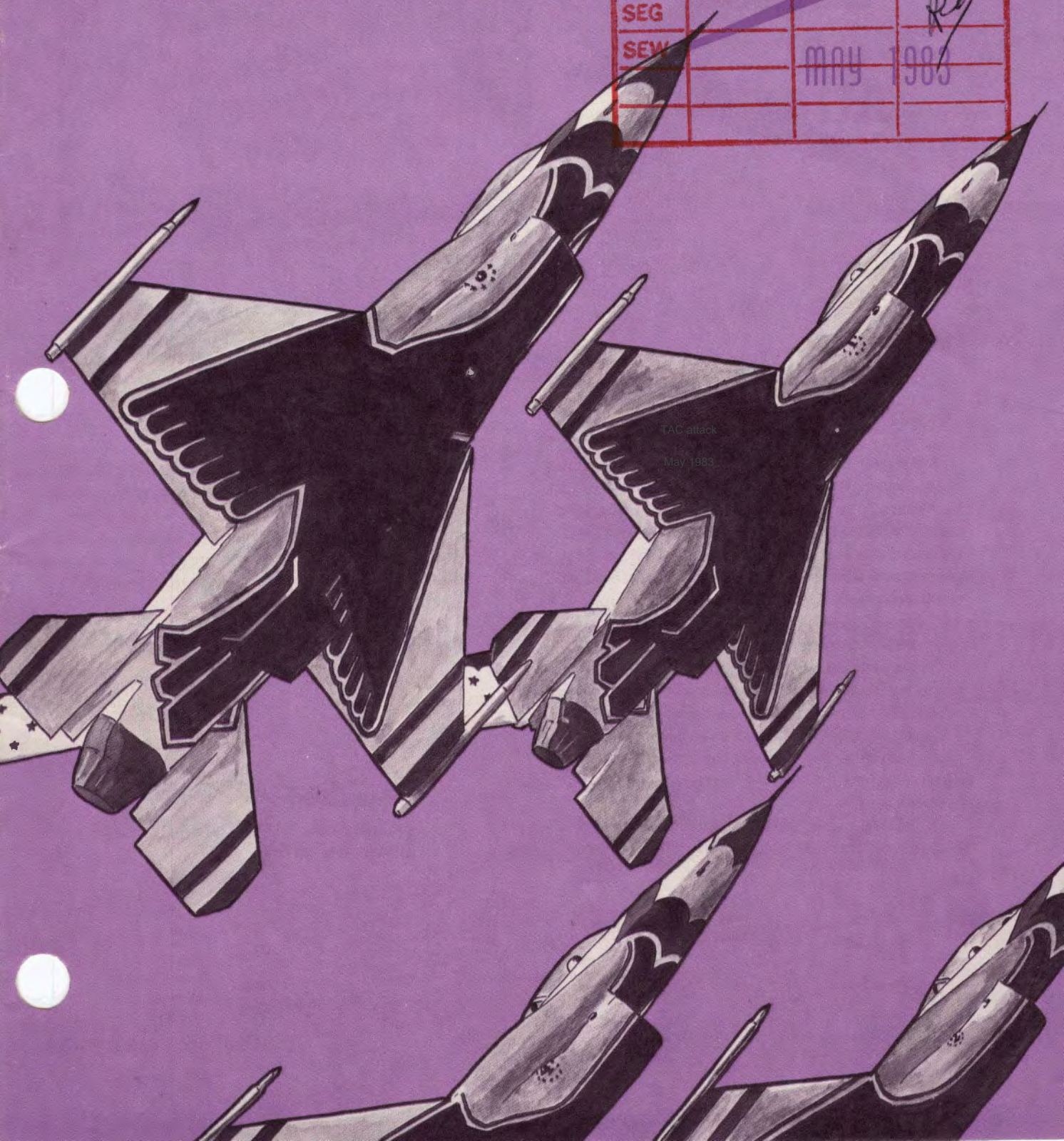


# TAC ATTACK

Office	Info	Action	Initial
SE			
SEF			
SEG			
SEW			

MAY 1983

R/L



TAC attack

May 1983



# Angle of Attack



This year's Armed Forces Day, on the 21st of May, carries the theme Peace through Strength. Our attitude toward safety can be an important factor in that strength. Last year TAC and TAC-gained units lost two squadrons' worth of airplanes and almost one squadron's worth of aircrew members. On automobiles and motorcycles, TAC lost 38 more airmen. We'd be a stronger force today if those men and women were still with us.

That's why safety isn't something additive to the mission; it's part of the mission. The article "Just When You Thought You Knew Everything about F-4 Canopy Stalls" is a good example of that. A lost canopy means the mission must be aborted, even if it's a combat mission. Good safety practices can prevent that.

Of course, flying safety isn't the only discipline that affects our ability to get the mission done.

That's why we cover such diverse subjects as hurricanes, motorcycles, and missile handling bars in this issue.

It's all part of the same picture: doing our jobs better and more safely means greater strength and a more secure peace. Peace through Strength. Keep doing your part.

*Richard K. Ely*

RICHARD K. ELY, Colonel, USAF  
Chief of Safety





# MAY

DEPARTMENT OF THE AIR FORCE

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TACRP 127-1

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

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

*TAC Attack* (USPS 531-170) is published monthly by HQ TAC/SEPP, Langley AFB, VA. Second-class postage paid at Richmond, VA. POSTMASTER: Send address changes to *TAC Attack*, TAC/SEPP, Langley, AFB, VA 23665.



JUST  
WHEN  
YOU THOUGHT  
YOU  
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EVERYTHING  
ABOUT  
F-4  
CANOPY STALLS





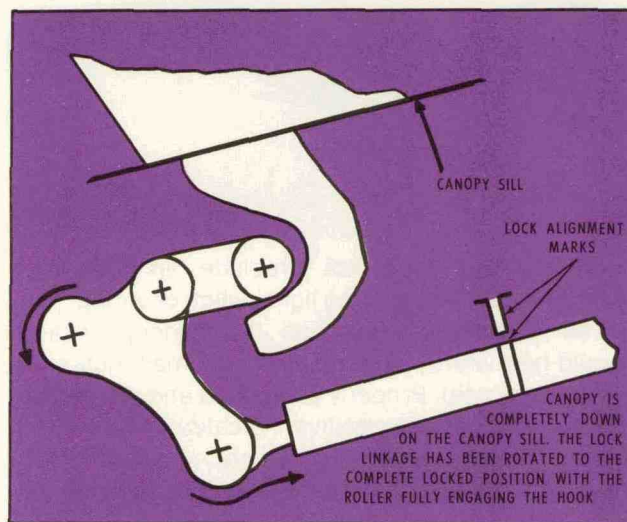
**By Maj Mike Lichty, TAC Flight Safety  
With Technical Assistance from Bobby Moore,  
HQ TAC MCAIR Field Service Engineer**

Demonstrating an F-4 canopy stall is not a prerequisite for completing a stan-eval flight evaluation, but recognizing its characteristics may save you a great deal of embarrassment and perhaps your life. Of the four major reasons for inadvertent canopy loss, stalled (not locked) canopies have accounted for 60 percent of 103 losses since 1972. An understanding of the F-4 canopy system will allow you, the aircrew, to help in eliminating the primary reason for canopy loss.

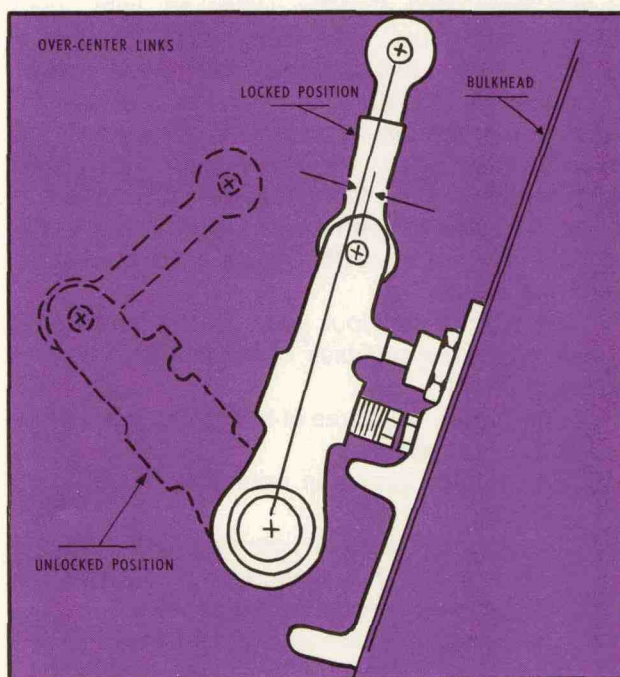
The F-4 canopy system is one of the few systems which does everything for you at the flick of your wrist. Move the internal control lever to the closed position, and in something less than 9 seconds the canopy will automatically close and lock. A simple check of the alignment stripes, Canopy Unlocked and Master Caution lights will confirm these functions have taken place. For those of you who have flown your "sleek and racy" Rhino sans canopy and take exception to that last statement, grit your teeth and read on.

A mechanical valve operated by a pneumatic system charged with 900 psi controls the normal operation of the canopy system. This valve permits air to enter the bottom (open) side of the canopy actuator. There is air on the top (close) side of the actuator at all times with the difference in effective piston area allowing the actuator to extend (open) or retract (close). Therefore, when the canopy is closed and locked there is always pressure on the retract side of the actuator.

The canopy locks are also mechanical and their operation is controlled by the canopy actuator through a sequencing cam. The sequencing cam allows the locking mechanism to operate only after the canopy has closed. Once the canopy is closed and the locking mechanism is over center, the canopy will stay locked. Of importance here is that a properly rigged canopy will not exhibit any further movement when the lock linkage roller engages the canopy hook. The canopy should be completely down on the canopy sill and not pulled there as a result of the locking action (figure 1).



The last step in the canopy linkage closing process is for the overcenter links to move to the locked position (figure 2). This allows for contact with the canopy unlocked limit switch which turns the Canopy Unlocked light out in the respective cockpit. The overcenter bellcrank is designed so improper rigging of the overcenter mechanism won't give an erroneous Canopy Unlocked light indication.







## just when you thought you knew everything about F-4 canopy stalls

However, this does not preclude an electrical malfunction of the warning light switch or wiring.

The alignment stripes on the canopy linkage should help alert you to an electrical malfunction of the warning light. Properly positioned and painted on the linkage, they are positive indications of a locked canopy (taped alignment stripes are not acceptable). The other obvious requirement to preclude an erroneous warning light locked indication is to insure it is on when the canopy is open.

With the way the canopy warning light sequencing is designed, the Master Caution light is only a good indicator of a stalled canopy after the fact. The Master Caution light is usually reset sometime during the engine start sequence and perhaps again during taxi or end of runway checks. This usually occurs with the canopies in the open position. For the Master Caution light to then illuminate as a result of an illuminated Canopy Unlocked light, both warning lights must have been extinguished as a result of locked canopies. Therefore, a lost canopy on takeoff with no associated Master Caution light indicates the canopy was never locked and the unlocked light was never extinguished. Human factors analysts have found that it is not uncommon for an individual to overlook an illuminated warning light which routinely extinguishes as a result of a recurring action.

