

TAC ATTACK

AUGUST 1983

Tac Attack August 1983



F-15 Loss of control
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ANGLE OF ATTACK

Angle of Attack

This month we are featuring two stories on the all too familiar tendency to drive well beyond the limits of our physical ability. Diller's intentions were good—he wanted to give the family, and himself, a much needed R&R. Similarly, Sgt Daniels was anxious to get home after a long, hard TDY. While these instances were “near misses,” there are far too many examples of others that did not miss. The 101 days that cover the summer period contain many holidays, and vacation periods also cover a period of high risk for all of us. The moral of our stories is consistent—plan ahead, get plenty of rest, use your seatbelts, and enjoy a well-deserved vacation.

This month's flying safety traffic crossing my desk contains the proverbial good and bad news. On the bad news side—I've seen two Class A accidents where mechanical indications of impending problems were noticed by aircrews on previous flights but were not written up in the 781. In one case, the stall warning circuit breaker popped, was reset, and not written up. In a second case, the pilot noticed airframe vibration, discussed it in maintenance, but chose not to write it up. Again, the moral is clear. The maintenance folks can't fix it if they don't know about it. Write it up as if you are going to be the next one to fly the bird—you may be.

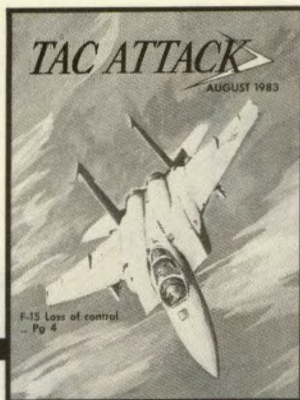
The good news is that due to our significantly improved flying safety record, several companies are reducing or eliminating the extra premium on military aviator life insurance policies. Keep

flying safe and write your insurance company—the cash you save may be your own.

This month, and next, we are formally soliciting your help through a survey. While we always seek your cards and letters and carefully consider your suggestions, this month we are including a survey that requires only a few minutes to complete and return to us. Our survey two years ago resulted in several important changes. This survey is more timely to us because of my recent arrival and the January departure of Major Jim Mackin. Please take a couple of minutes to give us the benefit of your feedback.

The graphics of air and ground losses are an attempt to convert cold statistics into people and airplanes that were lost during the first half of this year. While the loss of combat capabilities is significant, the loss of human life is tragic. Our losses have decreased, but we must continue our efforts to break the chain of events before a mishap results.

Harold E. Watson, Colonel USAF
Chief of Safety



ON THE COVER
F-15 Loss of control

AUGUST 1983

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TACRP 127-1

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Contributions are encouraged, as are comments and criticism. We reserve the right to edit all manuscripts for readability and good taste. Write the Editor, *TAC Attack*, HQ TAC/SEPP, Langley AFB, VA 23665; or call AUTOVON 432-3658.

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F-15 LOSS OF CONTROL



By Capt John Noss, 49 TFW/DOV
and Maj Hank Goddard, TAC Flight Safety

Out of control—can it happen to me? You bet. When can I expect it? When I *least* expect it, probably when I'm defending against a gun shot and my attention is riveted 1,500 feet at six. If I

get out of control, what will I do? Follow the Dash One procedures, I hope. But as we've seen lately in a couple of instances, that can be easier said than done. The time to prepare is now—to imagine what I'll be feeling and seeing in the cockpit and come up with a *plan* before the old heart gets to high rate.

The Dash One is very specific on the subject of out-of-control recovery. The procedures in Section III are simple and the discussion is comprehensive. Section VI is even more detailed, but it's still chock full of vital information. Both sections require periodic re-reading, no matter how good we think we are. But there's a lot of information there—and we need to study it in such a way that we relate it to what the situation will look, sound, and feel like in the cockpit when the pressure's on.

Obviously, the secret is to think the situation through ahead of time. Sure, we brief out-of-control procedures on every mission and get regular SEPTs to remind us what the steps are. But just thinking or reciting "Step 1, step 2, step 3" doesn't do much good, since it's out of context. We've got to sit and put each step into the context of a real out-of-control situation.

The out-of-control procedures in the Dash One are a bit different in character than procedures for more "vanilla" EPs. The out-of-control recovery steps leave a lot unsaid, and they imply the need for a lot of judgment. Let's look at how the situation will develop, step by step:

How do I know I'm out of control? The first paragraph of the out-of-control recovery procedure in Section III sums it up: I'm out of control when the airplane doesn't do what it's told. That pretty much says it all for me—if I tell the jet to do something, and it either does something else or doesn't do anything at all, it's time to start with step 1:

CONTROLS-NEUTRAL

This step is really a two-part step. Since the jet wants to fly right, neutralizing the flight control surfaces should do just that—let it regain the

equilibrium it lost through pilot inputs. There are two ways to accomplish neutralizing the controls. I could move the controls to neutral. The danger here is that I might—consciously or unconsciously—try to "help" the jet recover, perhaps applying pro-spin controls. The other option is to just let go—hands on the "chicken handles" and feet on the floor. Either technique is OK, but the point is that I should know *now* which one I'm going to use if the situation arises. And I have to train myself mentally to be ready to implement that plan immediately if I sense it's needed.

The second part of step 1 is implied. I have to figure out what kind of an out-of-control I'm in. While I'm holding the chicken handles is a great time to do it. Entering an out-of-control condition is just like crossing the railroad tracks—I need to stop, look, and listen. First, I have to stop flying the airplane and give it a chance to recover. Next, I have to analyze the situation by looking and listening.

I'm going to look at the altimeter first. I have a number in my head—prebriefed MSL minimum uncontrolled bailout—and I need to compare it with what's on the clock to determine if I have time to continue.

Next, I have to decide what the airplane is doing by looking at the horizon and/or the ADI to determine roll direction. This could be the trickiest part of the whole recovery. Large yaw and roll rates may be present, and my cerebral gyros will probably tumble. The important thing is to determine the roll direction and fight the natural inclination to stop the roll with aileron. An aileron input into the roll at this point could be just the thing to turn a departure into a spin.

Now, while this is going on, I should be doing the last step in analyzing the situation—listening. Wingmen can provide input—altitude, roll directing—and the departure warning tone can help my S.A. as well. At this stage, it's not as important as it may be later on, but other guys' experiences have shown me that I have to consciously get that tone in my cross-check, or I won't notice it later when I might need it.

Stop, look, listen. This all takes place in three

F-15 Loss of Control

heart beats, and I used two of those to make sure I got the roll direction right. Now the time has come for more direct action if the jet is still out of there. Step 2:

RUDDER-OPPOSITE ROLL

This assumes, of course, that I'm at positive G. At negative G, it'll be easy to release the controls, but quite difficult to put in recovery controls. Fortunately, the jet should recover itself from negative-G out-of-control with just neutral controls. If I'm in a positive-G autoroll, the air-speed will be around 200-250 knots, and the AOA will be fairly low (20-25 units). Roll will be very apparent, and I may or may not have departure tone. I know I can't use the turn needle for direction (it'll be doing a windshield wiper act), but outside references or the ADI should do the trick. Opposite rudder with neutral stick (again, very important to keep the aileron out of it at this stage) should recover the jet in two to four seconds. A couple more heart beats have gone by now. Time to check altitude again. If the jet's recovered, great. If not, time for step 3 (assuming my altitude check says I have the time):

LONGITUDINAL STICK-CENTERED

LATERAL STICK-FULL IN DIRECTION OF YAW (TURN NEEDLE)

If this is a spin, I have several good ways to tell. The departure tone is going ape, AOA is pegged, the turn needle is steady in one direction, and I'm being thrown forward. Hard. Get the aileron into the spin and hold it there. There's a trick here. Even if it's working, I know that nothing will be apparent for two turns, at about 1,000 feet per, and it may take up to five

turns to see any results (*check the altimeter*).

What's going to be my first indication of recovery? Pitch and roll oscillations? No. Reduction in yaw rate? Yeah, but how do you tell when your eyeballs are stuck to the HUD? My old buddy the departure tone will tell me. The rate of the tone beep will reduce as the yaw rate reduces. When I hear it slow down, I know I'm on the road to recovery. Then the pitch and roll oscillations will start, probably followed by a fairly violent pitch over. Time for the next step:

AIRCRAFT RECOVERS (TONE CEASES) CONTROLS NEUTRAL

When the departure warning beeper shuts up, neutralize the controls and hang on. Large oscillations in all axes are normal, as is a rather abrupt unload. Check the altimeter, and think about the dive recovery. Now for the last step:

IF RECOVERY IS NOT APPARENT BY 10,000 FEET AGL: EJECT

Check the altimeter. I've been watching the altimeter all along. Had I seen 10,000 feet AGL on the clock before the jet started to recover, I'd have left it. Now I need to insure that I have sufficient altitude for the dive recovery.

