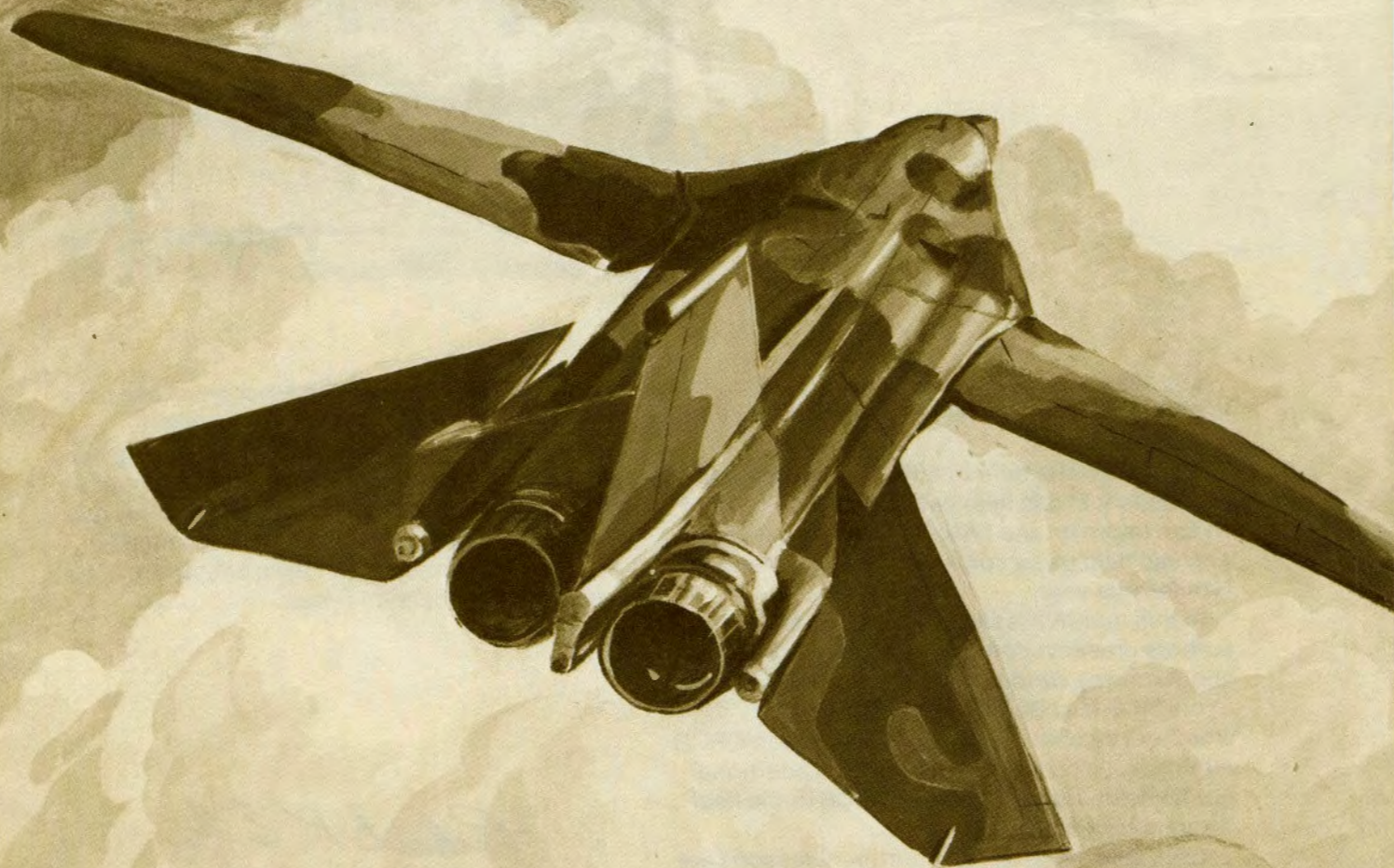


TAC ATTACK

JANUARY 1983



HARRISON

Angle of Attack



It's 1983. Last year, we had a tragically poor beginning. Let's start off better this year and finish even stronger.

We'll continue here to offer lessons learned and ideas that can help us operate better. All of us can improve, and *TAC Attack* is no exception. You can help us by contributing your ideas and articles this year.

In this month's issue, one of our reader-authors presents some remarkable information about runway condition readings (RCRs). Read "Your RCR May Be Wrong" and consider whether you should evaluate your personal RCR minimums. You should be receiving additional guidance on the application of RCR in the near future. So watch for it.

Less surprising but still pertinent lessons are found in "Look, Ma, No Wheels" and "Personal Discipline and Human Factors"—both geared toward aircrews and supervisors.

All of us can enjoy and learn from "Don't White-Knuckle Yourself." It's an amusing story with a moral. And the anonymous poem "Re-

membering the Forgotten Mechanic" can help us regain our perspective if we've lost it.

As we begin this new year, it'll also help our perspective if we remember what all our numbers and rates are talking about—not only lost combat capability, but lost or ruined human lives. The numbers don't hurt; people do. Let's save more people this year. ➤

Richard K. Ely

RICHARD K. ELY, Colonel, USAF
Chief of Safety



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TACRP 127-1

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VOLUME 23 NUMBER 1



An F-16 was flying an ILS approach to a cross-country base. The pilot was concentrating on flying precise course and glideslope. When he touched down, the pilot thought everything was normal. But as he slid to a stop on the centerline fuel tank and tower called that he was on fire, the pilot realized something was wrong.

The landing gear weren't down.

Fortunately, the pilot wasn't injured, and the damage to the airplane was relatively minor. The centerline tank was destroyed, but the aircraft itself only suffered scraped ventral fins.

If you're thinking that some weird electrons got

loose and raised the gear, the cause isn't that complicated. Even in the Electric Jet, the pilot has to lower the gear for landing. But this pilot didn't. The gear handle was up.

Normally, this pilot lowers the gear at ten miles on final for instrument approaches. But on this approach at ten miles he received a warning of a flight control problem, which naturally got his attention. The pilot found the roll and yaw lights illuminated. He reset the lights and resolved the problem. While he was dealing with the flight control problem, he was given a heading change by approach control. His delay in making the turn caused a slight overshoot of the final approach course.

The pilot had selected ILS mode on his flight instruments, so the mild overshoot showed up as a large deviation on the sensitive ILS readouts. This was the pilot's second ILS approach. On his first one, he hadn't maintained course and glideslope to his own personal satisfaction. He was determined to do better on the second approach. The pilot precisely intercepted the course centerline; at the same time, he intercepted glideslope and changed radio frequencies to talk to tower.

The pilot automatically reported "gear down" when he checked in with tower. But in fact, the gear were still up.

The F-16, like most airplanes, has some cues to remind the pilot about the landing gear. For one reason or another, none of the cues worked. The pilot's view of the gear position lights was blocked by his left knee with the checklist and approach plate strapped on. He would have had to move his head or his leg to see the lights.