Therefore, to do your part as the aircrew in preventing stalled canopies, check that the following conditions exist:

1. The canopy sill is free of foreign objects—to include pin bags.
2. The canopy closes in normal time and locks smoothly.
3. The Canopy Unlocked light extinguishes as the canopy locks. It is important to observe the light as the locking action takes place.
4. The canopy is down and locked firmly on the sill with the alignment stripes exactly aligned.

While I have your attention, I would briefly like to touch on shear pins—whose failure may place you in the fatally injured category. Canopies should be rigged for soft, quiet operation. This will decrease the possibility of incomplete locking and shear pin failure. Deformation of the shear pin and its eventual failure are directly related to the severity of the dynamic effect which occurs when the canopy mechanism goes over center at the end of a normal closing cycle. If a canopy is improperly fitted or adjusted and/or the canopy mechanism is misrigged, the loads on the shear pin will be higher than normal. Therefore, abnormal closing times or unfamiliar noises associated with canopy closing are reason for concern and should be thoroughly investigated prior to accepting the aircraft for flight. A failed shear pin in flight could well lead to inadvertent canopy loss followed by aircrew extraction or uncommanded ejection.

The bottom line is this: The F-4 has a reliable canopy system providing adequate warning to prevent a stalled canopy. To maintain its reliability, you the aircrew must do your part in recognizing anomalies associated with the opening or closing cycles. Additionally, when you experience an inflight canopy malfunction, provide maintenance with the following information during debrief:

1. Position of the open/close lever.
2. Status of Canopy Unlocked and Master Caution lights.
3. Position of the following during the canopy closing cycle: throttles and cockpit temperature control.
4. Canopy closing time.
5. Unusual cockpit noises.
6. Phase of flight.

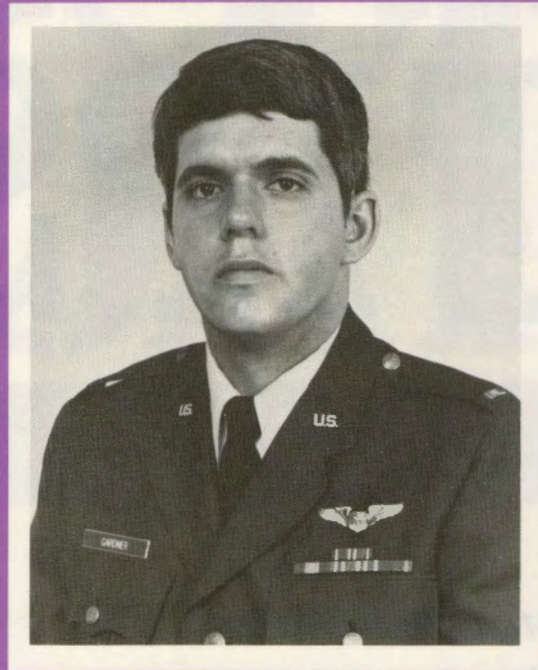
Investigation into inadvertent canopy losses has shown that when aircrews and maintenance provide for the proper care and feeding of the F-4 canopy system the Rhino won't flip its lid. ➔



# AIRCREW OF DISTINCTION



**Lt Col William A. Johnson**  
**391 TFS, 366 TFW**  
**Mountain Home AFB, ID**



**1st Lt Stephen W. Gardner**  
**391 TFS, 366 TFW**  
**Mountain Home AFB, ID**

On 2 November 1982, LT COL WILLIAM A. JOHNSON, Aircraft Commander, and 1ST LT STEPHEN W. GARDNER, Weapons System Officer, were flying a chase in an F-111 as their wingman returned to base for a minor aircraft problem. While configuring for a formation approach, Colonel Johnson and Lieutenant Gardner discovered that their gear would not extend. Their wingman confirmed that neither the main nor the nose gear had extended. All efforts to extend the gear using the normal system were unsuccessful. When the alternate extension system was used, the nose gear extended, but the main gear remained up and locked.

The aircrew prepared for an approach-end barrier engagement with the main gear up. Barrier engagement is essential to minimize potential for fire and prevent possible loss of the aircraft and aircrew. However, barrier engagement with the main gear retracted is difficult because the hook will not engage if the aircraft is simply skidded across the barrier. The aircrew must level the aircraft at about three feet above the ground with only the hook touching the runway.

To improve chances for a successful engage-

ment, Colonel Johnson flew three practice approaches. Lieutenant Gardner used the radar altimeter to assist with altitude control. An experienced pilot observed from the runway supervisory unit (RSU) and advised the aircrew of the hook height above the runway. Colonel Johnson planned to touch the hook down 200 to 300 feet prior to the barrier and then gently land the aircraft as barrier engagement was confirmed from the RSU. The approach, level off, and hook touchdown were perfect, with the hook touching the runway 200 feet prior to the barrier and engaging on centerline. As the hook engaged, Colonel Johnson gently landed the aircraft. Impact damage that would have resulted from the aircraft being pulled to the runway was avoided. Damage was confined to skidding damage to engine bay panels and strakes.

The excellent crew coordination and airmanship of Colonel Johnson and Lieutenant Gardner not only minimized damage, but may have saved a valuable aircraft and averted serious injury or loss of life. They have earned the title Aircrew of Distinction.



# TIPS

...interest items,  
mishaps with  
morals, for the  
TAC aircrewman

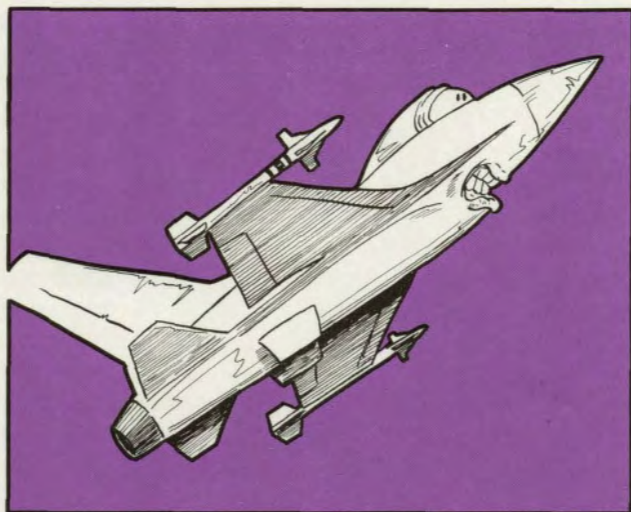
What's fame, afther all, me la-ad? 'Tis as apt to be what  
some wan writes on ye'er tombstone.

—F. P. Dunne

## F-16 OUT OF CONTROL

An F-16 pilot was flying basic fighter maneuvers against a "bandit"—another F-16. The first F-16 was a B model, with an instructor pilot in the back seat. The scenario called for the bandit to attempt a high angle gun shot and overshoot; the F-16 pilot was to defend against the shot and reverse if it seemed appropriate.

At 18,000 feet above the ground and 400 knots, the pilot began a hard left turn. He defended against the high angle gun shot by rolling wings level and pulling hard into the vertical. Then he began to roll left—the wrong way—to reverse. The instructor



commented that they were rolling the wrong way, so the pilot began to reverse his turn to the right. They

were now at 24,500 feet, 70 degrees nose high, air-speed decreasing through 240 knots.

A few seconds later, the bandit ended the engagement because of the poorly executed reversal. The pilot and his instructor were both still watching the bandit when they knocked off the engagement. Air speed was decreasing through 150 knots, with the nose still 70 degrees high. Shortly afterward, the low speed warning horn sounded.

Startled by the horn, the pilot momentarily unloaded to about a tenth of a G. The unloading stopped the nose track. When the pilot reapplied positive G, the F-16 departed controlled flight and entered a deep stall.

The instructor immediately took control of the airplane. He applied the flight manual procedures for recovering control. The airplane recovered on the first down cycle and was completely recovered to level flight at 13,000 feet. But even though he succeeded, the instructor had a problem recovering. The speed brake switch in the front cockpit was closed, which is normal for this phase of flight. However, because of that switch setting, the speed brakes automatically retracted when the instructor released his speed brake switch to turn on the manual pitch override.

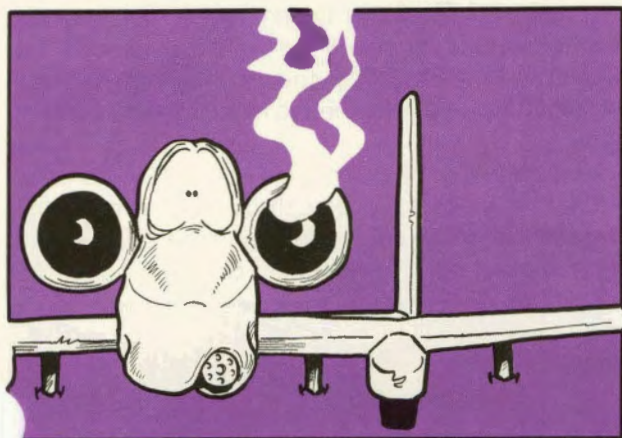
The setup was a classic. A brief moment of inattention and you find yourself nose high at low air-speed—not a good place to be in any aircraft. Instructors just have to anticipate being put in that situation and try to prevent it. But if that fails and you have to recover, remember the trick in the speed brake switch.



## A-10 OVERTEMP

After extensive maintenance, an A-10 was being flown on an FCF. At 15,000 feet the pilot started the APU. Then he shut down the left engine and let it cool for a few minutes. When it was cool enough, he tried to start it, using crossbleed air from the right engine.

The airstart was normal until the core rpm reached 40 to 50 percent. Suddenly the engine temperature began to climb rapidly. It passed 860 degrees and peaked at about 980 degrees. Although



It was a hot start, the pilot was reluctant to shut down the engine without further analysis of other engine instruments. The temperature stayed at 980 degrees for a few seconds, then dropped to about 850 degrees. The core rpm stabilized at 60 to 65 percent. Although all other indications seemed normal, the rpm wouldn't increase and the temperature wouldn't drop below 830 degrees. The pilot shut down the left engine.

After he landed safely, maintenance troubleshooters inspected the engine. They found damage from overtemperature in the high pressure turbine. Flags showed that the temperatures had exceeded 927 degrees for five seconds. Damage was confined to the stage 1 turbine and shroud; stage 2 and everything downstream were undamaged. The leading edge of the stage 1 blades showed some erosion; and a small amount of molten metal, probably from the blades, was found on the shroud.

The engine was reassembled, using a new high pressure turbine rotor. It ran on the test stand without any problems. But when the airplane flew another FCF, the problem recurred. This time there was no overtemperature damage to the engine. The source of the problem turned out to be a bad hot-air check valve, which was leaking bleed air into the APU and depriving the engine of starting air. When

the valve was replaced, the problem was solved.

The difference in damage between the first and second occurrences seems to be related to the amount of time the pilot let the engine run at overly high temperature. In the second case, the pilot knew of the problem and shut down immediately. In the first case, the pilot hesitated.

The Dash One calls for retarding the throttle to keep the temperature within limits, even if that means pulling it all the way to off. Certainly if thrust is critical, we'd delay doing that. When we delay, however, we should know that the delay is very likely causing damage to the engine. We may be willing to pay the price because of our circumstances, but in other circumstances we might be aggravating our own problem.