This article is just a starting point. Our purpose is to convince other F-15 jocks to think through an out-of-control situation in concrete terms. Read the Dash One again and try to imagine how it'll feel and what it'll look like. Shorten it. Rehearse it, rehearse it again. Practice it in the simulator. Run through it before every mission. Be ready.

Nobody wants to lose a jet for any reason, especially plumbering a departure recovery. But it can and does happen. Don't let it happen to you.

AIRCREW OF DISTINCTION



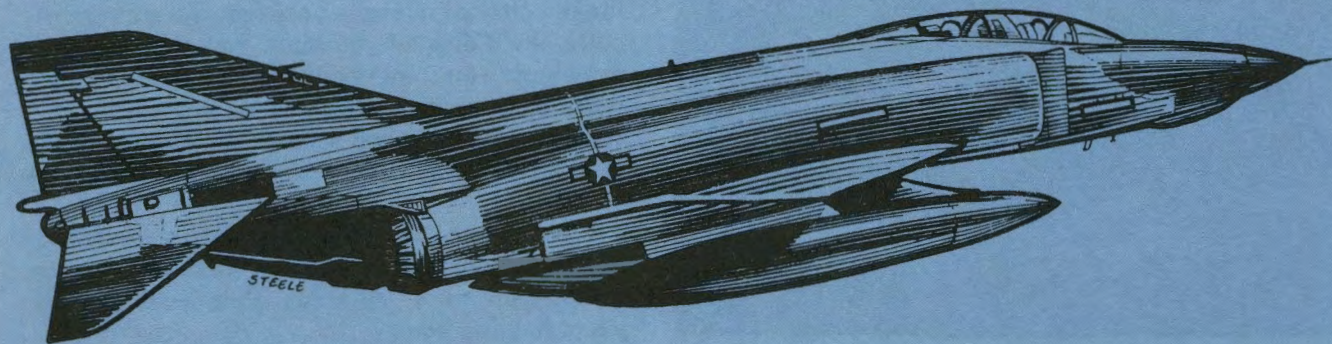
Capt Francis J. Hanzelka
1st Lt Mathew A. Bowra
12 TRS, 67 TRW
Bergstrom AFB, TX

On 11 February 1983, 1ST LT. MATHEW A. BOWRA and CAPT. FRANCIS J. HANZELKA were flying lead RF-4C on a two-ship tactical mission at 500 feet AGL and 480 knots. After 30 minutes of uneventful flying and four targets, Lieutenant Bowra initiated a weave. Upon completing the first cross, Lieutenant Bowra prepared to turn back into his wingman. However, just as he looked forward, a hawk smashed through the left quarter panel of the aircraft's canopy, hitting Lieutenant Bowra in the face and helmet. The impact of the hawk ripped the glare shield free and dumped it into his lap. It also broke the visor housing of his helmet, cracked his visors, and damaged the front cockpit airspeed indicator, the radar altimeter, and several wire bundles. Debris was spread throughout both cockpits covering canopies and windscreens with remains. Lieutenant Bowra and Captain Hanzelka accomplished briefed birdstrike procedures leveling the damaged aircraft at 16,500 feet MSL and 250 knots. Lieutenant Bowra cleaned enough debris from his cracked visors and windscreen to see, shook the control stick to acknowledge control of the aircraft, and turned for Bergstrom AFB, Texas, 100 NM away.

The crew of the number two aircraft realized lead was in trouble and rejoined to a briefed route position to check the damaged aircraft. Lieutenant Bowra passed lead to the number two aircraft, and an emergency was declared. When their aircraft was approximately 40 NM from

Bergstrom, Captain Hanzelka used the HF radio to contact the supervisor of flying and inform him that both crew members were uninjured. He also reported that they would take the approach-end barrier because of severely limited visibility. Lieutenant Bowra could not hear the radio for the loud howling in the front cockpit, but he did pass information between cockpits by shouting slowly into the intercom. As they lined up with the runway, Lieutenant Bowra performed an excellent formation-wing approach, touching down at approximately 500 feet from the barrier and engaging it successfully.

The coordinated efforts executed by Lieutenant Bowra and Captain Hanzelka enabled the safe recovery of crew and aircraft from an emergency during high speed, low level, multiple aircraft flight. They have earned the Tactical Air Command Aircrew of Distinction Award. ➔



HELP US HELP YOU



Every two years we conduct a survey of our readers. The survey is very important to us because it's one of the few ways we have of keeping in touch with you. This year it's even more important because we'll soon be breaking in a new editor, and your inputs will help him decide what approach he's going to take.

We know you don't have much time to spare, but please squeeze out a few minutes from your schedule to fill out the survey form. We've included two forms with each copy of the magazine because most of you have to share your copy with at least nine other people. At least two of you can contribute to the survey. We'll include another form next month so that others also have a chance to voice their opinions. Obviously, we encourage local reproduction of our form.

The form includes some questions about you. We're not trying to invade your privacy; we just want to know more clearly who it is we're communicating with. That way we should be better able to tailor the magazine to your interests. Please don't include your name or Social Security number because we don't want to get involved with the Privacy Act.

The rest of the form lets you sound off to us. Tell us honestly what you think about the way we're doing our job. Don't worry about hurting our feelings. Nobody's performance report is hinging on your answers, so just be as honest and accurate as you can. The back of the form has more space for remarks and suggestions. We will read each survey and consider each serious suggestion; after all, it really is your magazine. We are relying on your inputs.

When you're finished, fold and staple the survey so that the address shows. Drop it in a mailbox or in base distribution.

We'll analyze the responses we get. Then we'll make editorial changes based on the survey results. We'll also let you know how the survey came out. You may recall that our survey two years ago resulted in several changes to the magazine: we dropped some features and added or enlarged others. So we really are listening to you.

This is your chance to sit on our editorial board and have your opinions heard. Take the time to let us know what you think. Help us do a better job of helping you.

TAC Attack Survey

1. What is your rank or grade? _____ Time in service? _____

2. What is your job?
- a. pilot
 - b. WSO
 - c. other aircrew member
 - d. aircraft maintenance
 - e. weapons
 - f. flight medicine
 - g. air traffic control
 - h. life support, survival
 - i. safety
 - j. other (specify) _____
3. What is your age?
- a. under 21
 - b. 21-25
 - c. 26-30
 - d. 31-35
 - e. 36-40
 - f. over 40
4. Your sex?
- a. female
 - b. male

5. How much formal education have you had?
- a. didn't finish high school
 - b. high school
 - c. some college but no degree
 - d. associate degree or higher
6. How often do you read *TAC Attack*?
- a. every month
 - b. almost every month (at least six a year)
 - c. occasionally (from three to five a year)
 - d. rarely (once or twice a year)
 - e. never

7. How often do you read these regular departments?

	Never	Rarely	Occasionally	Frequently	Always
Fleagle	_____	_____	_____	_____	_____
Angle of Attack	_____	_____	_____	_____	_____
TAC Tips	_____	_____	_____	_____	_____
Chock Talk	_____	_____	_____	_____	_____
Down to Earth	_____	_____	_____	_____	_____
Short Shots	_____	_____	_____	_____	_____
Weapons Words	_____	_____	_____	_____	_____
Aero Club Clinic	_____	_____	_____	_____	_____
Aircrew of Distinction	_____	_____	_____	_____	_____
Other Awards	_____	_____	_____	_____	_____
Letters to the Editor	_____	_____	_____	_____	_____

8. What kinds of articles should we print more of?
- _____
- _____
- _____
9. What kinds of articles should we print less of?
- _____
- _____
- _____

10. Of the stories we printed in the last year, what was your favorite? _____

11. What story in the last year did you like least? _____

12. Overall, do you think *TAC Attack* is—
- a. interesting and useful?
 - b. interesting but not useful?
 - c. useful but not interesting?
 - d. of no value at all?
13. How does *TAC Attack* compare to other safety magazines?
- a. better than most
 - b. about the same as most
 - c. worse than most
 - d. don't read any others

14. How do you like our layout and design?
- a. excellent
 - b. good
 - c. fair
 - d. poor
 - e. terrible
15. What magazines or newspapers do you regularly read?
- a. _____
- b. _____
- c. _____

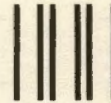
16. What changes would you make to *TAC Attack* if you could?