His airspeed on final was so fast that the gear warning horn and the landing configuration warning light didn't come on. The horn and light activate when the airplane is descending at more than 250 feet per minute and the airspeed is less than 170 knots, plus or minus 11 knots. The pilot flew this approach 170 to 180 knots. He had decided to fly fast because he had more fuel (3,500 pounds) than



normal; but he didn't compute the approach speed to fly. If he had calculated the speed, it would have been less than 150 knots. The pilot also chose not to use angle-of-attack indications because he expected to be flying at a lower angle of attack than the HUD would display. Without the gear down, the flaps also remained up, and the engine nozzle was closed, all of which contributed to higher speed. The pilot, with no speed target in mind and his attention locked onto course and glideslope, allowed the high speed all the way to touchdown.

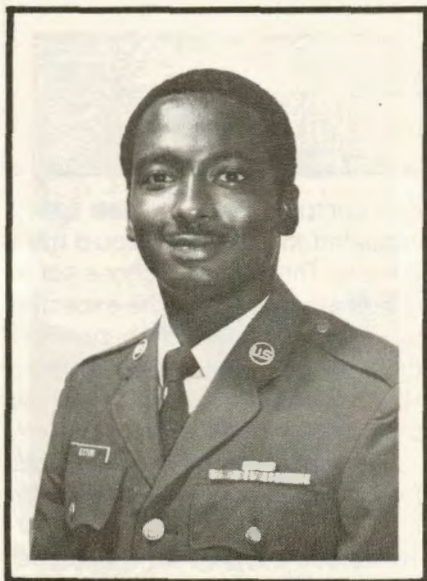
One indication reinforced the pilot's mistaken belief that the gear were down. Even when the angle of attack is low, the HUD displays the AOA bracket, along with airspeed and altitude scale changes, when the gear are lowered. On this approach the AOA bracket and scale changes were evident on the HUD, helping the pilot assume his gear were down. What the pilot didn't know was that selecting ILS mode causes the same changes on the HUD.

The pilot was unaware that his landing gear were up until after he'd climbed out of the airplane. He thought all the warning lights he saw as the airplane slid to a stop were due to the fire that tower had called out to him. Actually, there had been only a very brief fire as the residual fuel flashed. But there had been plenty of sparks.

Based on this story, the F-106 story in last month's issue, and what you've heard, you might think that gear-up landings are a common occurrence. That's not true. Very few pilots ever land gear up.

But on a given day, anyone could.

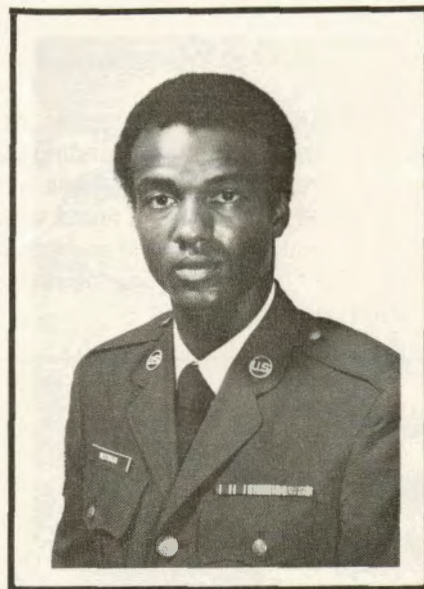
SPECIAL ACHIEVEMENT IN SAFETY AWARD



Sgt Elbert Ector, Jr.



TSgt Frederick A. Kaiser



Sgt Jeffrey Westbrook

TSGT FREDERICK A. KAISER, SGT JEFFREY WESTBROOK, and SGT ELBERT ECTOR, JR., have been selected to receive the Tactical Air Command Special Achievement in Safety Award. They are all members of the 95th Aircraft Maintenance Unit, 325th Aircraft Generation Squadron, 325th Fighter Weapons Wing, Tyndall Air Force Base, Florida. The three of them came to the aid of a fellow airman who was engulfed in flames during a refueling accident.

During a routine refueling on a T-33A, the hose separated from the truck and fuel gushed out. Fuel sprayed the truck operator and rapidly surrounded the truck and aircraft. As the operator shut down the truck, flames engulfed the whole area. His hands, arms, and clothing caught on fire, so he dropped to the ground and rolled, trying to put out the flames.

Sergeant Ector was the first to get to the truck operator. He tried to smother the flames with his hands. Then Sergeants Kaiser and Westbrook arrived, got a fire extinguisher, and helped Sergeant Ector put out the flames. Realizing they were in the midst of a major fire and that the fuel truck could explode at any time, the three of them quickly moved the truck operator to an area well away from the fire where he was later transferred to an ambulance. He is now recovering from his injuries.

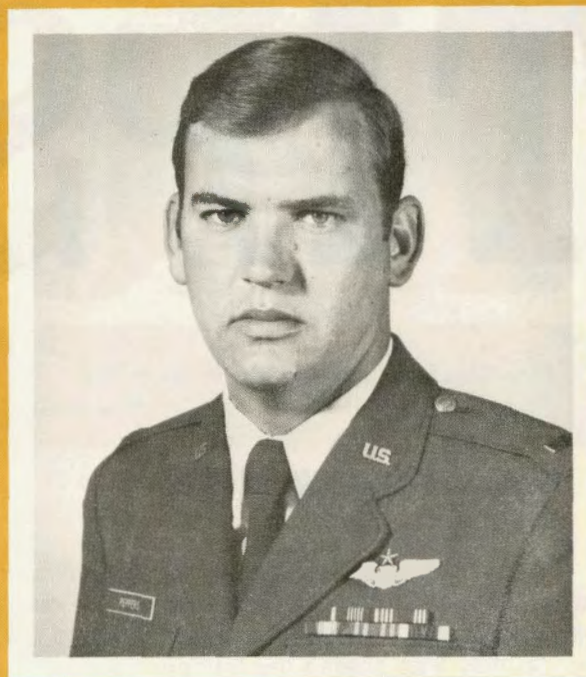
Sergeant Kaiser, Sergeant Westbrook, and Sergeant Ector entered a dangerous situation to save the truck operator. Their quick actions kept the man from being burned more seriously. Their courage and their concern for a co-worker deserve special recognition.

AIRCREW of DISTINCTION

On 14 September 1982, 1LT GARY D. PEPPERS was flying an F-15A on an air-combat training sortie. While separating from the first engagement, Lieutenant Peppers began having serious flight control problems. At 20,000 feet, his aircraft started a nose-down, uncommanded, rapid roll to the left. Lieutenant Peppers put in full right aileron and full right rudder, but the aircraft continued in a left roll. Each time the aircraft rolled through wings level flight, Lieutenant Peppers attempted to stop the descent rate. After seven consecutive rolls and a loss of more than 6,000 feet, Lieutenant Peppers successfully got the nose of the aircraft above the horizon, reduced airspeed, and slowed the roll rate. At 180 knots, he regained marginal control.