We can't say that no damage would have occurred if the first pilot had shut down more quickly. We don't know that. We also can't spell out when thrust is critical. You'll have to decide that yourself. But we can say that the book is right: an overtemp can damage an engine quickly. Our decisions should take that fact into account.

## FLIP USER COMMENT CARD

The Defense Mapping Agency (DMA), producer of Department of Defense Flight Information Publications (FLIPs), has initiated a six-month test of a new FLIP feature which provides FLIP users a ready means of passing feedback on FLIP products. Effective with the 14 April 1983 publication cycle, DOD Enroute Supplements will contain removable user comment cards which are preaddressed and post-paid for easy mailing. The cards allow FLIP users to immediately report errors, corrections, omissions, or changes to improve the content or presentation of the DOD FLIP. However, the cards do not replace established procedures for reporting safety and operations hazards or for commenting on military departments' operational policies.

The remarks provided by the user will be evaluated and acted upon by the DMA Aerospace Center (DMAAC) or the appropriate military department. While it is the respondent's option to provide name, unit, and phone number, this information may be useful in clarifying or acting upon the comment and recognizing the respondent's interest in the quality of the FLIP products. Continuation of the program will be based on the use of the comment cards during the six-month test period. (Major Harber, DMAAC/PRRF, AUTOVON 693-4961)



# TAC TIPS

## 0-2 MALAPROPISM

An 0-2 pilot was starting engines for his planned sortie. When he used the normal battery start procedures and engaged the starter on the rear engine, the propeller hesitated. Suspecting the battery was weak, the pilot signaled for the auxiliary power unit (APU) to be connected. When it was hooked up, he again engaged the rear engine starter; but again the prop hesitated.

The pilot signaled the crew chief to disconnect the APU. He checked that the battery switch was off. The crew chief walked over and talked to the pilot, suggesting that he could turn the prop by hand. Hand turning the prop is used to limber the engine when the oil is cold and thick. The pilot agreed that it was worth a try.

The crew chief went back to the rear prop. A quality assurance inspector happened to be nearby, watching the crew chief. He saw the crew chief grab the prop and turn it in the wrong direction; but before he could stop the crew chief, the engine started.



With a sickening feeling, the pilot quickly turned off the magnetos. The QA inspector went to help the crew chief, who was shaken but unhurt.

The crew chief knew which way to pull the prop.

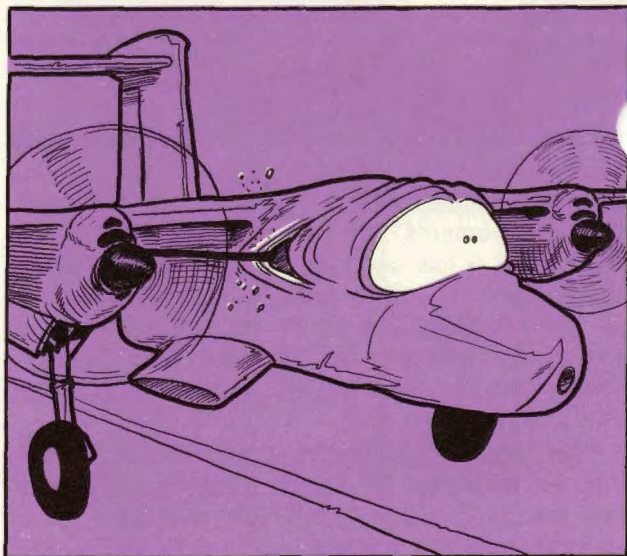
For some unknown reason, he pulled it the wrong way. And he also failed to check that the magnetos were off.

That's also where the pilot failed his responsibility. He had forgotten to turn off the magnetos. And he didn't double check to make sure the magnetos were off before letting the crew chief (or anyone else, for that matter) near the prop.

## PIN CHIPS PROPELLER

After the OV-10 was dearmed, the pilot in the rear seat inserted the D-ring safety pin into his ejection seat and opened the right rear canopy. He draped the safety pin's streamer, which had the thruster safety pin attached to it, over the instrument panel.

While they were taxiing back, the pilot in front put the right engine into reverse thrust. When he did, the streamer and thruster safety pin in the rear cockpit were sucked out the right side of the cockpit. The



backseater heard a loud noise come from the right engine. He pulled the streamer back in and found that the pin was cut in half. After they shut down they saw that a small piece of the number 3 propeller tip had been knocked off.

This unit has since shortened the streamers so that if the pin is sucked out, it shouldn't reach the prop. That sounds like a good idea. But the incident should also serve as a reminder to all of us, no matter what airplane we're flying, to make sure nothing is laying around loose when we have the canopy open. If we don't stow it, the wind can blow it; if we don't tuck it, the engine can suck it. That's rotten poetry, but true.



# TAC SAFETY AWARDS

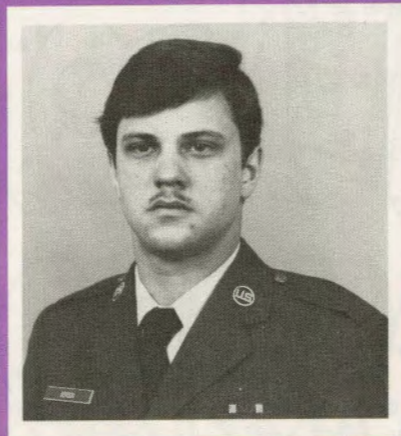
## CREW CHIEF SAFETY AWARD

**A1C DENNIS J. BENSON** of the 363d Tactical Fighter Wing, Shaw Air Force Base, South Carolina, is this month's winner of the Crew Chief Safety Award. He is an assistant crew chief on an F-16 with the 19th Aircraft Maintenance Unit in the 363d Aircraft Generation Squadron.

Airman Benson is alert to potential trouble spots on the F-16. On two separate occasions, he has found indications of cracking and heat deformation in main wheel heat shields. On one of these, failure was imminent and could well have occurred on the next sortie. Failure of the shield has caused brake failures and hydraulic fluid fires on other F-16s.

On two other occasions, Airman Benson prevented unnecessary aborts: once by finding a disconnected cannon plug to the A-system hydraulic indicator, and another time by pointing out the correct routing of a flight control power cable to others who misunderstood the routing and were going to ground an airplane unnecessarily.

Airman Benson's job knowledge and attention to detail were again evident recently when he was preflighting his aircraft after work had been done behind two different panels forward of the



**A1C Dennis J. Benson**

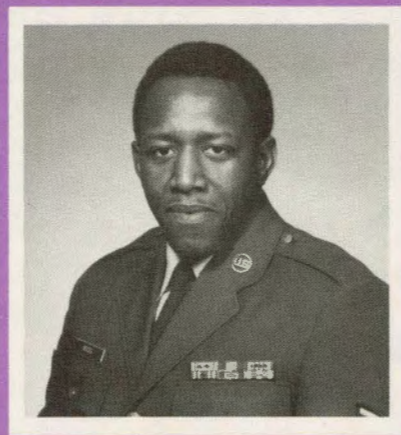
intake. Although the work had been properly documented, inspected, and signed off by a 7-level supervisor, Airman Benson found that the panels were incorrectly installed. Not only did he prevent a FOD mishap, but he also surfaced a serious training problem which has since been corrected.

Airman Benson's careful attitude and excellent job knowledge have earned him the Tactical Air Command Crew Chief Safety Award.

## INDIVIDUAL SAFETY AWARD

**TSgt STANFORD D. WOODS** is this month's winner of the Tactical Air Command Individual Safety Award. He is a member of the Armament Systems Branch, 1st Equipment Maintenance Squadron, 1st Tactical Fighter Wing, Langley Air Force Base, Virginia.

Sergeant Woods is day shift supervisor and has been the branch safety NCO since October 1979. He recently identified a major electrical problem that required the Base Civil Engineers to rewire an electrical receptacle in the maintenance section. Sergeant Woods was also one of the key persons involved in the American Red Cross Buddy Care Program. Under his supervision, 11 people completed the cardiopulmonary resuscitation (CPR) course during the month of August 1982. Sergeant Woods also gives a daily safety briefing at roll call and has implemented a branch safety checklist that is used for training



**TSgt Stanford D. Woods**

people newly assigned to his unit. In addition, he has submitted three suggestions, three AFTO Forms 22, and eight materiel deficiency reports.

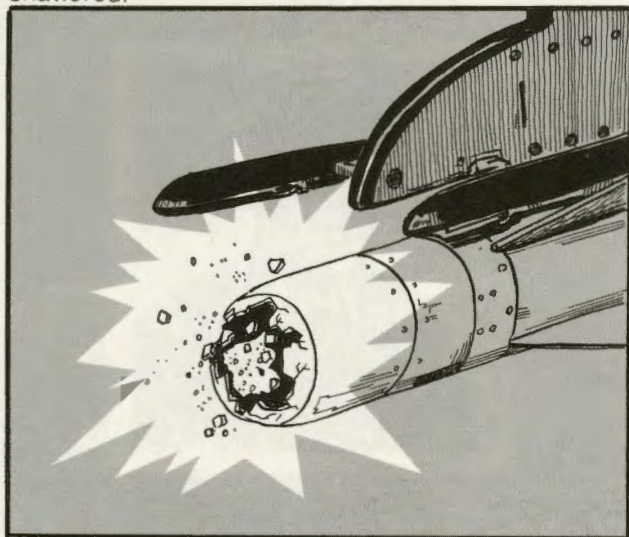
Sergeant Woods' day-to-day supervision, together with his involvement in and contributions to safety have earned him the Tactical Air Command Individual Safety Award.



# WEAPONS WORDS

## SURPRISE, IT'S LIVE

A weapons control system (WCS) specialist was doing a video check on a Maverick missile. Following the tech order, he turned the station select switch to the correct position and pressed the trigger. The dome cover on the AGM-65 missile shattered.

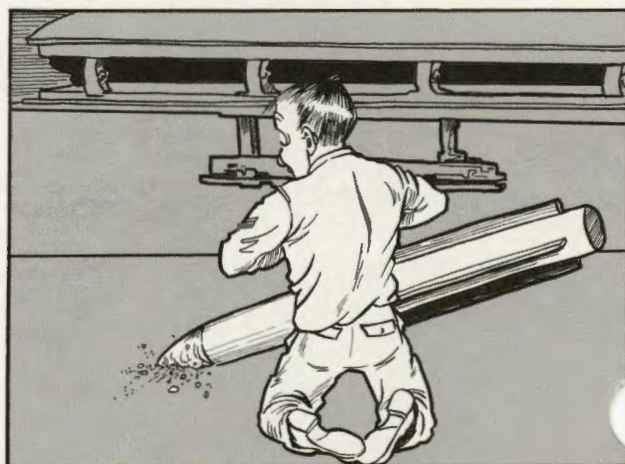


The WCS specialist was using the tech data, but it was the wrong checklist. He had always worked with TGM-65 training missiles before. They don't have dome covers. When he used the TGM checklist on the AGM Maverick, the results were predictable. The specialist had not known that he was working on a live missile. Maybe somebody should have told him.