17. Other comments:

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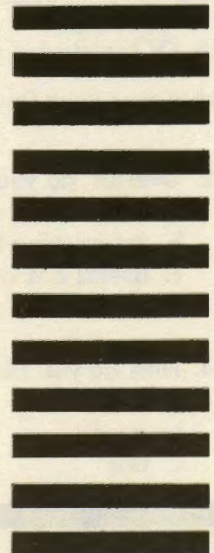


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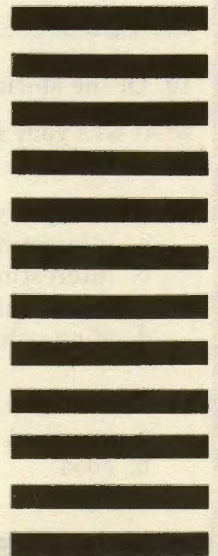


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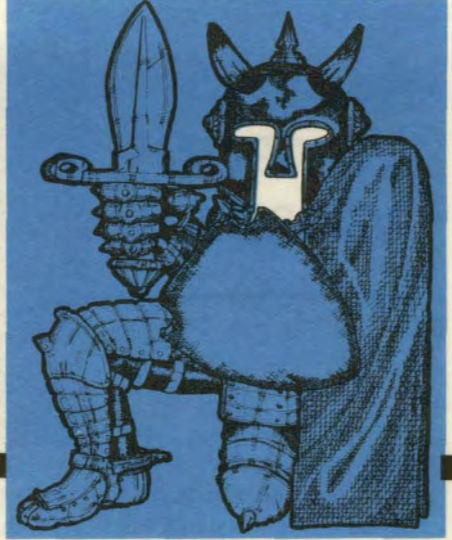
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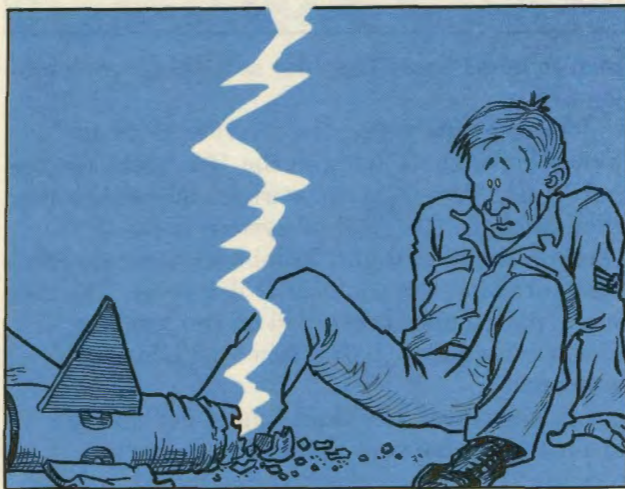


WEAPONS WORDS



Tongue tripper

A load crew was sent to move two AIM-9E captive missiles that were on a trailer. They moved one missile to another trailer parked parallel to the first trailer. The second missile was supposed to be moved to a Y-stand in front of the trailer. All three crewmembers took hold of the missile and lifted it from the trailer; then they moved forward to clear the trailer. As they changed direction to place the missile on the Y-stand, the crew chief's foot hit the tongue of the trailer, and he stumbled. The crew chief was in



front of the missile. When he fell, the crewmember in the middle lost his grip and let go of the missile. It fell to the ground, cracking the guidance and control unit.

A little bit closer attention to the hazards in the area where they had to carry the missile might have helped the crew prevent this mishap. Sometimes we get so used to working around a piece of equipment that we forget about its hazards—even something as simple as a tongue.

Jammer jams trailer

At the end of a local exercise, a weapons load crew was given the job of moving AIM-7 and AIM-9 missiles from the tab-vee missile racks to an MHU-12 trailer. The missiles were moved with an MJ-1 bomb loader, or jammer, driven by the most experienced airman on the crew. This airman was a 3-level who had been checked out on the MJ-1 a month earlier.

As the driver approached the trailer with the last AIM-7 on the MJ-1, he pressed down on the foot brake but didn't come to a complete stop. He became confused and panicked. He was driving an MJ-1 with an automatic transmission, but earlier in the day he had been driving one with a manual shift. Now he confused the automatic with the manual MJ-1. He thought his left foot was on the clutch, so the jammer shouldn't have been in gear; but it kept creeping toward the trailer because it was an automatic and always in gear.

The driver stomped down with his right foot where the brake pedal would be on the manual model. His foot hit the accelerator with a glancing blow that caused the MJ-1 to lurch forward. The AIM-7 he was carrying on the jammer table struck an AIM-7 on the trailer, pushing it out of its chocks. The radome of the first AIM-7 shattered, and the rocket motors of both missiles had to be rejected for exceeding drop criteria.

The problem here was what the human factors specialists call negative transfer of learning. When we build up a pattern of actions and then transition to a new piece of equipment that requires slightly different actions, we can get ourselves in trouble quickly because we tend to revert to our old habit patterns. The counter to the problem is training on the new equipment. In

WEAPONS WORDS



this airman's case he had been trained on both types, but his work earlier in the day had reinforced his pattern on the manual jammer. His lack of experience on the model with automatic transmission, coupled with fatigue and stress, led him to revert to the more familiar pattern.

This unit now has given the airman additional training and has gotten rid of the last of its manual shift MJ-1s. But some of the rest of us still have to deal with both kinds. So how do we avoid negative transfer of learning? By giving more hands-on training on both types of equipment. We can't just gloss over the differences and emphasize the similarities. We have to build good habit patterns for both pieces of equipment and then stay current on both, or else we have to restrict ourselves to operating only one type. Otherwise our human frailty will let us down.

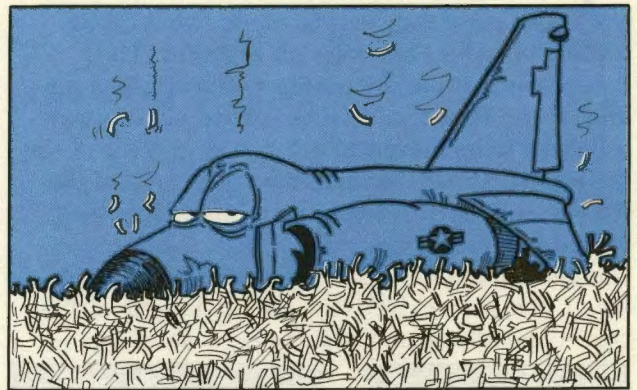
Mixed-up priorities

An F-4E was scheduled to ferry two ACMI pods to another base. The aircrew ground aborted that aircraft, so the pods were quickly switched to a spare aircraft. In the rush to make the take-off on time, no one noticed that the ALE-40 chaff module on the spare aircraft had not been downloaded. At the end of the runway, the arming crew removed the ALE-40 safety pin, but they didn't put it in the travel pod.

The flight to the other base went normally. The aircrew parked on the transient parking ramp and shut down. They didn't mention to the transient maintenance workers that chaff was loaded, and the workers didn't notice it themselves. Even if they had, they couldn't have pinned the module because ALE-40 safety devices for the F-4 weren't available at this base.

After the ACMI pods were transferred and the airplane was serviced, the aircrew climbed back

into the airplane for the return trip home. About 30 seconds after start, the number 30 chaff cartridge fired, dispensing chaff on the transient parking ramp. After being reassured that the airplane wasn't damaged, the aircrew decided to re-



turn to home base. They did so without any problems.

After they got home, the aircrew forgot to write up the chaff firing in the 781 forms. On the next flying day, weapons workers uploaded a new chaff module. The ALE-40 system failed to release on the next flight. Troubleshooters found a fuse burned out in the master dispenser. The unit was repaired and reinstalled on the airplane; it flew a subsequent chaff mission without any problems.

Ten days later, the word finally got through about the inadvertent firing. The entire dispensing system was checked thoroughly; all the components bench checked good. The cause of the inadvertent firing was never discovered.

Maybe if the aircrew had written up the problem right away, the cause might have been discovered. We'll never know. Then again, maybe if everyone involved in the launch hadn't gotten their priorities mixed up, the incident might never have happened. When are we going to learn that being on time is not the most important consideration in an aircraft launch?

Wrong loading bends fins

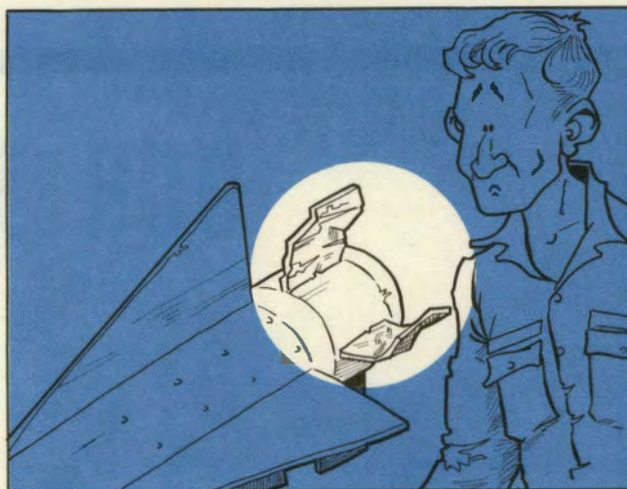
The AGM-65B preloads on two MHU-110M trailers had to be removed so that the trailers could be processed for a local mobility exercise. The preloads were made up of two AGM-65s on a LAU-88 with the inboard rail empty. Each trailer carried one right- and one left-side missile rack preload. After the preloads were downloaded, they were placed in a storage igloo.