His flight leader joined with Lieutenant Peppers, declared an emergency with the controlling agency, and turned the flight back towards Holloman AFB. His leader noticed that the leading edge of Lieutenant Peppers' left horizontal stabilator was full down. After several more uncommanded left descending rolls, Lieutenant Peppers determined that 180 knots was the maximum airspeed for maintaining control. He reviewed all applicable checklist items with his flight leader and set up for a controllability check. As the landing gear was lowered, the aircraft again began several uncontrollable left rolls. He retracted the gear and regained control. He increased airspeed slightly, and attempted another controllability check. He was able to maintain control at 160 knots, so he began a long straight-in approach for an approach-end cable engagement.

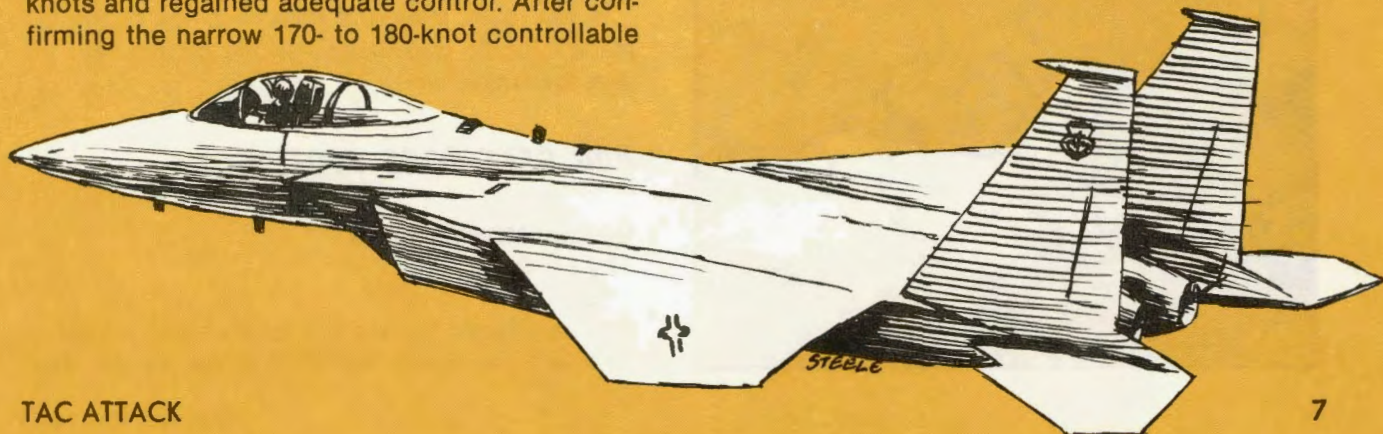
On short final Lieutenant Peppers was forced to go around when the aircraft again began to roll left with full right controls. He accelerated to 170 knots and regained adequate control. After confirming the narrow 170- to 180-knot controllable



1Lt Gary D. Peppers
9 TFS, 49 TFW
Holloman AFB, NM

range, he decided to fly a straight-in approach to the opposite runway. He landed and engaged the approach-end cable at 160 knots.

Postflight investigation showed that the stabilator mechanical input shaft had broken, causing the stabilator to drive to the full leading edge down position. By his superior airmanship in handling an F-15 flight control failure never before encountered, Lieutenant Peppers saved a valuable combat aircraft and prevented possible loss of life. He has earned the Tactical Air Command Aircrew of Distinction Award.



TIPS

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

Fortune does not change men; it unmask them.

Mme. Necker

UNPLANNED LOW-LEVEL LOPS F-4 TAIL

The crew briefed a single-ship, low-level mission, but at the end of the sortie they planned to join up with a squadron mate to practice a formation landing. So they also briefed the formation segment of the mission with the other aircrew. After takeoff, the front seater decided that they wouldn't be able to fly their planned low-level route and still meet the other airplane in time. So he canceled the low level.

Now they had extra time. The crew headed VFR toward the closest Air Force base to fly some practice approaches. On the way there, the crew checked the IFR supplement and discovered that practice approaches weren't authorized at that base. They came up with a new plan: fly approaches at an Army field. They headed toward an Army field they were familiar with.

A mountain range lay between them and the Army field. Still VFR, the pilot decided a low-level through the mountains would be much more interesting than

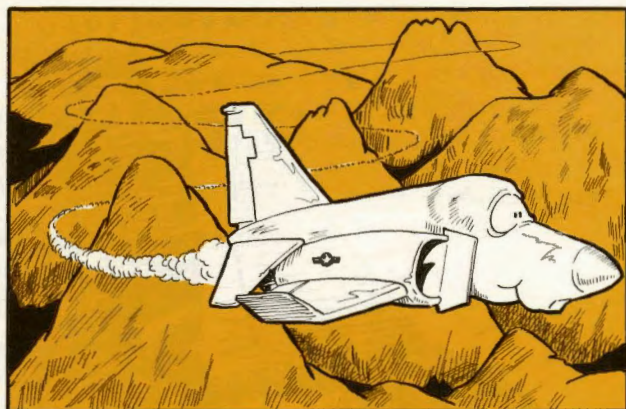
high altitude cruise. So he dropped down and zipped through the mountains. When they arrived at the other side of the mountains, the crew found they had a minor radio problem. The UHF radio wasn't working well, but they fixed that by switching from upper to lower antenna. The crew commented among themselves how unusual that was, since they could see the field they were trying to call. With the problem solved, they shot their practice approaches. Then they joined up with the other aircraft and made a formation landing.

As they pulled into their parking place, the crew chief noticed that the tail was damaged. Part of the tail fin was missing. The aircrew were puzzled; they couldn't figure what could have caused the damage. So they wrote it up as a possible birdstrike.

A week later, the local electric company called this unit. The electric company was trying to find out what airplane had struck one of its 200-foot-high, 230,000-volt power lines running through the mountains. Several eyewitnesses to the strike had called in to report it, but they could identify the airplane only as a camouflaged, fast, fighter type airplane.

The aircrew who had flown the airplane with the damaged tail were sure that they hadn't hit the power line at 200 feet. They never saw any power lines on their route of flight.

A few days later, the missing piece of the airplane's tail fin was found—on the ground near the damaged power line.