## WHAT'S YOUR TIME WORTH?

A load crew made up of a crew chief and two crewmembers was sent to an F-106 to download the weapon system evaluator missiles (WSEMs). The crew downloaded one WSEM, carefully following the tech data. The two crewmembers loaded the WSEM onto their truck. While they were busy putting the missile on the truck, the crew chief tried by himself to unlock another WSEM on rail number 4. When he encountered stiff resistance, he applied pressure backwards. He lost control of the missile. It fell off the rail and crashed to the ramp, breaking the guidance unit radome assembly.





## JAMMING A "SAFE" GUN

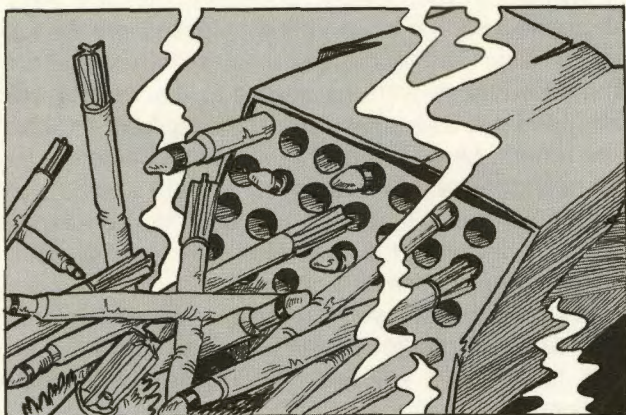
We know why the missile fell—because the crew chief disregarded the tech data and took on a job he couldn't handle by himself. What we don't know is why the crew chief was so impatient. He only had to wait a few seconds for the others to get back. Those few seconds cost over \$3,000. That proves time is valuable.

### ONE ITEM WE CAN'T AFFORD TO FORGET

Two munitions handling workers were given the job of loading and transporting some rockets from the munitions storage area to the rocket storage, checkout, and assembly (RSCA) building. At the munitions storage area, a rocket module on a trailer was already in place and available. After loading the module with 50 2.75-inch rockets, they connected the trailer to the tow vehicle. The crew didn't bother referring to the tech order, which was in the tow vehicle. They were in a hurry.

They climbed into the tow vehicle and drove off. The driver stopped near munitions control so the other crewmember could return the keys to the storage area. After the other worker got out, the driver continued on to a different building to pick up some more munitions. As the vehicle began a sharp left turn downhill, the worker who had gotten out noticed that the rocket module wasn't tied down. He yelled to the driver, who stepped on the brakes.

During the abrupt stop, the rocket module slid from the trailer bed, hit the ground, and rolled upside down. Seventeen rockets slid out of the module. All

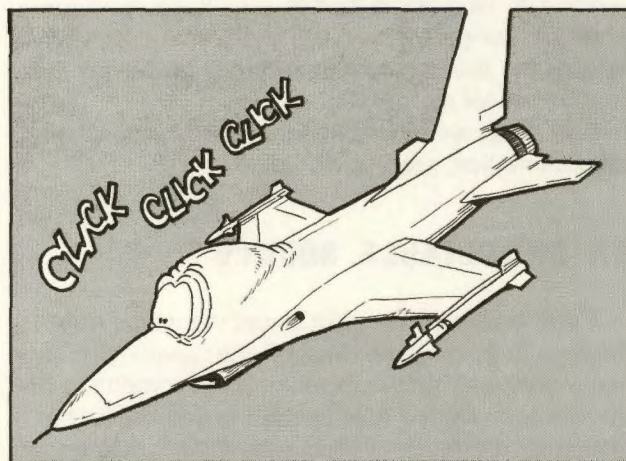


50 of the rockets had exceeded the drop criteria and were damaged.

The reason we have tech orders and checklists is because we know humans are bound to forget things. The tech order will protect us from forgetting a step, such as tying down the module, as long as we don't forget to use the tech data.

A pilot went out to fly an F-16 on a mission that required a safe, or "cold," gun. When he arrived at the aircraft, he found that the gun was "hot." So he called for a weapons crew to safe the gun. The crew showed up and wired the gun cold. By this time, the pilot was strapped in. Even though the pilot reminded the ground crew to note the gun status change in the 781, no one updated the forms. The pilot flew his mission and forgot about the gun.

On the next sortie, another pilot came out to fly the airplane on a range mission requiring the gun. He checked the forms, which still showed that the gun was hot, but on his preflight he forgot to move the safety pin to the outside of the gun bay door. When he got to the range, he set up his switches correctly, saw a Ready light, and tried to strafe twice. Both times no rounds fired, but the rounds



counter counted down. The pilot returned and landed. Remembering that he hadn't repositioned the safety pin, he figured it was his fault the gun hadn't fired. So he didn't write it up.

On the next mission a third pilot flew and tried to use the gun. It didn't work, so he wrote it up afterwards. Troubleshooters found that the gun was jammed.

There are several ways to safe the M61A1 gun in the F-16. One is by inserting the gun safing pin in the appropriate slot inside the lower gun access door. This pin prevents electrical power from being applied to the firing circuits no matter how the cockpit switches are set.

Another way to safe the gun is based on the M61's dual track: the rounds can be directed to either the firing path (hot) or the clearing path (cold). When the gun clearing cam is mechanically placed in the holdback position, the rounds are routed through an intersection to the clearing path. The clearing cam



# WEAPONS WORDS

can be held back by a special tool or by .032 stainless steel safety wire.

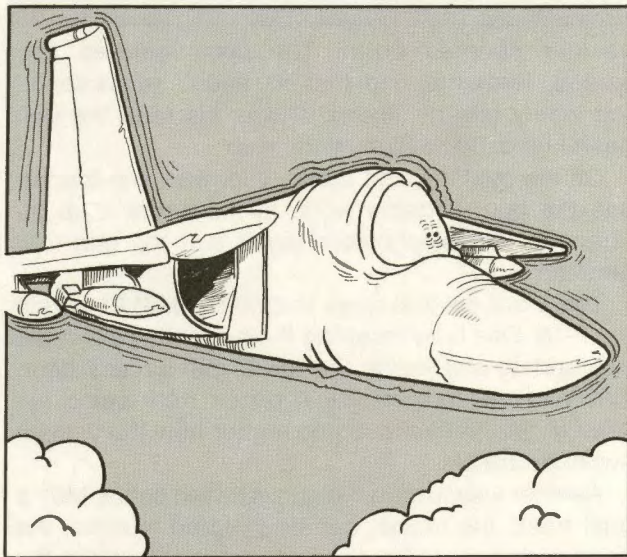
In this incident, the gun was safed using the safety wire. That method prevents firing but allows the hydraulic pressure to rotate the gun. It's possible for the 3,000 psi of hydraulic pressure and the rapid gun rotation to stretch the slack out of the safety wire and allow the clearing cam to move slightly. If that happens, the rounds can jam in the intersection between the firing and clearing paths. That's exactly what happened in this instance when the pilot set up the switches and pulled the trigger.

The cockpit shows a Ready light even if the gun is safety wired. So the only way the pilot would be warned of the gun's condition is by the aircraft forms showing the gun's status. If the forms aren't up to speed, the pilot could inadvertently jam the gun by trying to shoot it.

Looks like we're back to the importance of good documentation, aren't we?

## AN UNRELIABLE SOURCE

After taking off, the pilot swept the wings from 16 degrees to 26 degrees. Shortly after leveling off, the pilot noticed airframe vibration. It felt something like the vibration from a fully opened speed brake, but it



was more pronounced. The airplane also had a tendency to roll left and was sensitive in pitch and roll.

Another plane from the same unit joined with the problem aircraft. The wingman reported that the number 5 pylon had rotated a full 90 degrees in-board. The front tip of the pylon was resting in the right engine's upper blow-in door.

The aircrew ran a controllability check at altitude and reduced fuel. They made a successful landing with 26 degrees of wing sweep and 26 degrees of flaps.

This sortie was the first flight since the pylon had been installed. After the flight the pylon covers at the pivot point were removed; the tab on the ring nut pivot lock was broken off and laying inside the pylon. That seemed odd because if the pylon teeth are properly engaged, the teeth should absorb the forces from wing sweep. The ring nut pivot lock serves only as a safety device to prevent the ring nut from backing off over a period of time. The lock isn't meant to absorb stress when the wings sweep. But if the pylon teeth weren't properly engaged, the pivot lock would have absorbed loads it wasn't designed for.

It turned out that the load crews in this unit had some wrong ideas about the pylon teeth. Everyone who was asked said that the ring nut cannot be installed unless the teeth are meshed correctly. They felt that the ring nut threads couldn't engage, but a test loading of a pylon proved the idea false. A pylon was intentionally loaded with stacked teeth not engaged, and the ring nut was torqued to 200 foot-pounds.

The false assumption set up the load crew. The crewmember responsible for insuring the teeth were engaged said that he usually only looked into the top of the wing. The tech order requires him to feel the mated surfaces with his fingers to insure they are engaged. He was unaware of that requirement. Like the others, he was sure that the pylon could not be loaded incorrectly because the ring nut wouldn't go on. Convinced of that error, he wasn't too concerned about checking for proper teeth engagement. Neither was anyone else on his team.

Air loads in flight were strong enough to overcome the friction of the 200-pound torque on the ring nut if the teeth were stacked. Apparently that's what happened. The airloads turned the pylon and broke the pivot lock.

Isn't it odd that a false assumption carried more weight than the tech order with these troops? In the end the tech order proved to be right, of course; the teeth did need to be double checked. Doesn't it make you wonder how many others operate under assumptions that are really false?



# MOTORCYCLES AND HEARING

**By TSgt Donald G. Stormoen  
388 TFW Ground Safety**

Most bikers have heard the standard arguments for wearing helmets. But not that many people know that helmets protect us in another way—from noise. Most road riders jeopardize their hearing almost every time they ride. The bike, which mechanically might produce only 82 decibels on the A-weighted



scale (dbA—your basic measurement of sound), isn't the problem. "At ear" highway-cruising-speed wind noise is the villain, and there's no practical way of reducing it for a safe day-long ride.

Studies by several independent institutions have reported roughly the same finding: that noise levels of 100 dbA can be reached at highway speeds. A recent study by the U.S. Forest Service, of all people, reports on the at-ear noise levels allowed by 11 different helmets with various bubble and flat shields attached. The Forest Service study shows, for example, that a rider wearing a Bell Star helmet with a flat shield is subjected to 109 dbA of wind, road, and mechanical noise at 55 miles per hour.

For those of you who don't wear a helmet, be aware that at-ear noise generated at 55 miles an hour without a helmet is 120 dbA. One hundred and twenty dbA is on the threshold of pain; it is what you would hear inside of a loud disco or if you stood 1,000 feet away from a jet during takeoff.

The Air Force has gone to great lengths to provide you with a safe and healthful work environment. Air Force safety standards call for a maximum allowable eight-hour noise exposure of 85 dbA. So you can see that a one-day ride can do you more harm than being at work.