The next day, after the two trailers had been processed through mobility, they were lined up single file outside of the igloo. A load crew began to replace the preloads. The jammer operator picked up the first preload and placed it on the left side of the first trailer. It was preloaded for the right side of the aircraft, so that was its correct position on the trailer. Right-side preloads belong on the left side of the trailer, and left-side preloads belong on the right side of the trailer. The jammer driver next picked up a left-side preload; but instead of placing it on the right side of the first trailer, he loaded it on the right side of the second trailer. That was unusual but OK because it was loaded correctly on the trailer.

For these two loads, a load crew chief had acted as a spotter. Now he became preoccupied with other tasks and turned over spotting duties to another crewmember. Somehow, the new spotter and the jammer operator got the next two preloads reversed and placed them on the wrong sides of the trailers. The third load, a right-side preload, was placed on the right-hand side of the first trailer; and the last load, a left-side preload, was placed on the left side of the second trailer. That meant the first trailer had two right-side preloads on it and the second trailer had two left-side preloads. Loaded this way, the outboard missile on the wrong loads is to the center of the trailer, and the hydraulic actuator system (HAS) moveable fin on the outboard missile can rub the support brace on the opposite 114 stand.

That's exactly what happened. One of the missiles suffered severe damage to the HAS fin; the other got off with light damage.

Nobody had been using the tech data. A local checklist was available for this job, but it wasn't used. The load crew chief wasn't very familiar with the operation, so he counted on the others to do the job correctly. He thought "someone else was using the checklist." There was no safety briefing given before the crew began the job and



no clear-cut delineation of crewmembers' responsibilities. And the load crew chief didn't bother to ensure that the tech data was used the way it was intended.

Under these circumstances, we're lucky that a bent fin was all that happened. With poor supervision and no tech data, who knows what else could have gone wrong.

Keeping count

On his sixth strafe pass in an A-10, the pilot saw the Gun Unsafe light come on after he'd fired about 20 rounds in high rate. He returned home and landed with no problems. When the gun was taken apart, the flex return chute inside the roll chute was found separated.

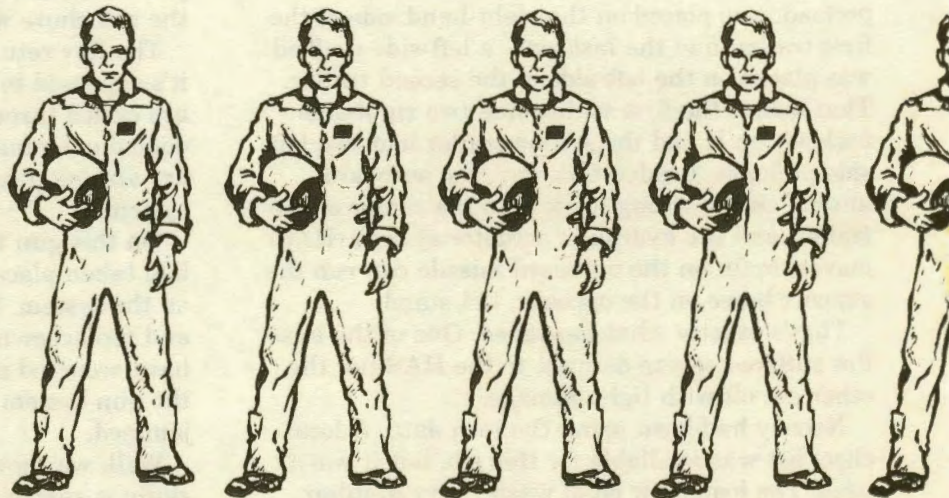
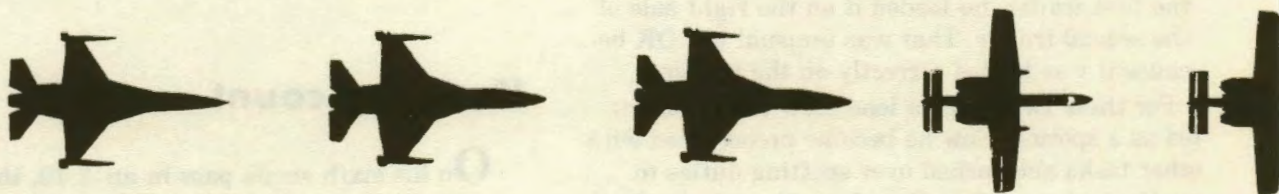
The flex return chute is a replacement item; it's supposed to be changed after 25,000 rounds are cycled through the system. Normally that's done during major inspections of the gun, which are also required after 25,000 rounds are on the system.

On this gun the first 25,000-round inspection had taken place when the gun had 22,796 rounds on the system. So the next major gun inspection and replacement of the flex return chute should have occurred no later than 47,796 rounds. But the gun system had 53,294 rounds on it when it jammed.

Well, we showed again why the flex return chute is supposed to be changed at 25,000 rounds. But that information doesn't do us any good if we don't develop a reliable method of tracking expended rounds and scheduling inspections on time.

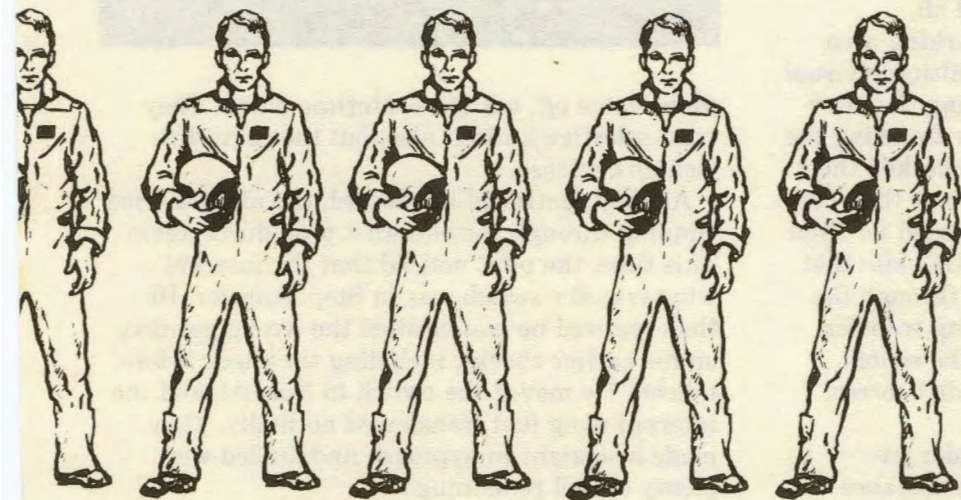
OUR TAC AND TAC-GAIN

JANUARY -



IED LOSSES IN THE AIR

JUNE 1983



TAG

tips

INTEREST ITEMS,

Tac tips

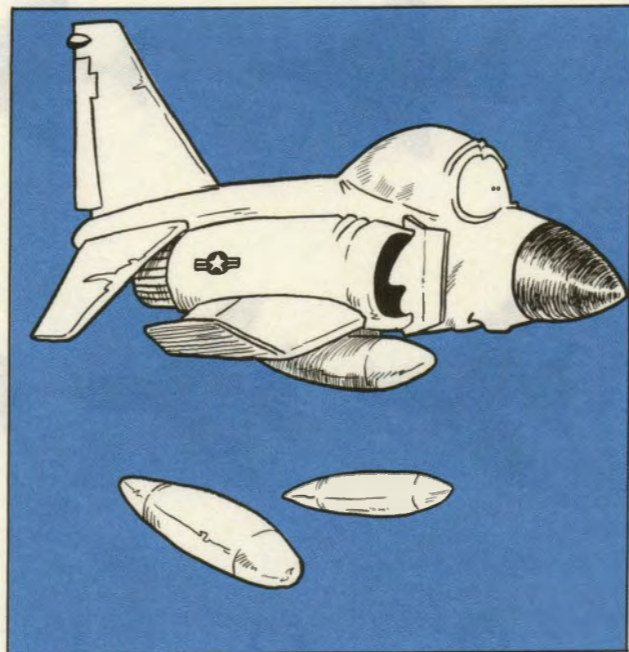
F-4 fuel transfer problems

A two-ship of F-4s took off on an intercept training mission and headed toward a training area that was a long distance from their home field. The airplanes were loaded with three external fuel tanks for the mission.

About 15 minutes after takeoff, the aircrew in number 2 noticed that the centerline tank light was off. It had been working properly. The fuel readings suggested that the tank had fed out and was now empty even though the light was off. The light tested good. So the crew selected external wing tanks, got the proper indications, and continued with the mission. In a while, the wing tanks ran dry and they were turned off.

The formation arrived in their working area and flew the first intercept, a high-altitude visual identification pass that required using the afterburner to climb to 40,000 feet. After finishing the intercept, the aircrew in number 2 checked their fuel; it read 4.3 over 8.6. Realizing that they had a fuel problem, they immediately turned for their home field, notifying Lead and the GCI site that they had a problem. Then they ran through the checklist procedures for internal wing transfer failure. The pilot visually checked the switch positions. But the checklist steps didn't correct the problem.