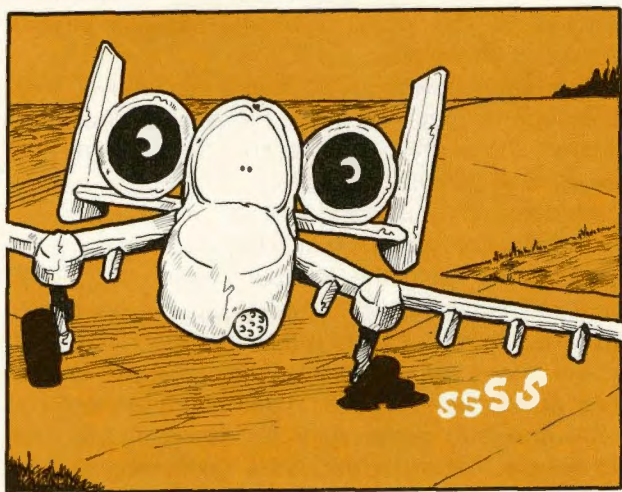
HOG GETS SORE FOOT

By Capt Mike Atherton
12 AF/DOV

The mission started out as a normal annual instrument check with the SEFE in the second Thurs-

derbolt. During taxi-out, the beady-eyed stan/eval pilot noticed a large rock on the taxiway and reported it to the tower. The tower dispatched a Base Ops NCO to police up the rock.

Subsequently the flight aborted and had to return to the ramp to get a new jet for the examinee. As the flight taxied out again, the SEFE took another look to see if the rock was still on the taxiway. Pleased that the Base Ops troops had done their job and picked up the rock, he taxied on the side of the taxiway where he'd seen the rock and promptly blew his right main tire.



Investigation revealed that the "rock" the SEFE had spotted was in fact a chunk of concrete. When the base ops NCO came out to pick up the "rock," he realized it was actually a piece of the taxiway and decided the best thing to do was to put it back into the hole it came from. When the Thunderhog taxied over it, the piece shifted and blew the tire.

Moral of the story: Some guys will go to no end to get out of an instrument check.

Lesson learned: Sticking loose pieces of concrete into ramps and taxiways isn't the same as fixing the problem.

KC-135 SPRAYS A-10s

Three A-10s were air refueling with a KC-135 tanker. On the first hookup, the A-10 pilots and the KC-135 boomer noticed fuel spraying from the area around the forward edge of the A-10's refueling doors. Both Lead and Two broke off their refuelings because of the fuel leaking.

The pilots talked over the situation with the boom operator. The A-10 flight decided that since they were taking on fuel and couldn't smell fumes in the

cockpits they would continue the mission. Each A-10 took on about 15,000 pounds of fuel during the remainder of the flight.

After all the airplanes landed, the three A-10s were found to be saturated with JP-4. The fuel had entered avionics bays and come in contact with unsealed electronic components. The potential for fire or explosion was high.



The cause of the fuel spray was an improperly installed part on the tanker's nozzle assembly, which had recently been rebuilt. But that wasn't the cause of the hazard. The hazard came about because the A-10 pilots decided to continue refueling despite the spray.

The Dash 26 on refueling procedures contains a note to the effect that a small amount of fuel spray from the boom nozzle or refueling receptacle during fuel transfer doesn't require terminating the refueling. Operations may be continued or discontinued at the discretion of the receiver pilot. The question is, What is a small amount of fuel spray? The tanker crew estimated that 500 pounds of fuel were lost for each 5,000 pounds transferred—or 10 percent of the total flow. The fact that the first two refueling attempts ended in disconnects because of the spray would seem to indicate that the amount was significant.

The mission was a deployment. The pilots were probably influenced in their decision by the complications that could arise from an air abort. They might have to divert to a non-U.S. airfield. Rescheduling tankers could take a while. And the pilots were ignorant of the real dangers of fuel spray. So they pressed on—while the slightest spark could have caused a disaster.

TAC TIPS

F-16 FEELS FUELISH

Joker fuel was 1,800 pounds; Bingo, 1,500 pounds. The F-16 pilot understood and briefed that, even though he didn't enter it into his fire control/navigation panel. Then he took off on a dissimilar BFM mission against two F-5s.

The F-16 flew four engagements against the first F-5. Between engagements, the pilot checked that the centerline and internal wings had fed out normally. The first aggressor reached his bingo fuel and headed for home. The F-16 had 3,000 pounds remaining.

Shortly afterwards, the second F-5 joined up with the F-16. The F-16 pilot reported he had 2,700 pounds of fuel remaining. During the first engagement the Bingo Fuel warning came on because 2,500 pounds happened to be the setting left on the fire control/navigation panel from a previous flight. The pilot reset the warning. As the F-16 and F-5 maneuvered to set up their last engagement, they made a fuel check. The F-16 pilot reported 2,000 pounds remaining.

The last engagement took only a few minutes, but it included a lot of vertical maneuvering. The F-16 pilot used afterburner several times while going over the top. Immediately after the engagement the F-16 pilot noticed the Master Caution, Aft Fuel Low, and Fwd Fuel Low caution lights on. The totalizer showed 400 pounds of fuel remaining.



The pilot was at 10,500 feet and 375 knots, 42 miles from his recovery base. He turned toward

home, began a climb, and set the throttle at mid-range. At the suggestion of the F-5 pilot, he slowed to max *endurance* airspeed. Five minutes later he had 100 pounds of fuel and was 15 miles from the field, at 15,000 feet and 240 knots.

The pilot aimed for base key on a flameout approach, lowering the gear at seven miles. Two and a half miles from the field, the engine flamed out. The airplane was at 200 knots and 3,000 feet above the ground. When the engine quit, the EPU fired and the pilot placed the EPU switch on. He entered a right base and landed successfully, 2,000 feet down the runway at 150 knots. The pilot stopped straight ahead on the runway.

The airplane was towed in and impounded. Troubleshooters checked out the fuel quantity indicating system thoroughly. They found nothing wrong that could have caused the incident. The airplane was refueled and run four times without fuel discrepancies.

It looks like the pilot just ran it out of gas. He got into trouble using the afterburner with only 2,000 pounds remaining. When he found out he was in trouble, he didn't have a rule of thumb for altitude to climb to for a given distance from home. And he took bad advice when he tried max endurance airspeed instead of max range. All in all, he wasn't prepared to handle fuel problems. It's a good thing he was able to handle the flameout approach.

WHAT'S THIS LIGHT? - OH, SORRY

A T-33 pilot had been scheduled to fly with an F-4 pilot in the back seat of his T-33. The T-33 pilot helped the F-4 jock into the airplane and was standing on the left wing root to give the other guy an egress briefing and to supervise his strapping in.

As the briefing continued and the F-4 pilot was settling in, he suddenly reached up and pressed the emergency jettison button. The tip tanks jettisoned onto the ramp.

The rear cockpit's jettison button was covered with green cellophane. To the F-4 pilot, it looked like a green press-to-test light, so he pressed it. Nothing should have happened, because the tip tanks should have been pinned. But the transient maintenance crew hadn't pinned them, and the T-33 pilot hadn't checked to see if they were pinned.

Their failure to follow their checklists contributed to the mishap. But the F-4 pilot could have helped out by stopping to ask the T-33 pilot, who was standing right next to him, before he touched any switches or lights in a cockpit he knew nothing about.