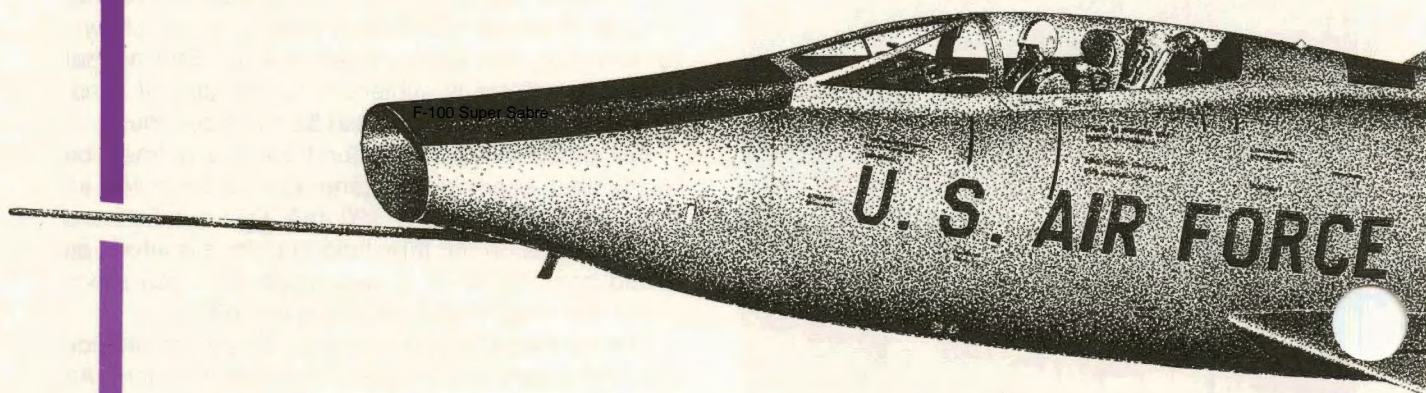
Noise affects us humans in many ways, but the most important effect to bikers is that prolonged noise causes fatigue. So before you start blaming your cycle for your exhaustion at the end of the riding day, think again. Have you done anything to prevent noise fatigue?

There are so many variables, including helmet fit and brand and shield configuration, that it is difficult to devise a formula for you to sit down and figure out what at-ear noise you are likely to be experiencing. As a very general rule, though, you should not ride more than two hours per day without somehow reducing the noise to which you are subjected. There are several ways of reducing the noise to which you are exposed. One way is by riding slower. Another is by wearing ear protectors—either plugs or custom ear molds.

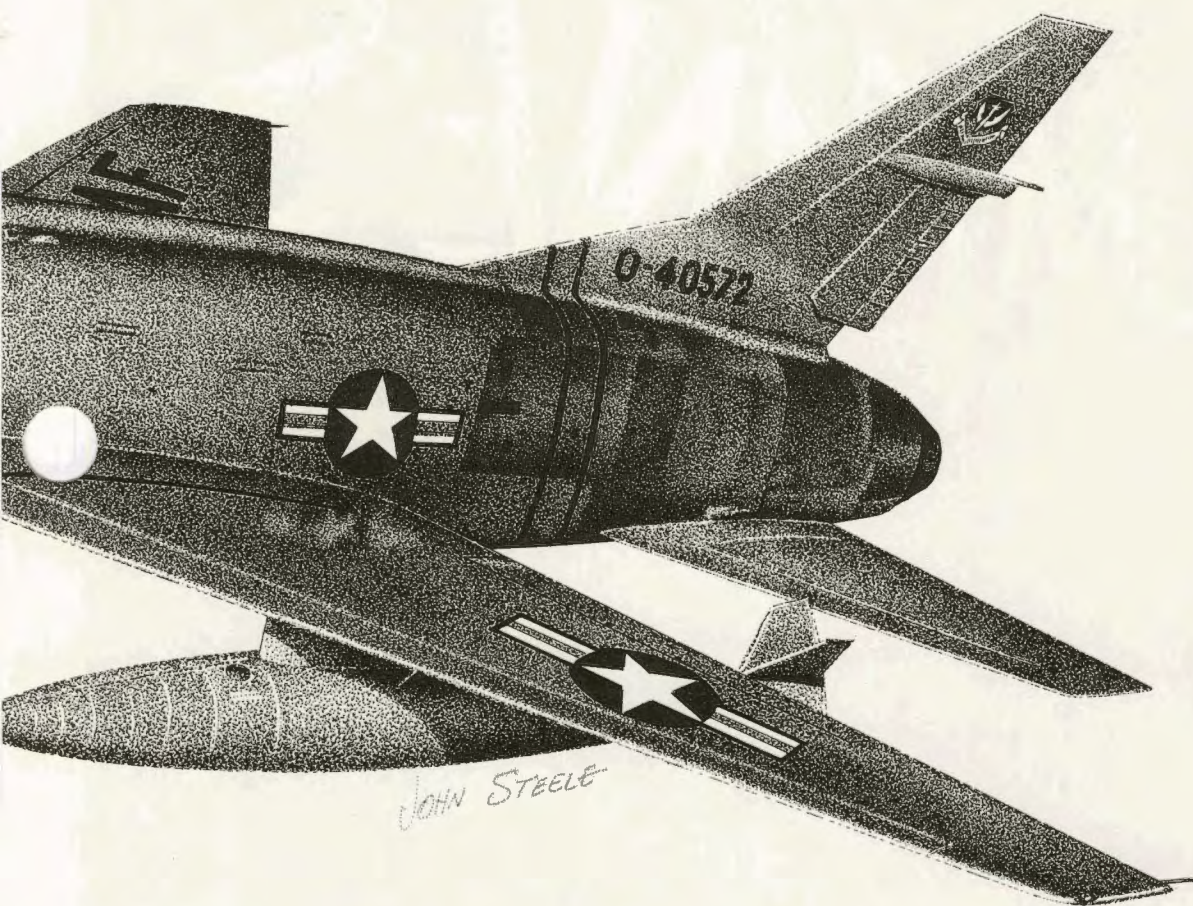
Preventive medicine is available. Practice it, and you will be able to devote time to really important things—like which roads you want to explore this spring.



# F-100 SUPER SABRE









*The Great Storms...*

# HURRICANES





It's the beginning of hurricane season again, and this could be your area's unlucky year. Think about it now. Don't wait until a hurricane is near shore—by then, it's too late. When a storm is heading to shore, officials are too busy preparing for the emergency and won't be able to respond to individual requests. So be prepared and know what to do ahead of time. Here are some tips:

#### Before a hurricane you should know—

- Elevation of your home above sea level. Get this information from local emergency services officials. Your nearest weather service office can supply floodstage data for area streams and bayous.

- Maximum storm surge which might occur. Information about the potential for inland flooding and storm surge is available through the nearest weather service office.

- Route to safety if you have to leave. Plan your escape route early. Check with local emergency services for low points and flooding history of your route.

- Location of nearest official shelter. Local emergency services or Red Cross can locate the shelter nearest your home and explain what you should bring with you.



- How safe your home is. Near the seashore, plan to relocate during a hurricane emergency. If you live in a mobile home, always plan to relocate.

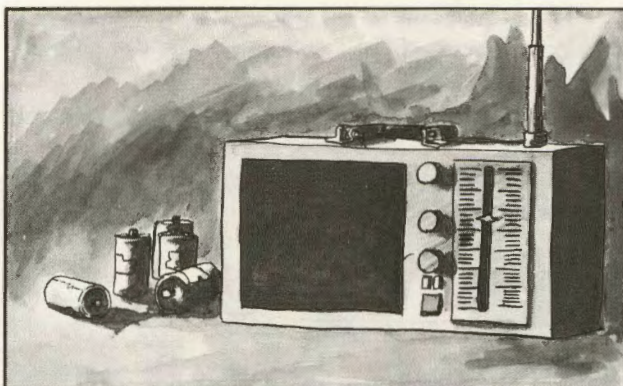
- The inventory of your property. A complete inventory of personal property will help in obtaining insurance settlements and/or tax deductions for losses. Inventory checklists can be obtained from many sources, including your insurance representative. Don't trust your memory. List descriptions and take pictures. Store these and other important insurance papers in waterproof containers or in your safety deposit box.

- What your insurance will cover. Review your insurance policies to avoid misunderstanding later. Take advantage of flood insurance. Separate poli-

cies are needed for protection against wind and water damage, which people frequently don't realize until too late.

**When a watch is issued, check supplies** (a hurricane watch is issued two days before the storm is expected to reach land):

- Transistor radio with fresh batteries. Radio will be your most useful information source. Have enough batteries to last several days. There may be no electricity.



- Flashlights, candles or lamps, matches. Store matches in waterproof container. Have lantern fuel for several days. Know how to use safely.

- Full tank of gasoline. Never let your vehicle gas tank be less than half-full. Fill up as soon as a hurricane watch is posted. When there is no electricity, gas pumps won't work.

- Canned goods and nonperishable foods. Store packaged foods which can be prepared without cooking and need no refrigeration. There may be no electricity or gas.



- Containers for drinking water. Have clean, airtight containers to store sufficient drinking water for several days. The city supply will probably be interrupted or contaminated.

- Materials for protecting glass openings. Have shutters or lumber for protecting large windows and doors and masking tape for use on small windows.



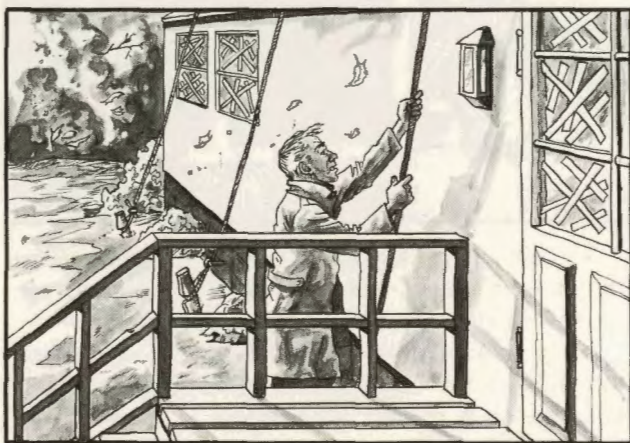
# THE GREAT STORMS— HURRICANES

• Materials for emergency repairs. Your insurance policy may cover cost of materials used in temporary repairs, so keep all receipts. These will also be helpful for any income tax deductions.

**When a warning is issued, act promptly** (a hurricane warning is issued 24 hours in advance):

• Listen constantly to radio or TV. Keep a log of hurricane position, intensity, and expected landfall. Discount rumors. Use telephone sparingly.

• If you live in a mobile home. Check tiedowns and leave immediately for a safer place.



• Prepare for high winds. Brace your garage door. Lower antennas. Be prepared to make repairs.

• Anchor objects outside. Garbage cans, awnings, loose garden tools, toys and other loose objects can be deadly missiles. Anchor securely or bring indoors.



• Protect windows and other glass. Board up or shutter large windows securely. Tape exposed glass to reduce shattering. Draw drapes across windows and doors to protect against flying glass if shattering does occur.

• Move boats on trailers close to house. Fill boats with water to weight them down. Lash securely to trailer and use tie-downs to anchor trailer to the ground or house.

• Check mooring lines on boats in water, then leave them.

• Store valuables and personal papers. Put irreplaceable documents in waterproof containers and store in highest possible spot.

• Prepare for tornadoes and floods. Tornadoes and flash floods are the worst killers associated with a hurricane. The surge of ocean water plus flash flooding of streams and river due to torrential rains combine to make drowning the greatest cause of hurricane deaths.

• Check your survival supplies once again.

