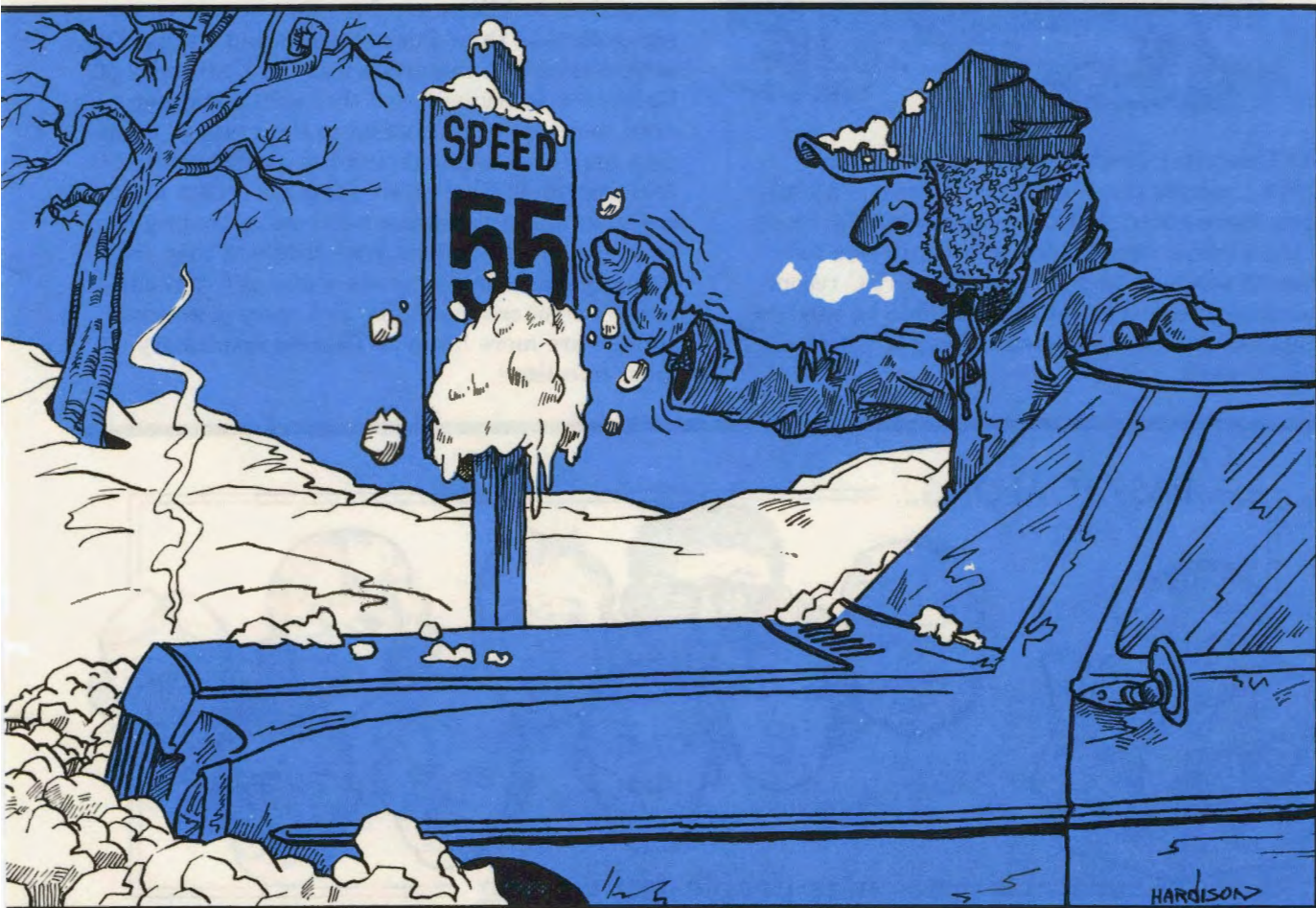
one). It's true that you can start off easier on snow and ice in your vehicle than 2-wheel-drive cars. You may even be able to maneuver your 4-wheel-drive vehicle better, but that doesn't mean you should drive above a safe speed for the prevailing road conditions or zig-zag through traffic. Remember, 4-wheel-drive vehicles don't stop any better or faster than the 2-wheel-drive variety on ice and snow. Use your 4-wheel-drive advantages to drive safer, but don't misuse them.

Everything I've mentioned is "not applicable" if your car isn't in good operating condition and prepared for the winter months. If that's the case, then either fix it or don't drive it. Otherwise you're a hazard

not only to yourself but also to everybody else on the road as well.

Finally, if you are afraid to drive in bad weather, don't. Make other arrangements for transportation when the road conditions exceed your personal comfort level. You, as a driver, are not only responsible to yourself, but also for making sure your actions don't endanger the lives of others.