DON'T WHITE-KNUCKLE YOURSELF



**By SMSgt Fred H. Fagan
9 AF Ground Safety**

As I strapped my tender body into the tacky two-toned seat aboard White Knuckle Airlines Flight 3, from Boston to New Cumberland, I observed that the weather was truly grungy. Rain pummeled the battered wings of the aircraft. Looking forward, I saw the pilot enter the plane, kneel down at the cockpit door, and say a prayer.

This, I thought, would be a really neat flight. As we taxied into takeoff position, I couldn't help but think that I had made a mistake getting into this bird in the first place. In some manner contradictory to the laws of nature, gravity, and modern science, Flight 3 broke ground and we were airborne on our way to the booming metropolis nestled amongst the mountains next to the Susquehanna River. During the flight I was treated as a visiting dignitary by the stewardess. I guess the reason behind this preferential treatment was that I was the only passenger who had not turned green from the somewhat rocky flight.

I remained pretty composed until I saw the lead pilot walking through the plane talking to passengers. I

guess what really stood out was his manner of garb, especially the parachute on his back. Granted, he was nonchalant and even whistling a tune. I think it was "Nearer My God To Thee."

Finally, after flying through zero-zero weather for an hour, we arrived in the general vicinity of the Greater Harrisburg International Airport complex. I say general vicinity because the stewardess came on the speakers and said that the pilot thought we were around there but would like to get a second opinion. He asked for volunteers from among the passengers from the local area. Filling this requirement, I beckoned like Arnold Horshak and was selected to provide them with my invaluable assistance. Using the latest in White Knuckle Airlines navigational systems, which I had learned about from my boss, a master naviguesser, I looked out the window. With eyes like an eagle (OK, possibly a buzzard), I immediately spotted the Rockville bridge and told the flight crew to follow the river downstream.

This bit of navigational enlightenment in hand, the crew managed to fly into the sophisticated control area of Harrisburg tower. Since this was the economy flight, the pilot had to get within two miles of the field before making contact. A \$65 CB set with a gutter mount antenna just isn't that good. I will give the approach guys credit, though, once we got them on channel 19, they got us on the deck. They didn't use a radar scope to do it. They have economized and had a guy sitting on the edge of York Mountain, another on the Turnpike bridge, and one on the end of the runway, using walkie-talkies. Anyhow, we got down in one piece.

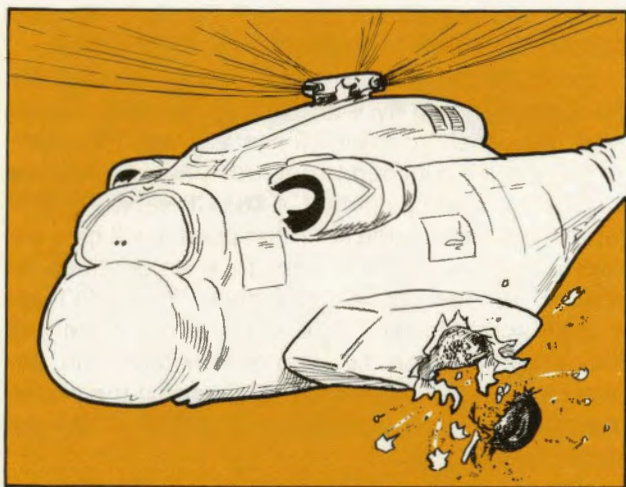
Now, if you think that I might have exaggerated a tad, you are correct (I call it literary license). The whole point of this adventure is to show that there are times, such as when flying on a commercial airliner, when you really may have no control over your destiny. But when you are operating a government vehicle or your own car, working in a shop, or puttering around in your basement, you have your whole world in your own hands. Don't give yourself white knuckles.

chock talk

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

BAD ENDING TO AN EXERCISE

An H-53, operating from a TDY base on an exercise, pulled onto the runway to take off on the return flight home. As soon as the helicopter broke ground, the crew heard a loud explosion. Pieces of metal flew in several directions from the aircraft.



The copilot, who was flying the H-53 from the right seat, began to put the airplane back down on the ground. The pilot of another H-53 redeploying with him called on the radio to tell him, "Don't land. You've lost your left main landing gear!" At about the same time, the copilot felt the aircraft was settling left wing low, so he pulled back up into a hover.

The left main landing gear was hanging by a single hydraulic line about five feet below the helicopter.

The aircrew flew the aircraft to an uncongested area of the parking ramp. They hovered there and waited for about 30 minutes while maintenance workers built a pallet of mattresses and plywood and positioned it near the damaged H-53. A flight engineer on the ground marshaled the helicopter over the pallet by giving instructions on intercom. He was hooked up to the aircraft by a long intercom cord. Fire trucks were positioned around the helicopter as it slowly lowered.

The engineer continued giving instructions until the helicopter's weight was on the pallet. He pulled the dangling main gear out of the way as the H-53 landed. Then he disconnected and got away from the helicopter. A couple of minutes later, the aircrew shut down and the blades coasted to a stop. The pallet held.

As the crew climbed out, they noticed a small hole in a main rotor blade pocket with a larger four-inch perforation of a main rotor spar. A sponson panel was completely blown off. The landing gear strut had exploded into pieces.

This particular strut had been leaking since it arrived at the TDY location. The deployed maintenance officer and his NCOIC had noticed the leak and requested a new strut from their home station. But they were told no strut was available and they should nurse the leaking strut through the TDY exercise.

Before this flight the strut had gotten low on oil again. However, the maintenance worker who serviced the strut didn't give it more oil. Instead, he pumped it up with high pressure air.

When the helicopter took off and weight was removed from the gear, the strut extended. Metal hit metal because of the lack of oil, and the upper end of the strut failed. The strut top cap then fired like a bullet up through the sponson and the main rotor blade.

MURPHY'S CONSTRUCTION LAW

A team was towing an F-4 out of a new maintenance facility. An overhead static grounding wire was installed low enough that it caught on the F-4's rear canopy. Before the tug driver realized what had happened, the open canopy was pulled off, fell on the left wing, then rolled off to the hangar floor.

When we begin using a new building, we ought to remind ourselves of Murphy's Law. If anything can go wrong in the building's design and construction . . . We can only try to figure out what might go wrong before it catches us unawares.

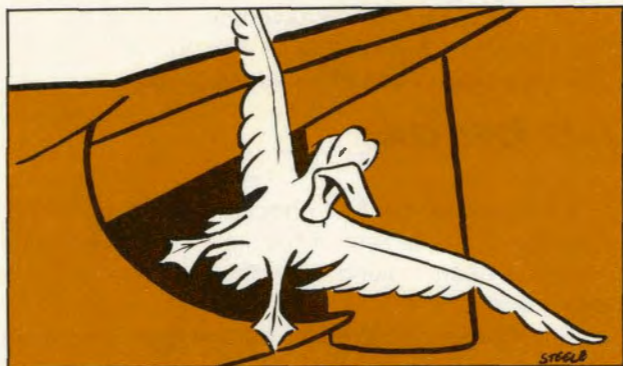
BIRDS TRY NEW TACTIC

We're used to reading about birdstrikes, but here's one where the bird pulled a sneak attack, even after it had been dead for days.