**If you remain at home—**

• Stay indoors. Don't go out in the brief calm during passage of the eye of the storm. The lull sometimes ends suddenly as winds return from the opposite direction. Winds can increase in seconds to 75 mph or more.

• Protect property. Without taking any unnecessary risks, protect your property from damage. Temporary repairs can reduce your losses.

• Stay away from windows and glass doors. Move furniture away from exposed doors and windows.



• Stay on leeward, or downwind, side of house. As wind direction changes, move to another room. If your home has a room with no outside walls, stay there during the height of the hurricane.

• Keep a continuous communications watch. Keep radio or television tuned for information from official sources. Unexpected changes can sometimes call for last minute relocations.

• Remain calm. Your ability to meet emergencies will help others.

—Courtesy York County, Virginia, Public Information Office

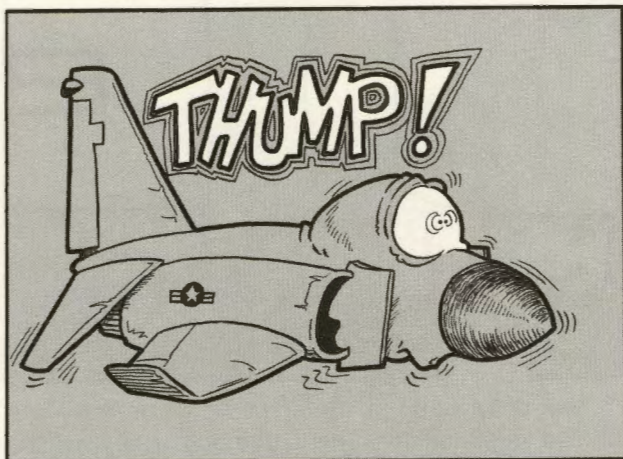


# chock talk

*...incidents and incidentals  
with a maintenance slant.*

## ENGINE DAMAGE OVERLOOKED, AGAIN AND AGAIN

In an F-4 flying a night low level, the aircrew heard a loud thump. The airplane yawed to the right.



All engine instruments appeared to be normal. The pilot did a controllability check at altitude and declared an emergency for a possible bird strike. They landed safely.

Afterwards, the exterior of the aircraft was inspected, and no damage was found. Both engine compressors were looked at, and FOD was noticed on three first-stage rotor blades in the left engine. The damaged blades were marked with blue dye.

The next morning, the outside of the airplane was inspected again. The inspectors found no evidence

of a bird strike. So the suspected bird strike was cleared from the forms, and the airplane was scheduled to fly.

On its next sortie, as the pilot pulled the throttle out of afterburner after takeoff, the left engine compressor stalled. It cleared itself. But the pilot took no chances; he declared an emergency and landed as soon as he could.

A maintenance team inspected the left engine compressor. They found the three blue-dyed rotor blades and determined that the damage was unserviceable, even though it had been signed off that morning. They then took apart the compressor case and found major damage throughout the compressor. The blades had cylindrical impact marks. One impression clearly matched the head design of a jo-bolt used to fasten the fire warning harness clips.

The maintenance team then took apart the hot section. They found major damage on 31 turbine blades. And a total of 425 compressor stators had suffered major damage. Inspection of the engine bay showed where the problem originated: two fire loop clamps were broken, one clamp and bracket were missing, and two clamp attachment jo-bolts were missing. It seems likely that one of these jo-bolts migrated forward and was ingested.

But the damage didn't happen on the sortie that compressor stalled, nor on the sortie with the loud engine noise the night before. The three first-stage rotor blades were seen to be damaged *one month earlier*. At that time they were signed off as serviceable and weren't even dyed blue. The intakes were then inspected 31 times in the next month, and unserviceable damage was signed off each time. No one bothered to open the inlet guide vanes and check for more damage.

## ACCEPT NO SUBSTITUTES

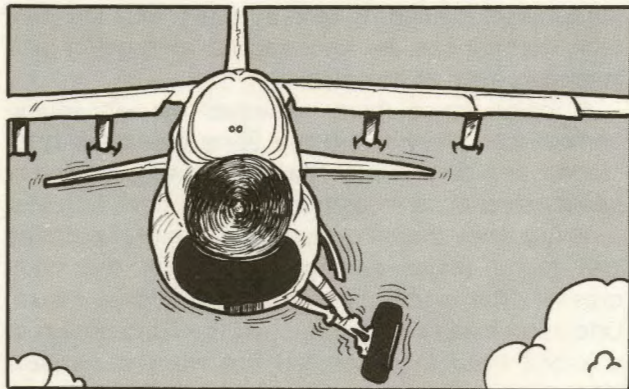
An A-7 unit decided to repaint the wheel wells on its airplanes. The project went well. Twelve airplanes were painted with polyurethane paint, using an airless paint gun. On the 13th aircraft, however, the painters changed their method. Instead of spraying one coat, they sprayed two light coats, figuring they'd have fewer paint runs.

Afterward, the airplane was run through 8 to 10 gear retractions on jacks to make sure all switches were free and the system worked normally. Then the airplane was put back on the flying schedule.



# CHOCK TALK

The first flight for the airplane after it was painted took place at night. After takeoff, about 10 seconds after the pilot had raised the gear and put the flap handle in Iso Utility, the left main gear fell down, giving a light in the handle and a green left-main-



down-and-locked indication. Then the green light went out, but the right main gear fell down, with its corresponding green light.

The pilot slowed to 220 knots and moved the flap handle to Flaps Up; the gear retracted. Next, the pilot decided to see if the gear would come down. When he put the gear handle down, the main gear locked down, and the nose gear came down but indicated unsafe. Because of the other troubles with the main gear, the pilot decided not to cycle the gear. He slowed to 145 knots with no effect on the nose gear indication. Blowing the gear down also didn't give a down-and-locked indication. So he ended up landing with an unsafe nose gear indication.

The gear held up through the landing. The pilot stopped the airplane straight ahead on the runway, and maintenance tried to pin the gear. They couldn't get the nose gear pin to fit through the hole, even though three different workers were under the nose of the aircraft trying to get the pin in. Finally they just stuck a smaller pin in the hole, and the airplane was taxied in. On the parking ramp, a nose jack was put in place before the airplane was shut down.

That proved to be a wise move because the gear was in fact still unsafe. The small pin in the nose gear was only through the arm holes, not the center loop. All that was holding the gear down was hydraulic pressure. If they hadn't put up the jack before shutting down the engine, they'd have had an unpleasant surprise when the hydraulic pressure bled off.

The cause of the nose gear problem was paint that had gummed up between the rod and guide in

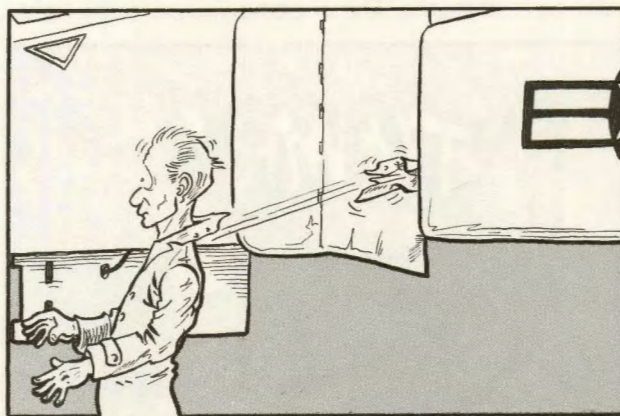
the gear assembly. Nothing was found wrong with the main gear; most likely the pilot put the flap handle in Iso Utility before the gear were fully up and locked.

This unit has decided that in the future they'll make an extra effort to insure that all pivot points and push/pull devices are clear of paint before an airplane flies after a paint job. But, more importantly, they've learned that when a nose gear pin can't be installed, the area under the aircraft should be cleared of people and a jack installed. No more taxiing in with a substitute pin.

## RAIN HOOD FOD

The four-ship of F-4s taxied out and pulled into the arming area for a quick check and arming before takeoff. The chief of the quick-check crew was wearing a light plastic rain jacket with a detachable hood. Connected to the jacket by three plastic snaps, the hood was hanging loose behind the crew chief's head as he inspected one of the F-4s.

The crew chief looked over the nose gear area, then ducked under the left engine intake. As he moved forward beside the intake, his rain hood was pulled off its snaps and sucked into the engine.



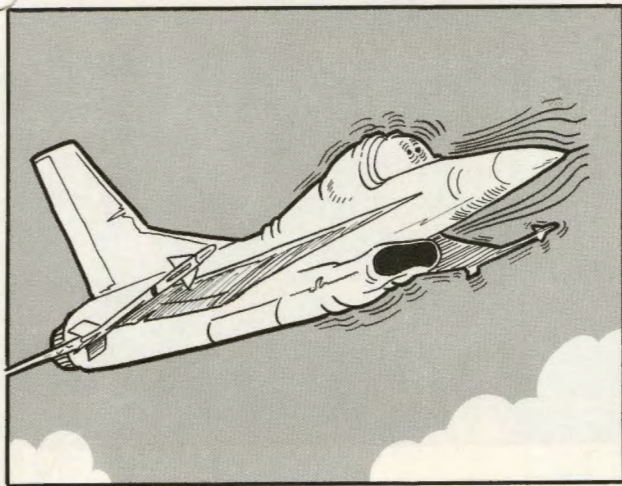
The hood had no metal parts. Apparently the engine digested it without damage. Because the hood detached from the jacket, the crew chief wasn't pulled into the intake and injured. We were fortunate; it could have been worse—much worse.

## ALL SYSTEMS ARE CRITICAL

Just as an F-16 was lifting off, the nose began to move up and down rapidly.

The pilot was able to control the airplane and climb to a safe altitude. Then he checked his instruments. The angle-of-attack (AOA) indicator was





off; and the Warning, Dual FC, Master Caution, ADC, CADC, and LE Flaps lights were on. The lights would not reset. No lights were lit on the flight control panel. At airspeeds below 200 knots, the leading edge flaps cycled up and down, and the horizontal tail oscillated above and below neutral.

The pilot locked the leading edge flaps near full up. Then he flew a straight-in approach and tried landing at 180 knots, but the pitch oscillations were too severe for him to land safely. He went around and tried again. The second time, he made a flat approach at 210 knots and flew the airplane onto the runway with power on, little flare, and no aerobraking.

After clearing the runway, the pilot used the electrical reset switch on the flight control panel to reset all warning and caution lights. This time they reset. Before shutting down the engine, the pilot ran a flight control self-test through step 54. That test showed no failures. The airplane was impounded.

The problem was in the angle-of-attack system. When the right AOA probe is rotated full clockwise and the left is rotated full counterclockwise, the slots on the bottom of the probes should match each other: both should point slightly aft of six o'clock. When they were rotated on this airplane, the left probe pointed forward of six o'clock. The disparity between the two probes was about 15 degrees. Besides the differences in alignment, the right probe was sticking.

On a previous functional check flight, the pilot wrote it up for an ADC light on liftoff, which wouldn't reset. During troubleshooting of this malfunction, the AOA probes were removed and replaced. The left probe was not aligned properly, and the right probe was installed wrong. When the right probe was mounted, the dowel pins on the transmitter flange

were not lined up with the corresponding holes on the mounting plate inside the radome. When the transmitter was tightened to the mounting plate, it mashed the dowel pins back into the flange and bent the transmitter slightly, preventing free rotation.