Their leader suggested they consider jettisoning their tanks because of their distance from the base. A break in the undercast showed that they were over a clear area, so they jettisoned the tanks by pushing the external stores emergency release (panic) button. The wing



tanks came off, but the centerline didn't. They tried selective jettison also, but the centerline wouldn't release.

As they continued homeward, the aircrew tried running through the checklist procedures again. This time, the pilot noticed that the internal wing transfer switch was in Stop Transfer. He then realized he had verified the wrong position on his earlier checks, including the check before takeoff. He moved the switch to Normal, and the internal wing fuel transferred normally. They made a straight-in approach and landed with plenty of fuel remaining.

A cannon plug on the centerline tank had come loose and caused the loss of telelight indications and the failure to jettison. That problem wasn't related to the transfer failure, which was simply

MISHAPS WITH MORALS, FOR THE TAC AIRCREWMAN

a matter of having the switch set wrong.

The pilot of this airplane had lots of fighter experience but not much of it in the F-4. He thought afterwards that his failure to correctly check the switch setting was caused by his only looking at the switch and not actually touching it. The switch's placement on the sloping side console made a visual check difficult.

But the lesson that the old switchology jinx is still with us isn't all that can be gleaned from this incident. This unit also realized that they really had no usable criteria for deciding whether or not to jettison the fuel tanks. The decision to jettison in this case was based on a hunch, not on any real calculations. Looking into it a little more deeply, the unit found a general lack of information on the subject among other aircrew members, even the most experienced in the F-4. The necessary data can be extracted from the Dash One performance charts, given enough time; but time is a valuable commodity when you're afraid of running out of fuel.

Including a rapid reference chart in the local in-flight guide that would compare normal configurations flown by a unit to a clean aircraft seems like a logical idea. It might keep us from jettisoning when we don't need to—or worse, not jettisoning when we should have. Is diversion and min fuel information available in your unit?

Flare fires in RSU

The mobileer had installed and locked two flare pistols into their ports in the runway supervisory unit (RSU). Later, he watched a transient F-111 take off. As the F-111 passed by, the whole RSU vibrated. One of the pistols fell from its



port; when it hit the floor, it fired a flare. The flare burned a spot on the wall but didn't do any other damage.

About three weeks earlier, the same kind of thing had happened. A pistol had fallen out of its port, but that time it didn't fire.

A check of the pistols showed that one fit snugly into its port, but the other was loose. The locking lever on the loose pistol was worn to a point where it could no longer serve as a lock. So it was able to vibrate out of its port.

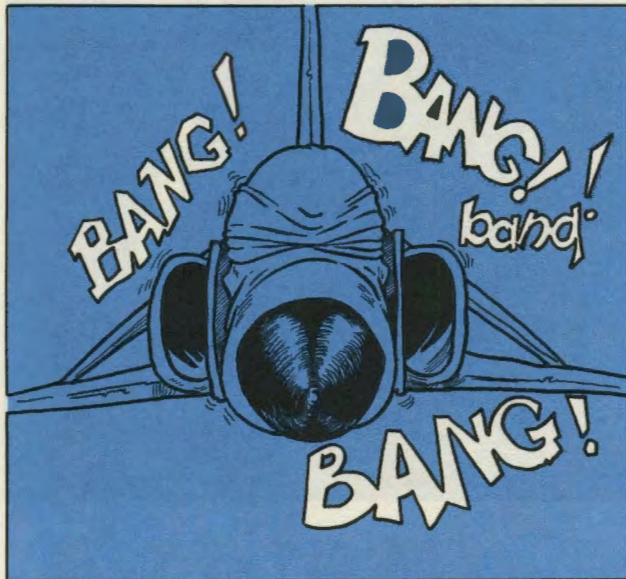
The obvious question is, Why wasn't it fixed the first time it fell out? Must we wait until something dramatic happens before we attend to a hazard?

TAC TIPS

Waivers aren't free

An F-4 aircrew were flying their third sortie of the day in a local surge exercise. This sortie was a two-ship night intercept mission. To meet the requirements of the surge, the wing commander waived the restriction against flying a third sortie with a night turn. So the crew launched.

While completing an intercept with a stern conversion, the pilot selected afterburner to ensure he had good closure for firing parameters. But when he moved the throttle to AB, the aircrew felt and heard several loud bangs from the right side of the airplane. The pilot immediately pulled the throttle back out of AB to military



power. He noticed that with the throttle at mil, the tachometer showed only 65 percent rpm on the right engine. He pulled the throttle to idle, and all engine indications were normal. Hoping that the compressor stall had recovered, the pilot slowly advanced the throttle; however, the exhaust gas temperature indicated abnormally high. He returned the throttle to idle and left it there for the rest of the flight.

The pilot declared an emergency and decided to divert to the primary emergency divert base, an airfield belonging to another branch of service. The pilot planned and flew a single-engine approach and landing under GCA control. Touch-

down was about 600 feet past the threshold. The pilot deployed the drag chute, checked the brakes at 130 knots, and began applying steady brake pressure at 100 knots. He couldn't read the runway remaining markers, and the departure end of the runway looked like a dark hole, so the pilot hugged the runway centerline during rollout.

As he slowed to about 30 knots groundspeed, the pilot suddenly saw a row of construction barricades directly ahead of him. He stepped on the brakes, but it was too late. The F-4 crashed through the barricades and came to a stop in a closed portion of the runway. There the crew shut down and climbed out. Crash crews responded and towed the airplane off the runway. The F-4 suffered damage to its right external fuel tank, and both main tires. Two of the construction barricades were totaled.

The NOTAMs for the airfield had included the fact that the last 1,650 feet of the runway were closed from the centerline to the left edge. The WSO had briefed this airfield's NOTAMs on the first flight of the day and had checked the NOTAMs for changes before the next two flights. The runway had been under repair in different areas for more than a month, and the aircrew was aware of that.

Approach control at the airfield also reminded the aircrew on initial contact that portions of the runway were closed. And while the F-4 was rolling out after landing, the approach controller called tower on the hotline and suggested they give the aircrew another advisory just in case they needed a reminder. Tower told the approach controller that the aircrew hadn't checked in yet on tower frequency. So the controller made a radio call on his own frequency, reminding the aircrew of the barricades. That call was made at about the same time the pilot saw the barricades in his landing light—too late to stop.

The aircrew knew the NOTAMs, and the pilot acknowledged the initial contact radio call that warned of the runway work. So why didn't this information register? Maybe it's simply because they were tired, and the emergency took up all the concentration they had left.

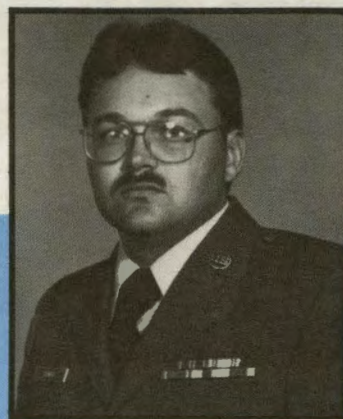
We're not trying to excuse the aircrew's inattention, and we're not saying that commanders should never waive restrictions. We're simply saying that we shouldn't believe that waivers are free. Waivers increase risks—that's the price we pay. If we're going to waive rules, we need to first weigh the potential cost.

TAC Monthly Safety Awards

CREW CHIEF SAFETY AWARD

SRA WILLIAM F. FISHER of the 479th Aircraft Generation Squadron, 479th Tactical Training Wing, Holloman Air Force Base, New Mexico, is this month's winner of the Tactical Air Command Crew Chief Safety Award.

Airman Fisher prevented severe damage to AT-38B aircraft wings and prevented possible loss of life and aircraft by discovering, on two separate occasions, aircraft that had broken wing-to-fuselage attaching bolts (15 percent spar bolts). These aircraft were on their "last chance" inspection prior to takeoff when Airman Fisher discovered the wing leading edge sealant was broken. Further inspection by Airman Fisher revealed the broken wing attaching bolts. If these aircraft had flown, the wing would have moved in excess of technical order tolerance, causing severe damage to the critical wing areas. The slightest nick or dent in these critical areas re-



SrA William F. Fisher

sults in the wing being condemned; a new wing costs approximately \$250,000.

Because of Airman Fisher's discoveries, 15 percent wing spar bolts on all 479 TTW T-38A/B aircraft are being replaced with a newer, stronger bolt.

Airman Fisher's diligence and technical knowledge have saved the Air Force considerable resources; he has earned the Crew Chief Safety Award.

INDIVIDUAL SAFETY AWARD

SGT. KEITH E. STEWARD is this month's winner of the Individual Safety Award. He is a member of the exterior electric shop, 23d Civil Engineering Squadron, 23d Tactical Fighter Wing, England Air Force Base, Louisiana.