During a low-level flight, an F-111 ingested a bird in the right engine. The aircrew put the airplane back on the ground, and maintenance inspected the engine. Borescoping showed no damage.

Four days later, the airplane taxied out for its next mission. After taking the runway, the aircrew ran up the engines. They appeared normal at military thrust. But when the right engine was put into minimum afterburner, its compressor stalled, and the engine rolled back to 80 percent rpm. The aircrew tried recycling out of and back into afterburner, but the compressor again stalled. So the aircrew gave up and taxied back in, which is probably what they should have done after the first compressor stall.

This time, inspection of the engine turned up dried bird remains in the compressor air bypass section of the engine. Apparently, bird remains had been in the forward section of the engine since the original birdstrike. On runup, the remains were dislodged and



went further into the engine. The compressor blade damage was the blade-rolling type that is the result of soft or semi-solid FOD.

Must have been a pretty clever bird to hide itself from a thorough engine inspection.

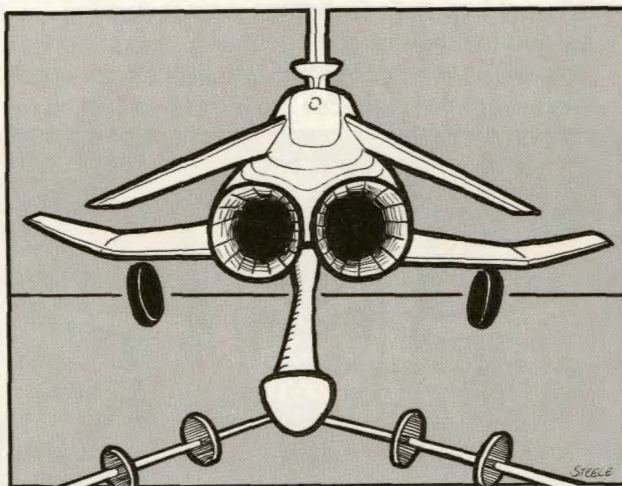
COTTER PIN CAPER

About halfway through his flight, the F-4 pilot noticed a problem with his engines. At first he thought that the right engine rpm had rolled back; but when he looked more closely, he saw that, in fact, the left engine had accelerated to military power on its own.

The aircrew followed the Dash One checklist for autoacceleration. They configured the airplane for landing and pulled the left throttle to idle. With autoacceleration the nozzle should still respond to the

throttle, so putting the throttle at idle should open the nozzle and reduce thrust. But it didn't work that way. The nozzle stayed at one-quarter.

The pilot made several S-turns to reduce airspeed, but he couldn't fly an on-speed approach. They landed at 180 knots. At touchdown the pilot shut down the left engine using the master switch. He dropped the hook, and they took the departure-end BAK-12 cable at about 100 knots. The cable stopped them without any problems.



What the aircrew, the SOF, and everyone else involved had diagnosed as autoacceleration was actually caused by a poorly installed cotter pin. In autoacceleration the engine's recirculating air temperature gets too hot and sets off the T2 reset, usually because the aux air doors didn't open when the gear were lowered. But in this case a castellated nut had come off the bolt that attaches a clevis link from the throttle crossover shaft to the torque booster lever. When the clevis link disconnected, the engine was allowed to accelerate to military power.

This mission was the third sortie since maintenance had been done on the left engine for the throttle failing to cut off. During repair this clevis link connection was taken apart and put back together. The specialist who did the work replaced the castellated nut and inserted the cotter pin, but he didn't bend it enough. The supervisor who inspected didn't notice the problem. The normal vibrations encountered in the three sorties caused the cotter pin to slip out and the retaining nut to back off.

We all learned something from this one. The specialist and his supervisor relearned how important attention to detail can be. And the aircrews learned that autoacceleration isn't the only reason an engine can get stuck in military thrust.

CHOCK TALK

PLUGS PROVOKE PROBLEMS

The F-4 pilot released the brakes and pushed the throttles into afterburner. The airplane began its takeoff. The pilot noticed that the Master Caution light and the Duct Temp Hi light were on, and the WSO saw that both variramps were extended. The crew aborted their takeoff.

The WSO tried cycling the variramp circuit breakers to retract the ramps as the aircrew taxied in, but



the ramps stayed out. They remained extended and the duct temperature light stayed on until both engines were shut down.

Troubleshooting of the variramp system showed the problem was in the central air data computer (CADC) test receptacle plug. The plug is one of four plugs below the left canopy sill in the rear cockpit. The upper two plugs are attitude reference and bombing computer set (ARBCS) test plugs; the bottom plugs are CADC test plugs. The bottom right plug was about three-quarters of the way off its mount. A loose plug would cause a momentary interruption of CADC power, which would cause the ramps to extend.

A week later, two other F-4s in this unit suffered heading and attitude failure before takeoff. Causes of the failures were loose ARBCS test plugs. An inspection of all the unit's F-4s turned up two other airplanes with loose plugs. What could have caused this rash of loose plugs?

Shortly before these incidents occurred, the unit had received a TCTO calling for inspection of the flight director computer (FDC) cannon plug wires. AMU supervisors assigned a 5-level nav specialist to do the work. As he went about his project, the nav specialist discovered that not all the FDC cannon plugs were the environmental type discussed in the

TCTO. Some were potted plugs instead. The potted plugs were impossible to check following the TCTO unless they were completely taken apart. The nav specialist decided that there had to be a better way to do the checks.

The specialist talked to his supervisor. They got out the aircraft wiring diagrams and traced the wires that the TCTO called for checking. The supervisor decided that the TCTO requirement could be filled by a continuity check at the ARBCS test receptacle using a multimeter.

So the nav specialist went back to work. First he removed the CADC test plugs so that the ARBCS test plugs would be easier to get at. He didn't use the tech data for removing and replacing ARBCS and CADC test plugs. As a matter of fact, he thought they were just dust caps.

It's hard to fault the nav specialist for trying to get the job done. When he ran into a problem, he did the right thing: he took it to his supervisor. If his supervisor had followed the same tack and notified his boss, maybe the word would finally have gotten back to the folks who wrote the TCTO that the directions for potted plugs were not provided. Then a correct set of instructions could have been issued, and the nav specialist wouldn't have had to mess around with the plugs he wasn't trained to handle.

F-15 FUEL LEAK

On each of his fuel checks, the F-15 pilot had less fuel than the rest of his flight. After he landed, fuel was seen leaking from the fuselage onto the centerline tank.

The incident occurred on the first flight after maintenance work on fuel tank 3A. Access to tank 3A is gained by removing panel 66, which is under the speedbrake. Whoever removed the panel didn't write it up in the 781.

After the fuel shop finished working on tank 3A, they sent the airplane back to the AMU for a leak check. The speedbrake had been lowered, and it concealed the loose panel. The AMU ran the leak check, found no leaks, and released the aircraft for flight.