Driving at any time of year is a constant conscious process, but this is especially true during the winter. There's no time to get complacent or frustrated. When dreadful road conditions catch up with you, for whatever reason, the safest philosophy to keep in mind is "I'll be there when I get there." ➤







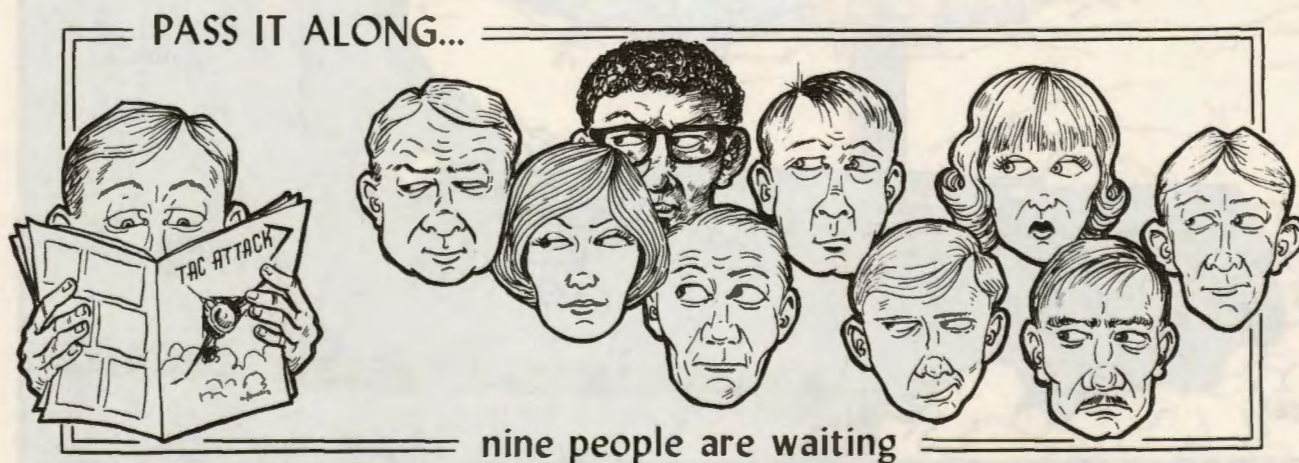
The Consumer Product Safety Commission (CPSC) reports that in the last 4 years, 35 **children have strangled on drapery cords**. Many of the victims were babies whose crib was too close to windows with drapes. The CPSC recommends that the shortest cord possible be used on drapes or tie the cord down to keep it out of a child's reach.

If you live in military family housing, according to AFOSH Standard 127-56, dated 5 Apr 86, it's up to you, the sponsor, to test and examine all household fire warning devices. The test and exam should include:

- Inspecting physical appearance for damage that could render the device inoperative.
- Ensuring the units are securely mounted.
- Conducting an operational test according to manufacturer's guidance to be sure the alarm can be heard in **all** rooms of the home.
- Testing battery-operated detectors **weekly**.

The National Highway Traffic Safety Administration found that **mounting a convex mirror** on the right side of a van significantly decreased the number of accidents. For best results, the mirrors must be adjusted to provide overlapping fields of vision.

According to an article in *National Wildlife* magazine, **toddlers are far more sensitive to air pollution** than older children and adults. The article says that researchers at the University of California at Irvine found that young children need more air in proportion to their size to maintain proper metabolism and body temperature and that their smaller air passages collect more pollutants. Bet you know what we're leading up to: If you smoke around your toddlers, they are actually smoking too. Doctors also say that children of smokers tend to be sick more often and infants are more likely to develop respiratory tract infections.







# TAC TALLY

CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
DEC	THRU 1986	DEC 1985
2	28	15
2	13	10
2	23	14
2	22	10

ANG		
DEC	THRU 1986	DEC 1985
0	8	12
0	1	7
0	11	8
0	10	8

AFR		
DEC	THRU 1986	DEC 1985
0	2	1
0	0	1
0	2	0
0	2	0

## TAC'S TOP 5 thru DEC 1986

1st AF	
class A mishap-free months	
181	84 FITS
76	318 FIS
22	325 TTW
11	57 FIS
11	5 FIS

9th AF	
class A mishap-free months	
46	33 TFW
19	507 TAIRCW
18	23 TFW
17	56 TTW
16	1 TFW

12th AF	
class A mishap-free months	
44	366 TFW
28	355 TTW
26	27 TFW
26	479 TTW
22	58 TTW

ANG	
class A mishap-free months	
209	182 TASG
193	110 TASG
168	138 TFG
150	177 FIG
145	114 TFG

AFR	
class A mishap-free months	
76	482 TFW
75	301 TFW
66	924 TFG
54	906 TFG
50	442 TFW

DRU's	
class A mishap-free months	
189	USAFTAWC
123	28 AD
68	24 COMPW
2	USAFTFWC

## CLASS A MISHAP COMPARISON RATE

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

TAC	1986	4.8	6.8	5.4	4.4	4.1	3.7	3.6	3.2	3.4	3.9	3.9	3.9
	1985	3.2	3.4	2.7	2.4	2.9	2.7	2.5	2.6	2.5	2.3	2.2	2.1
ANG	1986	4.3	2.4	3.1	2.3	2.7	3.0	2.5	2.2	2.5	2.6	3.2	2.9
	1985	4.8	4.8	3.0	4.3	4.2	4.9	5.4	5.2	5.1	5.0	4.6	4.3
AFR	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	4.5	4.2	3.8
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.4	2.2	2.1

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