Sergeant Steward was escorting two contractors who were taking oil samples from electrical transformers. While working in the transformer vault, one of the contractors came in contact with an energized electrical circuit carrying 2,400 volts, causing the person's body to adhere to the energized circuit. When this happened, the second contractor started to grab the victim with his bare hands. Sergeant Steward shouted at the contractor not to touch the victim and prevented the other contractor from becoming a part of the energized circuit.

Sergeant Steward then picked up a hot stick and entered the area to pry the victim from the live circuit. He disengaged the victim from the high voltage, and at that time noticed that the



Sgt Keith E. Steward

individual wasn't breathing. As a first step to beginning cardiopulmonary resuscitation, Sergeant Steward opened the victim's mouth; when he did, the victim started to breathe. Sergeant Steward covered the victim and remained in attendance until medical help arrived.

The attending physician stated that the contractor was lucky to be alive and that Sergeant Steward's actions were critical in saving his life. He has earned the Tactical Air Command Individual Safety Award.

CHOCK TALK

Chock Talk

Incidents and

INCIDENTS AND

Wrong response

An F-16, operating at a deployed location, taxied into the quick-check area at the end of the runway, where an armament specialist noticed that the EPU indicator was tripped. The mission was aborted, and the aircraft taxied to the hydrazine maintenance area.

The hydrazine response team was immediately dispatched. The three-member team arrived at the aircraft. Their operating instructions at the deployed location call for the number 2 team member to chock the aircraft and pin the gear, while number 1 connects number 3's comm cord and checks for leaks. Number 3, the supervisor on the team, oversees the operation and talks to the pilot. They all wear protective clothing.

Number 2 began at the left wing of the airplane and chocked the left main gear. Then he went under the aircraft and chocked the right main gear. He headed back to the truck to get the gear pins.

Meanwhile, number 1 and number 3 were busy trying to untangle the comm cord from the reel. Number 1 saw number 2 standing on the left side of the airplane with the gear pins, looking as though he didn't know what to do next. Number

2 was new to the response team and hadn't been trained. So number 1 went over to number 2 and helped him pin the left main gear. Then they went under the airplane and pinned the right main gear.

After number 1 finished checking for hydrazine leaks, number 2 handed him the nose gear pin. They were still on the right side of the airplane. The nose gear is supposed to be pinned only from the left side. But number 1 tried to reach around in front of the nose gear to install the pin. In doing so, he moved his head to within a foot of the intake. When he did, his protective hood was sucked off his head and swallowed down the intake. He signaled number 3, who was still concentrating on untangling the comm cord. Number 3 then had the pilot shut down the engine.

The engine received damage to all stages of the fan module and the first stage of the core. Number 1 was lucky—it was only his hood, not his head.

He'd only been trying to help out number 2, and he knew the job should be done as fast as possible so that the aircraft could be shut down. The procedures for the response team at the deployed location were different from those at home station. At home the crash recovery team or transient alert chocked and pinned the airplane. Here the fuels specialists on the hydrazine response team had to do it. Training at the deployed location consisted of reviewing a check-sheet and walking through the procedures on an airplane. Number 2 had read the checksheet, but his walk-through on the airplane was supposed to take place later in the day.

Even though he was unqualified at the time, number 2 was placed on the response team at the deployed location. Another fully qualified worker was available but was used only to drive the truck. Then the untrained worker was left on his



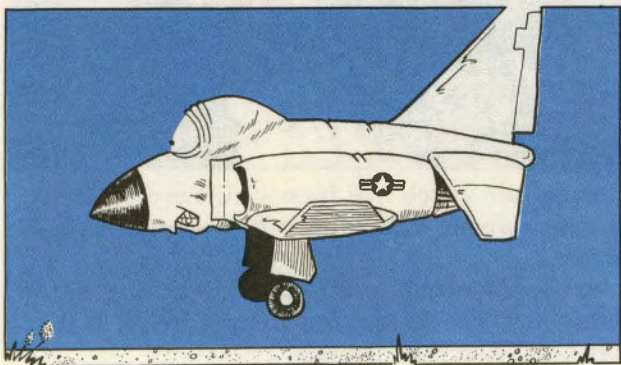
INCIDENTALS WITH A MAINTENANCE SLANT

own by his supervisor, who was engrossed in untangling the comm cord. It's no wonder that number 1 felt he had to help out.

Unfortunately, violating procedures is no help, even when it seems like the only way to get things done in time. When we start thinking that we have to take short cuts, it's a sign that we have our priorities messed up. Sometimes, it's also a sign that the supervisors aren't doing their job right. In any case, it's time for us all to back off, regroup, and fix the problem instead of working around the symptom.

Bad splice causes fire light

Ten minutes after takeoff, the right fire warning light on an F-4 lit up. The pilot immediately pulled throttle to idle, but the light stayed on. Another F-4 looked the airplane over and reported no visible indications of fire. The light was still on, so the pilot shut down the right engine. The light remained on. The aircrew landed from a single-engine approach without any other prob-



lems. After turning off the runway, they shut down; and the warning light finally went out.

This airplane had flown only three sorties since a TCTO was done on it. The TCTO had required cutting and splicing three wires in the fire detection system harness on door 83R. After the wires were spliced or end-capped, heat-shrink tubing was placed on each wire. Then the wires were grouped together, they were not well insulated from each other. Over the course of three sorties worth of airframe vibrations the wires moved into contact with each other and finally short-circuited, lighting the fire warning light.

The tech data requires spacing crimp-type connectors at staggered intervals, but it doesn't say much about splices with heat-shrink tubing. Now we know that they should be staggered also and that each heat shrink tubing should be melted individually to ensure the wires are insulated from each other.

So now that we know, the next step is to pass the word.

F-16 shuts itself down

An F-16B with a pilot in front and an instructor in the back taxied for takeoff. The engine check at 80 percent rpm on the runway before takeoff was normal. Advancing the throttle to military power, the pilot began takeoff roll. Immediately both the pilot and the instructor noticed a loss of thrust; the rpm decreased, and the emergency power unit (EPU) activated. The pilot aborted the takeoff, shut off the throttle, and turned off the EPU. A small fire flared up momentarily in the tailpipe but didn't do any damage.

Afterwards, maintenance investigators found

CHOCK TALK

the main fuel shutoff valve closed. The fuel shutoff valve cannon plug had been disconnected and bagged. Earlier, this airplane had failed a TCTO check of the main fuel shutoff valve actuator. For those actuators that failed the check, the TCTO required disconnecting the cannon plug to the actuator, wrapping it in plastic, and safety-wiring the main fuel shutoff valve lever to the open position.

The day before this aborted takeoff, maintenance workers had done a hot preflight, with the engines running, to check all aircraft systems. A ground engine run requires reconnecting the cannon plug to the actuator and taking the safety wire off the control lever in case it's needed for an emergency shutdown. After the engine run, the crew chief disconnected the cannon plug and wrapped it, but he forgot to safety wire the control lever to the open position. Nevertheless, he wrote in the forms that both items had been accomplished. Later, the flight chief signed off the inspection block of the 781 but didn't really ensure that the job had been done right.

Before starting the engine, the pilot had read the entry in the 781 about the main fuel shutoff valve. On preflight he looked at the valve and assumed it was correct. The pilot's tech orders don't require checking the position of the shutoff valve, although some other F-16 units have local rules requiring their pilots to check the valve and make sure it is safety-wired on those aircraft that are written up for failing the check. This pilot's unit didn't have that rule in force.

So the problem went unnoticed. Without power to the valve actuator and without the control lever safety-wired open, the valve was free to move as the airframe vibrated. The valve stayed open long enough to allow engine start and operation up to 80 percent rpm. But at military power on takeoff, the valve had moved to where the demand for fuel was greater than the supply; so the engine flamed out—fortunately, while the airplane was still on the ground. It's a good thing the valve didn't wait until the airplane was airborne.

For something as critical as a main fuel shutoff, we think it's a good idea for the pilot to check the valve during preflight. After all, his

life is at stake. But the pilot's check should just confirm that maintenance has done the job right. If the crew chief and flight chief had done what their initials said they had done, the pilot wouldn't have found anything wrong on his check. The real problem was that those two workers hadn't done what they signed off in the forms.

Our initials should mean more to us. After all, when we sign off the forms, we're really giving our word that the work is done.

How time flies

An F-106 was taken to the engine trim pad for an engine run because its fuel control had been changed. After most of the checks were completed, a crewmember noticed that the canopy jettison streamer was dangling near the intake. The streamer had been pulled down the intake boundary layer. The crewmember removed the streamer from the boundary layer. While he was looking for a place to stow it, the streamer was nearly sucked into the main intake, but the crewmember caught it in time.

After retrieving the streamer, the crewmember noticed something strange about his wrist—it no longer had a watch on it. He signaled his partner in the cockpit to shut down the engine. Sure



enough, the watch had been swallowed by the engine, causing \$23,000 worth of damage in the process.