During flight when the speedbrakes were opened, the loose panel 66 blew off the airplane. In leaving, it severed the fuel vent line to tank 3A and caused the fuel leak.

The hazard arose from a failure to document the original removal of the panel. But it should have been caught by a good supervisory inspection of the work.

Author Unknown

Through the history of world aviation
Many names have come to the fore
Great deeds of the past in our memory will last,
As they're joined by more and more.

When man first started his labor
In his quest to conquer the sky
He was designer, mechanic, and pilot
And he built a machine that would fly.

But somehow the order got twisted,
And then in the public's eye
The only man that could be seen
Was the man who knew how to fly.

The pilot was everyone's hero,
He was brave, he was bold, he was grand,
As he stood by his battered old airplane
With his goggles and helmet in hand.

To be sure, these pilots all earned it,
To fly you have to have guts
And they blazed their names in the Hall of Fame
On wings with bailing wire struts.

But for each of these flying heroes
There were thousands of little reknown,
And these were the men who worked on the planes
But kept their feet on the ground.

We all know the name of Lindbergh,
And we've read of his flight into fame,
But think, if you can, of his maintenance man,
Can you remember his name?

And think of our wartime heroes,
Gabreski, Jabara, and Scott.
Can you tell me the names of their crew chiefs?
A thousand to one you cannot.

Now pilots are highly trained people,
And wings are not easily won
But without the work of the maintenance man
Our pilots would march with a gun.

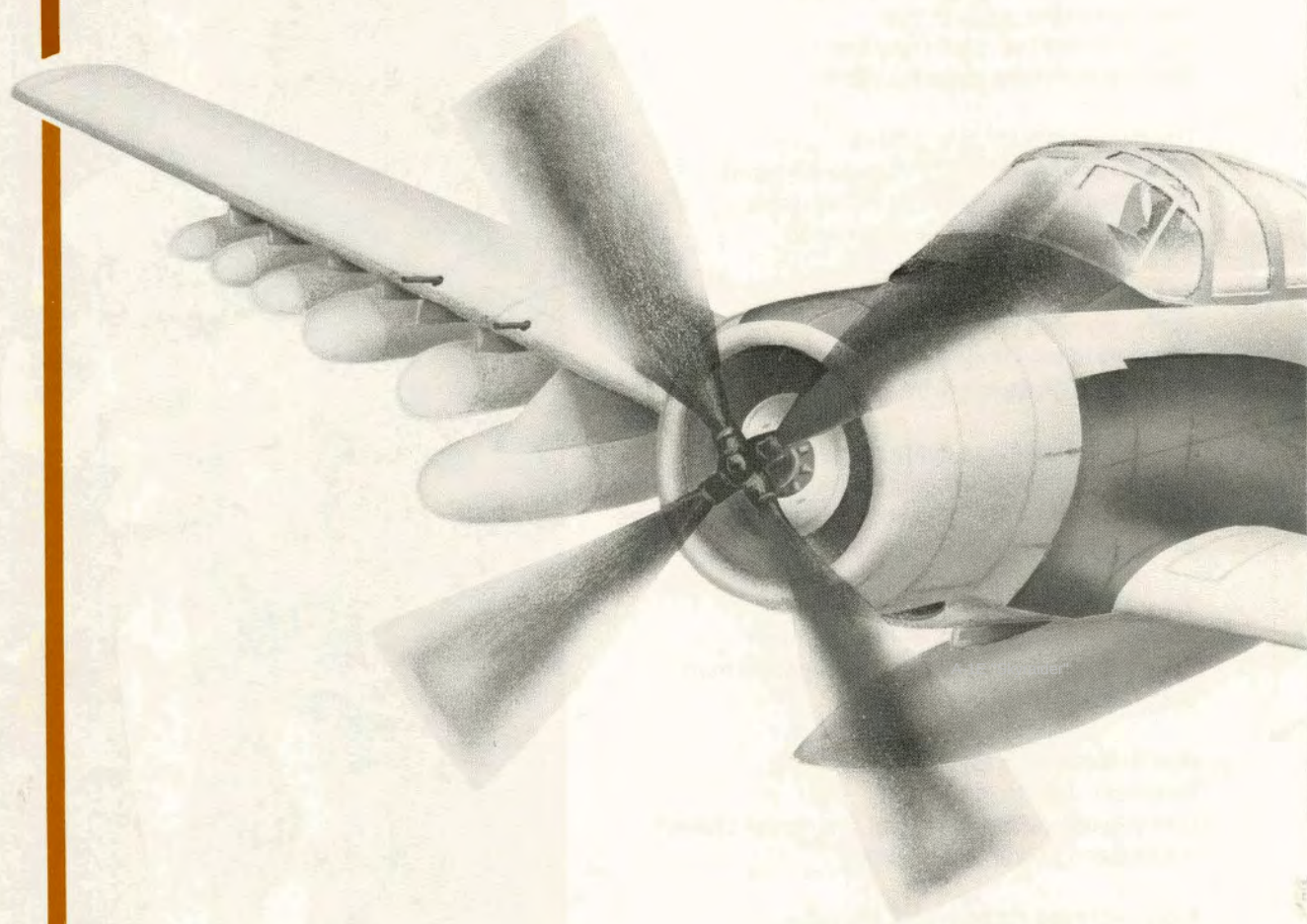
So when you see mighty jet aircraft
As they mark their way through the air,
The grease-stained man with the wrench in his hand
Is the man who put them there.