After the probes were replaced, the airplane was scheduled to fly again. The pilot aborted that mission takeoff for pitch oscillations, accompanied by several caution lights. Maintenance investigators found a bad weight-on-wheels switch in the left main landing gear. They replaced it and also replaced the electronic component assembly (ECA). Then they ops-checked the system, and it checked good. No one thought of checking the AOA system. The next flight was this one in which the airplane was almost lost on takeoff.

The way systems are integrated in the F-16, every system is critical. We can't afford sloppy maintenance. And we can't overlook any system when we troubleshoot—they're all tied together.

## ONE FASTENER WASN'T ENOUGH

An A-7 on a cross-country flight was being launched by transient maintenance. Preflight activities had been normal up to engine start. But when the pilot tried to start the jet-fuel starter (JFS), he couldn't get it running. The battery also appeared to be weak.

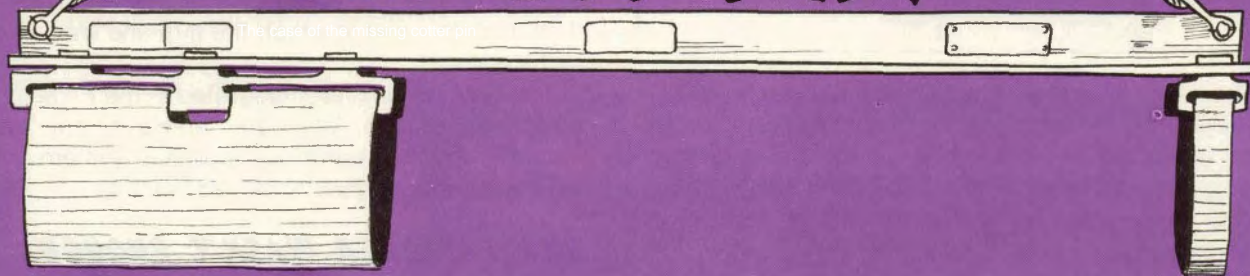
The pilot climbed out of the cockpit while maintenance work was done on the JFS. The maintenance workers opened the left and right avionics bay panels and the access panel forward of the JFS exhaust area to work inside. Then the pilot climbed back into the cockpit to see if the JFS would start. When he tried it, it started up. So the transient maintenance workers on the ground told him to stay in the cockpit; they'd take care of buttoning up the panels.

The pilot started the engine and shut down the JFS. He finished his cockpit checks and taxied. The same transient maintenance crew met him at the end of the runway and gave him his last-chance quick check. After getting a thumbs-up from the ground crew, the pilot took off and flew to his destination. There he discovered that the left avionics bay panel was missing.

The panel hasn't been found. But on the airplane, the female portions of the panel fasteners were not damaged—except for one. That fastener was the center fastener on the aft edge of the panel. Do you suppose that the reason it was damaged was because it was the only one fastened?



# THE CASE OF THE MISSING COTTER PIN



**By 1st Lt Gary L. Hartle  
USAFTAWC/TXMG**

The munitions crew hustled to make the AIM-7 missile trailer transfer as quickly as possible. Cold rain made each movement uncomfortable; however, a well-trained team was in action, so the transfer was professionally accomplished. The empty trailer was delivered to the trailer maintenance facility for its periodic maintenance inspection.

The truck was backed into a spot near the supply building for unloading of the tools and equipment, the final part of the work order. The crew leapt back into the deluge, grabbed the slings, missile handling bar and straps from the bed of the truck, and tossed them through the propped-open door and into the bin. The crew chief heard a noise back under the bin. A faint tumbling of some minute piece of metal, small stone, or wood chip. No time now to investigate, just get those slings stowed.

The crew dashed for the shelter and warmth of

their break room. The crew chief briefly wondered about the noise as he completed the AFTO 349 work order. Yes, he convinced himself, it was a stone that was dislodged by the impact of the bar. Now, to get dry.

The afternoon arrived and a break in the weather made the thoughts of outside work more pleasant. Another crew departed for the supply bins to check out the required tools and slings for a trailer transfer. The handling bar and slings still had evidence of the morning's soaking. It was obvious to the crew chief that this equipment was serviceable, for hadn't it just been used? It was quickly loaded in the truck and on its way to the storage location.

The MJ-1 arrived at the structure just as the doors had been opened, and the driver dismounted to help the other crewmembers position the trailers for ease of transfer. One crewmember grabbed the sling from the pick-up bed and clipped it into the hook on the extended boom. The jammer driver positioned the hook and sling directly over the first missile. The straps were slung under the lifting points of the Sparrow, and a quick thumbs-up signaled the operator to raise the boom.

Missile chocks had already been pinned onto the awaiting MHU-12M trailer. All was ready to simply





drive over to the trailer and reverse the task just accomplished. The two crewmembers assigned to steady the AIM-7 in its sling were sidestepping toward the empty trailer. The jammer driver stopped to change direction and the missile gently swayed. Suddenly, the forward end of the missile bar ejected violently from the clevis, and the missile heeded its command from gravity. The crewmember steadying the nose grappled momentarily with all the weight slamming into his forearms. He groaned with pain and frustration as he desperately tried to prevent the inevitable. Gasping, he lunged backward at the same time he retrieved his arms. The Sparrow, with its aft end still dangling in the sling, crashed against the pavement. The perfectly formed porcelain dome over shattered to reveal a smashed seeker and numerous wire bundles.

Shocked, the crew stared disbelievingly at the missile. Baffled, they stepped forward to inspect the broken missile and sling. It was immediately apparent that the clevis pin had come out. But how? It's supposed to be held secure by a small but strong cotter pin.

The crew chief realized his responsibility to take emergency actions and quickly made a report to munitions control. A fire truck was dispatched, EOD personnel called for, and an evacuation begun. Control called Storage on the hotline to report the incident, and within seconds the crews still in the building knew what had happened. The crew chief who earlier had used the sling ran to the door and looked down between a row of covered igloos at the site of the misshapen missile. That noise this morning. Could it have been . . . ? ➤





## DRIVING IN A FLOOD, TORNADO, OR EARTHQUAKE

**Flood:** Never attempt to drive through water on a road. Water may be deeper than it appears, and water levels can rise very quickly. Most cars will float for at least a short while. A car can be buoyed by floodwaters and then swept downstream. Floodwaters can erode roadways; and a missing section of road—even a missing bridge—will not be visible



with water running over the area. If you don't try to get through floodwaters you shouldn't have this problem; but if somehow your car stalls in floodwater, get out quickly and move to higher ground. The floodwaters may still be rising, and the car could be swept away at any moment.

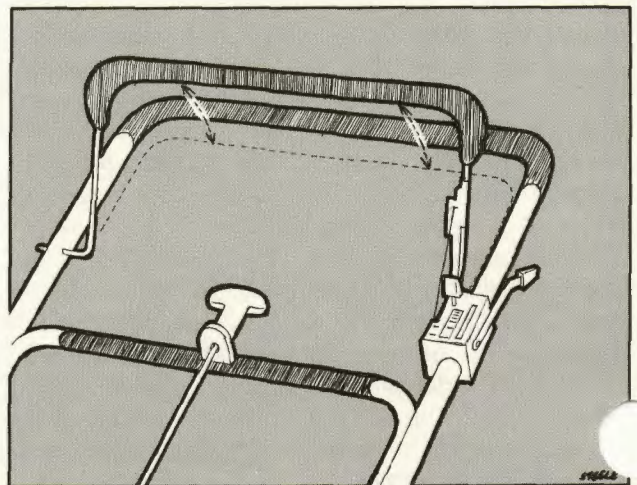
**Tornado:** A car is the least safe place to be during a tornado. When a warning is issued, do not try to leave the area by car. If you are in a car, leave it and find shelter in a building. If a tornado approaches and there are no safe structures nearby, lie flat in a ditch or other ground depression with your arms over your head.

**Earthquake:** Bring the car to a halt as soon as safely possible, then remain in the car until the shaking has stopped. The car's suspension system will make the car shake violently during the quake, but it is still the safest place to be. Avoid stopping near or under buildings, overpasses, and utility wires. When the quaking has stopped, proceed cautiously, avoiding bridges and other elevated structures which might have been damaged by the quake and could be damaged further by aftershocks.

## NEW MOWERS, SAME OLD JOB

Each year about 77,000 people are injured by power mowers. Hopefully, this year should be different because new mowers with more safety features go on sale. Most injuries were caused by contact with the blade, so most of the safety features try to make it harder for you and the blade to meet.

Here's what's required: A new mower will have a "deadman" handle control which the operator has to grip to keep the blade spinning; if the control is released, the blade must stop within three seconds. This can be done either by killing the engine com-





pletely or through a BBC—blade-brake clutch—that stops the blade but not the engine. Mowers will also be equipped with a trailing shield centered along the rear edge of the deck so that in the normal operating position a foot can't slip under and contact the blade.

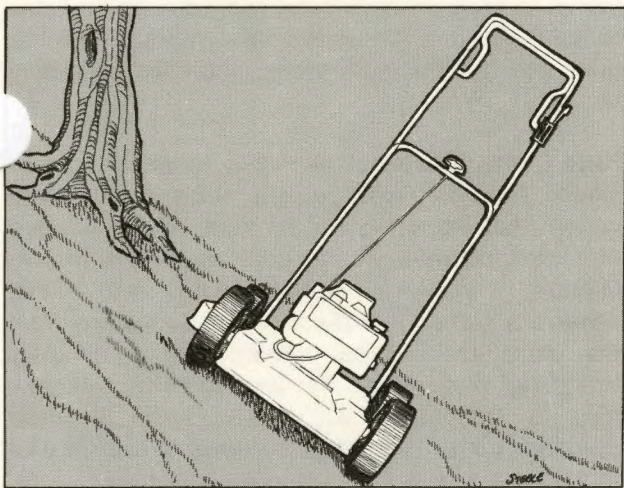
Now, what if you're still using an older-model, walk-behind power mower? That's OK, as long as you remember what's safe and what isn't.

- Never use your fingers or a stick to clear a clogged chute. Make sure the engine is off and the blade has stopped and then use a stick. If you tip the mower to unclog it, disconnect the spark plug wire because a hot engine can start unexpectedly.

- Don't pull backward, whether you have a new mower or not. You could pull the mower over your foot or your foot could slip under the mower.

- Don't mow up and down on a slope—mow across. If you slip, it won't be into the mower.

- Start the mower on level, uncluttered ground.



Place a foot firmly on the deck so that it won't lift off the ground or run over your foot. Some of the new models offer an extended rope with the starting cord near the handle so you can pull from a standing position, and some offer an electric restart.

- Set height adjustment before you start to mow.
- Don't mow wet grass. There are more clogs, it's slippery, and there's danger of shock if you use an electric mower.

- Protect your feet. Wear steel-capped safety shoes if you have them. Tennis shoes, sandals or clogs, and bare feet are definitely a no-no.