As for the watch—well, it took a licking, but it didn't keep on ticking. Don't expect to see it in any television commercials.

Our TAC Losses on the Ground

JANUARY - JUNE 1983

OFF DUTY MISHAPS

Automobiles



Motorcycles



Drowning



Hiking



Bicycle



Electrocution



Parachuting



Fall



ON DUTY MISHAPS

Industrial



DOWN TO EARTH

Preventable tragedy

An airman was water skiing with his brother on a lake. Another brother was in the tow boat with a friend who was operating the boat. The boat operator noticed that they were headed toward the shore, so he turned the boat sharply, causing the skiers to go down.

The boat operator circled around to pick up the skiers. Spotting only one skier, he continued in that direction. As he slowed the boat to pick up that one skier, he heard a thump on the bottom of the boat. The engine bogged down. Then bits and pieces of a T-shirt and life jacket floated to the surface. The next day the body of the airman was found.

Safety articles that discuss what to do when picking up a water skier all agree that only two things need to be done: visually spot all skiers before steering the boat in that direction; and when you get close to the skier, stop the motor. The skier can help by holding up his ski to make himself more visible. This was such a tragedy, and so preventable.

Near miss made me a believer

By Sgt. Wendall K. Daniels
831 Security Police Squadron

For those people who think seat belts are a waste of time, I am living proof that they work. They saved my life.

After a long, tough TDY in North Carolina, I was ready for a long trip home by car. I was released at 8:25 p.m., got ready for the 2,400-mile drive, and hit the sack. I was determined to get

home as soon as I could and wanted to get an early start.

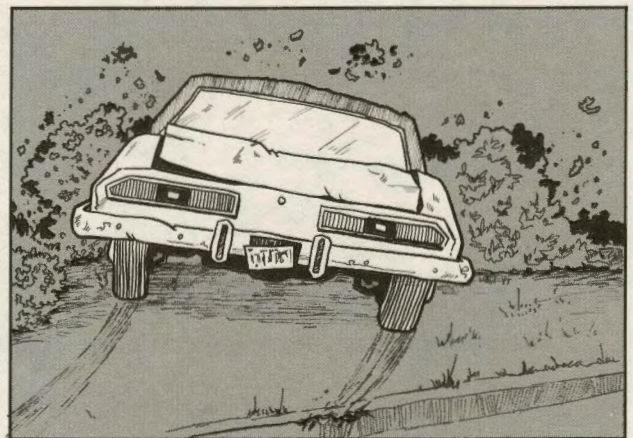
I was up at 3:45 a.m. and headed west. At 3:15 a.m. the next day, I was 45 miles from the Texas border. I had traveled 23 hours straight with only four stops for gas at about five minutes per stop. I was too tired to go on, so I stopped at a motel parking lot and climbed in the back seat for a nap.

Four hours later I felt refreshed and ready to go. I felt I could make it the rest of the way now. On the way across Texas, New Mexico, and Arizona, fatigue started to set in again. I found myself speeding excessively without being aware of it.

By the time I reached California, my body was weak and my alertness was gone completely. I started to weave from lane to lane. But I was getting close. I had to keep going. I could see the lights of Barstow with only 38 miles to go.

I was uncomfortable after all those hours in the car. I started to unstrap the seat belt and shoulder harness, but I was too tired to get them off.

That was the last thing I remember, until I was awakened by a loud thump and tremendous





pressure on my waist and left shoulder. There was another bump, and another as I bounced through the bushes in the center divider. With each bump, I was thrust forward in my seat belt and shoulder harness.

The car finally stopped and was very quiet. As the dust cleared, I saw that I was about four feet from going into the opposite lanes of traffic, which were wall-to-wall with 18-wheelers.

After unstrapping and getting out of the car, I started realizing what a foolish thing I had done and how lucky I was. An inventory showed minor damage to my car and a small scratch on my thumb.

I learned a few things from this incident and would like to pass them on to everyone else: Plan your trip with enough time to get adequate rest. A fatigued driver is no better than a drunk driver. When you are tired, pull over and rest, no matter how close to home you are. And always wear your seat belt and shoulder harness.

—Courtesy TAC News Service

Going on a vacation?

Make it more enjoyable and take the time to safeguard your home against burglary.

Lock up. In almost 50 percent of all home and apartment burglaries, a door or window was left unlocked or a key was hidden in an obvious spot and was found by the burglar. Exterior doors should have a deadbolt lock with at least a 1-inch throw. Chain locks can be broken—don't rely on them to do the job for a deadbolt lock. There are vertical bolt locks for sliding glass patio doors, but a sawed off broomstick will also do the trick. Key locks are best for windows, and a window-hung air conditioner should be secured to the window and window frame.

Don't provide cover for a burglar—trim trees and bushes and have some type of exterior lighting.

Hide your valuables. Burglars want to get out in a hurry. If they can't find anything after a quick search, they usually leave. Engrave or mark your possessions with a traceable ID number like your driver's license number.

And when you finally go on your trip, make your house look as lived in as possible. Leave blinds in their usual place. Have mail and newspapers picked up or held. Lower the bell on the phone so it can't be heard from outside. Have the grass mowed. Use automatic timers to turn on lights, a radio, or a lawn sprinkler. Ask a neighbor to park a car in your driveway, and tell a neighbor or the police when you'll be leaving, when you'll return, and how they can get in touch with you.



The Dill's Cross-Country



By TSgt Donald G. Stormoen
388 TFW/SEG

Diller came home from work on Friday with some great news for Dolly, his wife, and the kids, Joey and Nicky. He had decided that the family would all go on a last-of-the-summer, three-day-weekend outing. As the kids headed for the door to get into the car, he reminded them that everyone must pitch in and get things ready before they could leave.

Dolly wanted to know just one thing, "Where are we going?"

Well, he had that all figured out, as he had

been planning this trip all day at work. "We are going to grandmother's house."

Dolly now wanted to know if he meant the grandmother in Chicago or the one in Houston. Diller assured her that it would take too long to drive to Chicago and back in three days; but according to his calculations (after all, he was a pilot), they could go to Houston and back and still have time to get in 12 hours rest before he had to be back at work. Not wanting to throw cold water on his plans and disappoint the kids, Dolly reluctantly agreed.

Diller had his "flight plan" all worked out right down to the last rest stop. The only thing left to do was pack up the VW bus and head out.

For the next hour, the family looked like a Prime Beef team getting ready to deploy. A pile of gear was scattered around the VW as Diller loaded, tied down, and stuffed things everywhere on the old bus. At last everything was ready. With Dolly and the kids seat-belted, he backed out of the driveway and headed east.



As they crossed into Colorado, the copilot (Dolly) said that they were making pretty good time, even though the kids had made four pit stops in the past 90 minutes. Diller assured here that he would make up the lost time in the "Big Sky Country." Ten minutes later, his "airspeed" was reduced to 21 knots (25 miles an hour) for a construction zone the next 15 miles. This delay hadn't been in the flight plan.

As the rear wheels of the VW left the pavement, the resulting "thunk" woke the kids. Diller pulled off to the side of what was left of the road to check the "airframe." He discovered that the loadmaster had concentrated all the weight of the suitcases, the cooler, and two bicycles over the rear of the vehicle (where the engine weight is, too). That loud thunk they heard was the rear shocks bottoming out.

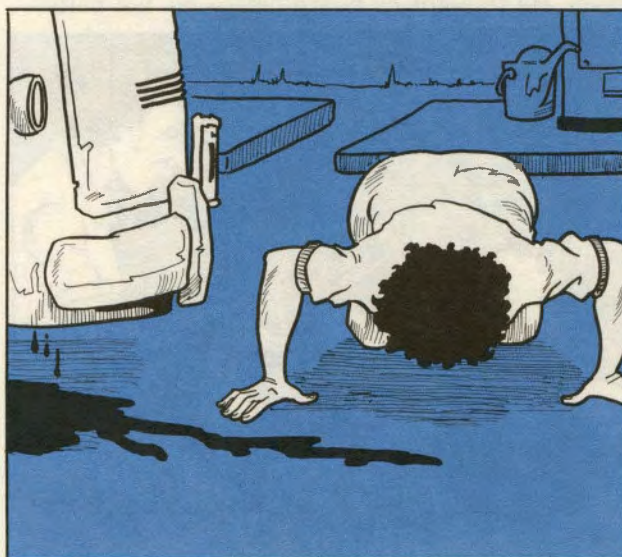
He had noticed that the bus had moved around on the highway more than usual, but discounted that as headwinds. When he saw how the rear tires were squashed down from the added weight,

he cursed the crew chief for not adding a few more pounds of air to compensate for the load. He would remedy that at the next refueling stop.

As he climbed back into the cockpit, Dolly pointed out that they had better stop for gas soon, since the flight plan had not accounted for the extra weight and the construction zone. Diller muttered something about deviating from the flight plan, but Dolly chose to ignore it, and they were off once more.