- Clear your lawn of any foreign objects like dog bones, clothespins, sticks and stones, or nuts. Don't push a running mower over a gravel or stone drive-

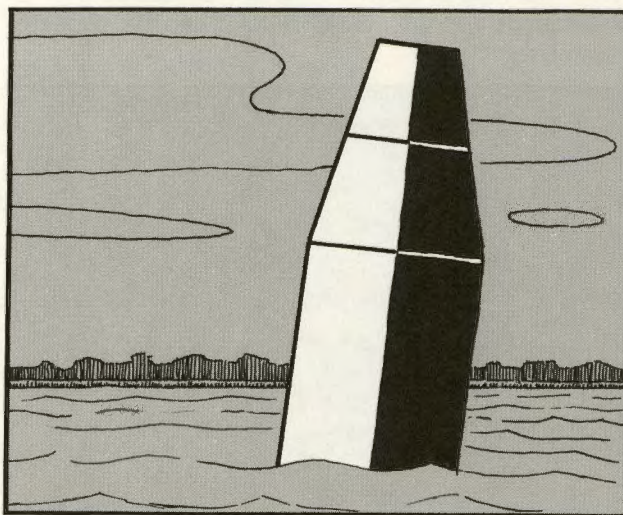
way. And keep all bystanders out of the way until mowing is finished.

- Fill a gas mower in the open air and wipe up any spills. Of course you won't smoke, and if you run out of gas, let the engine cool before refilling.

## NEW BUOY SYSTEM

This spring, the U.S. Coast Guard will start making changes to our present buoy system. Reasons for these changes are to improve buoy visibility and conform to international agreements. Here's what the changes are:

Port, or left-hand, buoys will be green instead of black. Lights will match the buoy colors—red buoys



will have red lights and green buoys will have green lights. Lateral aids will indicate the proper side by color, day or night.

Mid-channel or fairway buoys will change from black-and-white vertically striped to red-and-white so that they can be more easily seen from a distance. Lighted mid-channel buoys will keep the short-long white flashing lights and may have a red spherical topmark above the lantern. Unlighted mid-channel buoys will be changed to spherical above the water.

Red-and-black horizontally banded buoys will become red-and-green. Their function will stay the same, indicating a branching channel with uppermost color showing the preferred side. Their lights will change to a white 2-1 flash.

Many of the miscellaneous buoys will become yellow with yellow lights.

The only unchanged category is the orange-and-white marker used to provide regulatory information.



# DOWN TO EARTH

## LIFE GUARDS BEWARE

Last summer two life guards were cleaning a base swimming pool before it opened for the day. One of the guards was holding a 32-foot aluminum pole in the water while the other guard attached a suction device. The life guard holding the pole started to back up; the pole touched an energized transformer line and the roof flashing of the pool pump house, forming a parallel circuit with the life guards. Fortunately, the pump house flashing carried the majority of the current; the life guards just got a shock that knocked them into the water.

Pools will be opening soon. Make sure hazards like this are identified. Use warning signs, shorter poles, or have one person spot for another person so the pole doesn't hit a high voltage line or anything else. Working at a swimming pool should be a great experience for our young people, not the shock of their lives.



## PROBLEMS WITH THE TEAM MURRAY BMX BOY'S 20-INCH BICYCLE

Your Army and Air Force Exchange Service (AAFES) wants you to know that there is a problem with the pillow block (double clamp) stem on the Team Murray bikes that could cause the handlebars to collapse. If you purchased one of these bikes from your AAFES, look at the lower part of the handlebar/stem assembly for looseness, broken welds or fractured metal. The bike is model 3-5337, is track certified, and has a painted silver finish with red-trimmed handle grips, seat, and padding. The manufacturer is providing the replacement parts. So if you suspect you have a defective bike, write to Murray Ohio, Customer Service—Mike Mullins, P.O. Box 268, Brentwood, IN, 36027, or call collect (615) 373-6507/6508. If you're overseas, contact your local exchange.



**Preventable Accidents.** Accidental injuries rank as the fourth leading cause of death in the United States and cost an estimated \$83 billion a year. This is what you can do to decrease accidents: Reduce speed limits, use seatbelts, reduce the heights of highchairs and diving boards, apply nonslip surfaces to bathtubs, use flame-retardant fabrics, lock up guns and harmful substances, and keep physically fit.

**Here Come Da Bees.** One million Americans are so allergic to hornet, wasp, yellow jacket, or honeybee venom that one sting can be fatal. Allergists warn that many potential victims don't even know they're allergic. Reactions include itchy red welts, especially some other place on the body away from the sting itself; throat constriction or difficulty breathing; and sudden nausea, vomiting, stomach pain, or fainting. If you've had some of these reactions consult your doctor. He can prescribe a kit that you carry with you in case you get stung.

**Running Shoes.** Some minor injuries that people get from running can be avoided with proper fitting shoes. Here are some buying tips: Try on the shoes with the socks and foot-supporting devices you'll wear when running. Compare your shoe size with the next larger and smaller size—there should be a finger-width between your longest toe and the end of the shoe. Feet swell in the afternoon—take that into consideration—and if they aren't comfortable in the store, don't rely on their breaking in later.

**Car Seat Rentals.** If you want to rent a car seat instead of buying one, check with your Governor's Office of Highway Safety, local police, hospitals, the Red Cross.



# "LOSE SIGHT, LOSE. . ."

**By Maj Hank Goddard  
TAC Flight Safety**

Everybody who thinks Eagle jets are immune to birdstrikes, step forward. Not so fast. This Eagle hit a hawk while flying a low-altitude proficiency sortie. Airspeed was 430 knots. Fortunately, this Eagle driver had his visor down. As you can see, that action probably saved his eyesight. After he landed, there were bits of bird bones and plexiglass in his clothes. "Lose sight, lose fight," they say. In this case, we would have said "lose sight, lose everything."

Use your visor. 'Nuff said.







Letters to the Editor

Dear Editor

First off I would like to compliment you on a fine publication. Your articles are concise and informative. I find it an invaluable source for ground safety briefings and discussions, as well as keeping abreast of TAC's problems as they relate to ours here in USAFE.

I would like to comment on your article on page 26, [December 1982] titled "Skip Some Steps and Shorten the Sortie."

Item A: It looks like you have the same problem a lot of F-4 outfits have. There is not a 25-day jettison requirement, unless locally generated. There is a 30-day FUNCTIONAL check required by TO 1F-4C-6, page 2-A-22, item 24, dated 1 Nov 82. Unfortunately I've seen many outfits refer to it as a 30-day JETT CK (in your case the time frame was reduced) and do no more than a jettison check. This error could result in system degradation.

Item B: If someone can melt contacts in a relay by using the panic button thereby rendering the system inoperative, we have a design deficiency and that needs to be addressed. I couldn't do any in-depth research on this one because your article didn't disclose what model F-4 or block series this problem was found in. Ask yourself the following questions:

1. A circuit breaker is supposed to open before a system damages itself. Why didn't this happen?
2. What is the contact rating of the relay compared to the max load on that circuit?
3. The panic button usually closes the relay contacts by energizing a high resistance coil (minimum load). The contacts carry the load. However, the contacts don't incur a current flow

unless the cart firing line is complete. It wouldn't be complete without a cart installed or some other load installed in that line. Without a load on that cart firing line, arcing would not occur no matter how long the button was depressed.

I don't think the outfit involved did their homework. If all they did was replace the relay, they still have a problem in that airplane, or they didn't reflect all their work in their report.

The jettison system, like the ejection seat, MUST work the very first time it is called upon. We maintenance types cannot accept anything less than perfection from these circuits. The day they may be called upon to perform their designated duties, the crew member(s) usually don't have time to research alternative methods. This is why I become very concerned when I read something that indicates a false switch actuation or too long a duration of a signal will degrade an emergency circuit.

Keep the good publication coming.

PETER J. NELESON, MSgt, USAF  
52 AGS Ground Safety NCO

Dear Sergeant Nelesen

Our weapons experts tell us that there are two separate 30-day requirements: a jettison check and a functional check. In this case the crew was doing a jettison check five days early.

Your point about the design deficiency (or possibly materiel defect) in the relay is well taken. We don't normally deal with design and materiel problems because our target audience isn't involved in engineering or manufacturing. But you are right—we can contribute to a solution for those problems in at least one way: by submitting materiel deficiency reports (MDRs) when they're called for. We agree with you; that should have been done in this case, and it was.

The temptation is to stop looking after we find personnel error in an incident like this one, which had several violations of tech data. But to prevent future mishaps, we need to address every problem we uncover. In fact, this unit did submit an MDR. That information was left out of the story because it wasn't pertinent to the particular lesson we were emphasizing.

Thank you for reminding us that we can do something about design and materiel problems also.

ED



# TAC TALLY



CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
MAR	THRU MAR	
	1983	1982
0	6	10
0	3	6
0	2	8
0	2	8

ANG		
MAR	THRU MAR	
	1983	1982
0	3	2
0	3	2
0	3	2
0	0	1

AFR		
MAR	THRU MAR	
	1983	1982
0	0	0
0	0	0
0	0	0
0	0	0

## TAC'S TOP 5 thru MARCH '83



TAC FTR/RECCE	
class A mishap-free months	
41	49 TFW
40	355 TTW
28	354 TFW
23	67 TRW
23	363 TFW

TAC AIR DEFENSE	
class A mishap-free months	
122	57 FIS
75	5 FIS
72	48 FIS
31	318 FIS
22	87 FIS

TAC-GAINED FTR/RECCE	
class A mishap-free months	
131	188 TFG (ANG)
123	138 TFG (ANG)
122	917 TFG (AFR)
119	116 TFW (ANG)
109	434 TFW (AFR)

TAC-GAINED AIR DEFENSE	
class A mishap-free months	
109	102 FIW
105	177 FIG
71	125 FIG
54	119 FIG & 142 FIG
41	120 FIG

TAC/GAINED Other Units	
class A mishap-free months	
164	182 TASG (ANG)
148	110 TASG (ANG)
144	USAF TAWC
136	84 FITS
132	105 TASG (ANG)

## CLASS A MISHAP COMPARISON RATE

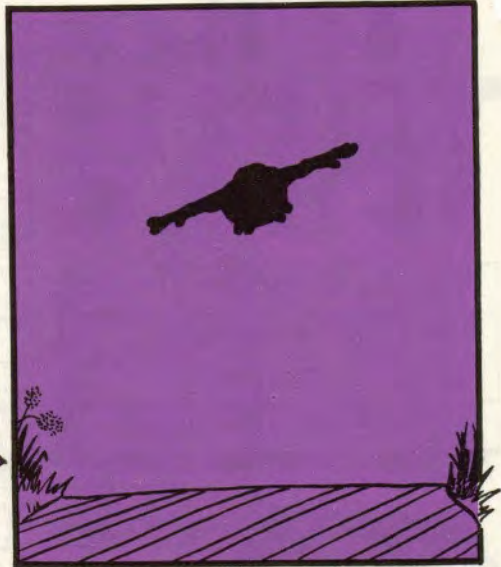
(BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

TAC	1983	6.9	5.3	3.4									
	1982	7.8	5.7	5.9									
ANG	1983	9.1	7.0	4.4									
	1982	0.0	2.7	3.2									
AFR	1983	0.0	0.0	0.0									
	1982	0.0	0.0	0.0									

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



FLEAGLE



SMASH!