After 12 hours of hard "flying" and as many cups of "100-mile coffee," Dolly called for a crew change. Diller readily agreed and took over the copilot duties. Instead of catching 40 winks as Dolly had suggested, he remained awake to ensure that she didn't "miss the turn-off to the short cut." After a couple of hours, Dolly mentioned that she could see that the headlights were giving her a good view of the tops of the telephone poles, but not much else. It was then that Diller realized that the added weight in the rear had lifted the front end enough to misalign the headlights. Another pit stop would have to be made.

At the all-night truck stop, the loadmaster repacked the VW and distributed the added weight evenly over the vehicle. Dolly noticed a pool of oil that hadn't been under the engine when they



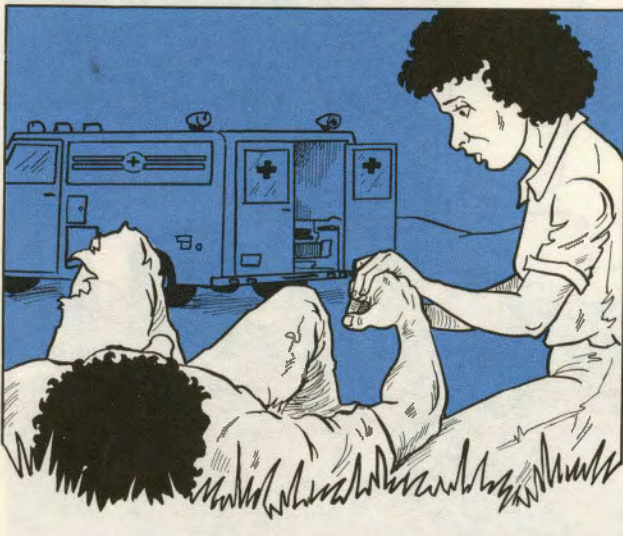
The Dill's Cross-Country

parked the VW. A check with the pump jockey confirmed Diller's fears. The mechanic wouldn't be in until 8 a.m., so there was nothing to do but sack out for three hours. With bloodshot eyes and another oil filter gasket installed (Dill hadn't replaced the old one at the last oil change), they were off once again with renewed determination.

Late Saturday afternoon, the Diller tribe turned onto Dry Lake Avenue just in time to see grandma and grandpa backing out of their driveway in their camper. After much horn blowing and hand signals, Diller got grandpa to turn around. After a drive to the lake, some fishing, swimming, and one of grandma's home-cooked meals, the VW headed back out of town.

The return flight plan had been modified by the copilot to include a rest stop every two hours and a few more gas stops. Grandma packed the cooler full of goodies to keep the kids happy. The flight was going smoothly over the plains toward home. The sunset was its usual spectacular self, and the gas stations were getting farther apart. The copilot estimated that they were only six hours from home, sweet home. Dill offered to spell Dolly and drive the last leg.

The rain drops were hitting his face like hammers. He thought he heard bells—no, not bells—



sirens! Yes, sirens. He remembered that he had been thinking how straight and flat these highways were, and how a good night's sleep would feel great. His eyes opened slowly and it was a few seconds before they focused on the squad car's flashing red lights. "What the . . .?" Dolly came running over from the police car and explained that she and the kids were fine. Just then the pain in his left leg reached his brain, and the lights went dim for a second or two.

After he was released from the hospital with a heavy white pants leg on the left side, Dolly headed straight for the nearest motel. After bedding down the kids and calling the base to inform the ops officer that they would be a day late and that Diller would be flying a desk for the next nine weeks, Dolly explained, "Pilots and car drivers should never over-extend themselves. These last few miles could have been the *last few miles*."

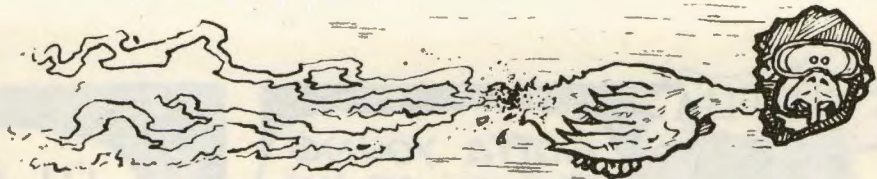
Diller had run off the road. Because of the rain and resulting mud, the old VW was not bent badly. His broken leg was a result of the sudden stop and contact with the steering wheel. Because everyone was buckled in, there were no other injuries.

The next morning, Dolly loaded the kids and Dill into "Old Faithful" and began the 200-mile drive home. Something had been nagging in the back of her mind the whole weekend. Had she forgotten to turn off the washer? Was the TV still playing? Nothing registered.

So it went, through the main gate, a stop at the base clinic, and across the base to home. As she helped Diller to the door, the alarm went off in her head. For her, the weekend was not yet over. That little whine behind the door confirmed her fears and was the answer to the thought nagging in the back of her mind all weekend long. She had to restrain the forgotten family member as he bounded out the door to greet his master.

It was Dill who said it first:
"Dawg!"

TAC TALLY



CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
JUN	THRU JUN	
	1983	1982
2	14	20
0	4	11
3	11	17
3	10	15

ANG		
JUN	THRU JUN	
	1983	1982
2	6	4
1	4	2
1	5	4
1	2	3

AFR		
JUN	THRU JUN	
	1983	1982
0	0	0
0	0	0
0	0	0
0	0	0

TAC'S TOP 5 thru JUNE '83



TAC FTR/RECCE	
class A mishap-free months	
43	355 TTW
26	363 TFW
22	58 TTW
15	4 TFW, 31 TTW & 35 TFW
12	37 TFW

TAC AIR DEFENSE	
class A mishap-free months	
125	57 FIS
78	5 FIS
75	48 FIS
34	318 FIS
25	87 FIS

TAC-GAINED FTR/RECCE	
class A mishap-free months	
134	188 TFG (ANG)
126	138 TFG (ANG)
125	917 TFG (AFR)
122	116 TFW (ANG)
112	434 TFW (AFR)

TAC-GAINED AIR DEFENSE	
class A mishap-free months	
108	177 FIG
74	125 FIG
57	119 FIG & 142 FIG
41	107 FIG
32	147 FIG

TAC/GAINED Other Units	
class A mishap-free months	
167	182 TASG (ANG)
151	110 TASG (ANG)
147	USAF TAWC
139	84 FITS
135	105 TASG (ANG)

CLASS A MISHAP COMPARISON RATE

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

	1983	6.9	5.3	3.4	3.8	4.0	3.9							
TAC	1982	7.8	5.7	5.9	5.2	5.9	5.7							
	1983	9.1	7.0	4.4	4.3	3.4	4.2							
ANG	1982	0.0	2.7	3.2	3.4	3.6	2.9							
	1983	0.0	0.0	0.0	0.0	0.0	0.0							
AFR	1982	0.0	0.0	0.0	0.0	0.0	0.0							
	1983	0.0	0.0	0.0	0.0	0.0	0.0							

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

GOTTA YOUNG TURKEY AT MY SIX



I'LL SHOW'EM A MOVE HE AIN'T NEVER SEEN BEFORE.

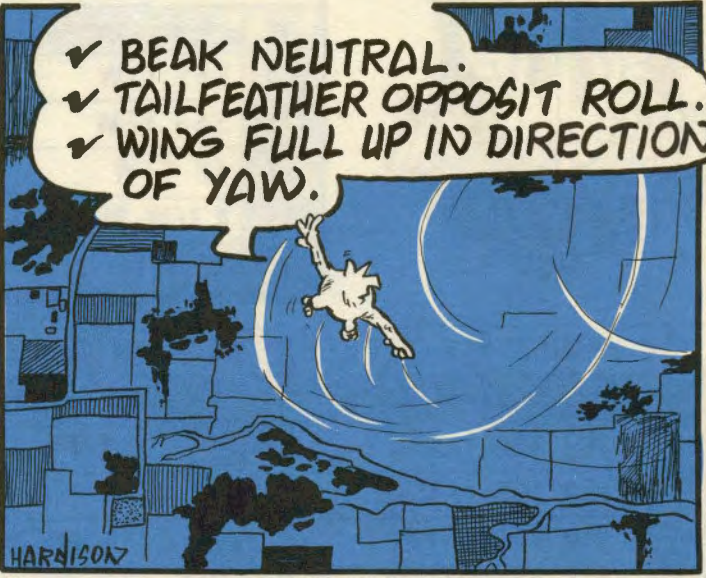


OH FOOT!! I'M IN A SPIN!



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✓ BEAK NEUTRAL.
✓ TAILFEATHER OPPOSIT ROLL.
✓ WING FULL UP IN DIRECTION OF YAW.



HARRISON

OK, TH' TONE IS OFF. I'M RECOVERING. I GOT IT MADE.



THUNDER

WHAT DID HE FERGET, GRIFF? TO CHECK TH' ALTITUDE.