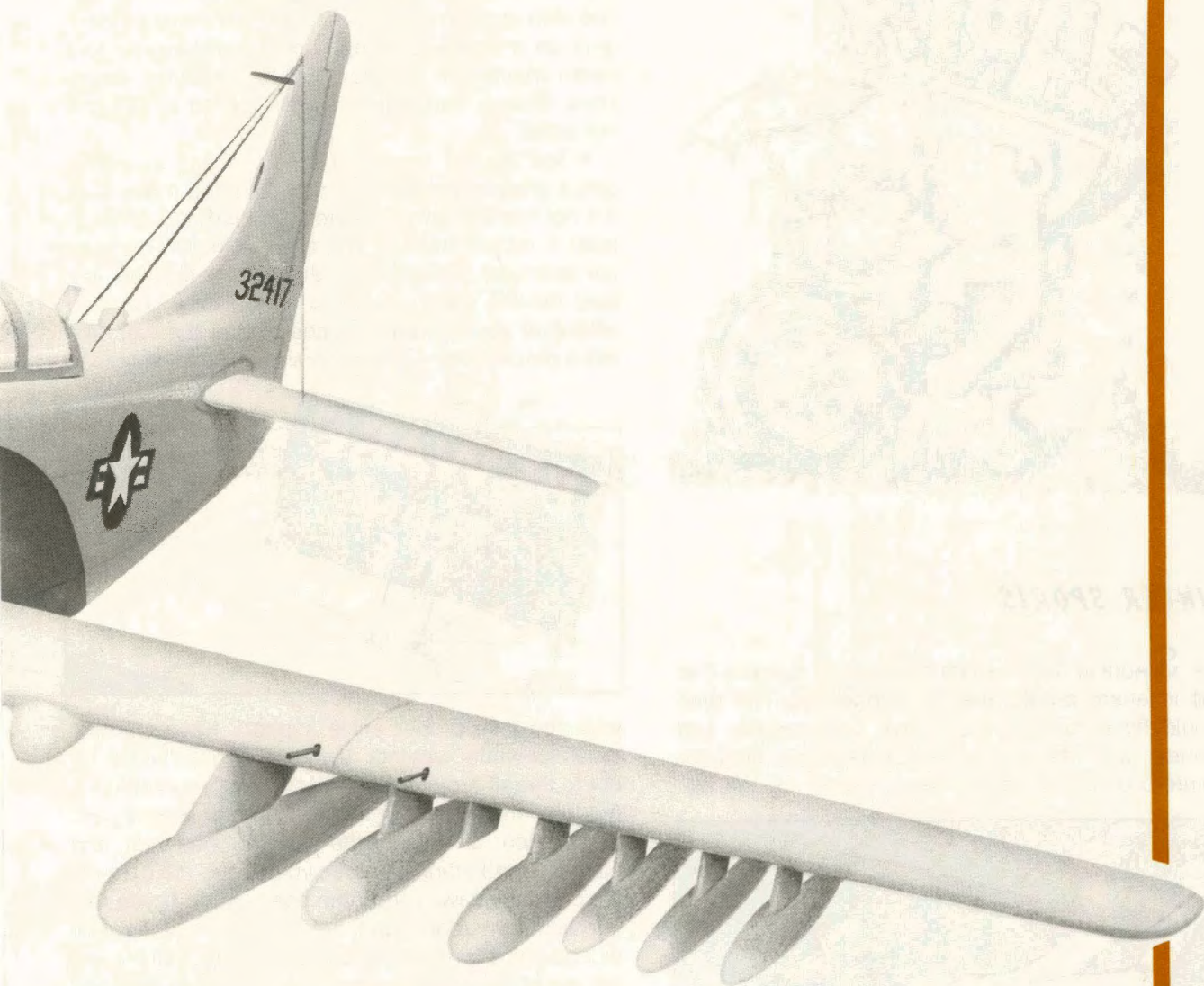
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REMEMBERING THE FORGOTTEN MECHANIC



A-1E "Skyraider"



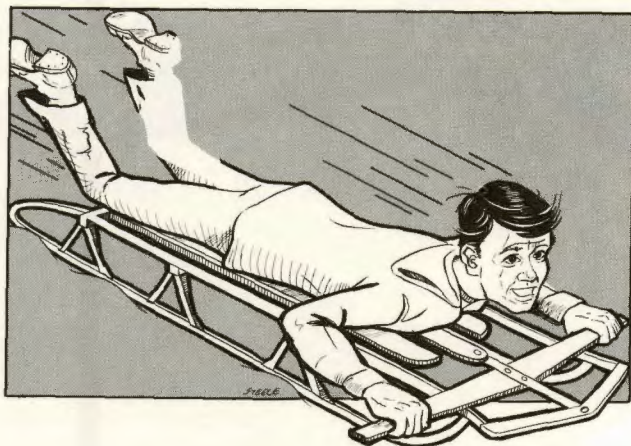


JOHN STEELE



WINTER SPORTS

- **Sledding.** Older sleds might have runners that end in sharp points; they're dangerous. The sled should have runners that curve continuously and connect with the sled's heel. Check the sled for splinters or rough edges. Next, check out the hill.



Avoid any slope that ends in a ditch or leads to a roadway. Stay away from steep hills—sledders should descend no more than 20 feet for every 100 feet. Always look for tree stumps or rocks that might be hidden by snow, and cover any bare spots you find with snow. The bottom of the hill should be wide and flat enough to allow for plenty of braking. Don't make ramps—airborne sledding is thrilling but can cause injuries. Children should know that sometimes it's best to roll off the sled in midhill rather than collide with another sled. Don't have too many passengers on a sled—dangling hands and dragging feet mean injuries. A sledder should ride lying down; snow diskers and plastic sliders should sit upright, not stand.

- **Ice Skating.** If a supervised site isn't available, use a shallow pond or flooded field and make sure it's not more than waist-deep. The ice should be at least 4 inches thick. If you are skating on refrozen ice (granular surface and cloudy appearance), ice over moving water, ice in the center of a lake, and wherever you see dark patches under the ice, take extra precautions—the ice is weak. Skates should fit



well and give proper ankle support. Keep warm—dress for winter weather. If you fall into the water, try not to thrash around. Don't try to hoist yourself up—the ice might break again. Instead extend and spread your arms onto the ice, kick your feet, and pull up. Don't stand up when you're out, roll over until you're well away from the open water. If you rescue someone, don't walk out on the ice, lie flat and extend something for the person to grab. Pull the victim out of the water but don't stand up; roll over and over until you're away from the open water. Get the victim to shelter and treat for exposure and shock.

- **Cross-Country Skiing.** Make sure your skis are the proper length, and boots should be large enough for two pairs of socks. Skis must be waxed before use—they slide more easily but will grip the snow for climbing hills. Take a cake or tube of wax with you on an extended outing. Wear tinted goggles or sun-



glasses to protect against tree branches and snow blindness. Watch for rocks or branches buried in the snow. Learn how to fall and how to get up. If you lose control going down a hill, you can stop by sitting down. Take a survival kit along if you're going beyond well-traveled areas. Always carry a whistle—if you get into trouble, the sound of a whistle will carry farther than shouts. And be sure to let someone know where you're going and when you'll be back.

LOOK AT THE FOREST, NOT THE TREES

By MSgt Billy Hester
TAC/IGIO

We've all heard the expression "You can't see the forest for the trees." Just what does this mean to us? Well, I've visited several offices in TAC as well as other commands, and I find it usually means we get so involved in certain projects we postpone the daily requirements. Now, I'm not saying projects aren't important. However, have your on-duty mishap rates increased? How about your first aid injuries? Have you had an upsurge in near-misses? If the answer to any of these questions is yes, maybe your efforts are in the wrong areas. A commander once told his people, "Don't champion causes you cannot win." Channel your efforts into areas you can reasonably expect to control. Are you concentrating too much effort on off-duty mishap prevention and not watching your on-duty indicators?

So, let's not bury ourselves in "trees" but try to see the "forest." Let's concentrate our efforts in controllable areas. This does not mean to neglect other areas. Good planning and execution will help you focus on problem areas and give you the "big picture."

Point

If you didn't wear your seat belts regularly in the last year, take a few minutes and read about some people who did:

- A woman left her home for work one morning, but forgot to fasten her seat belts. When she stopped at a traffic light, she realized her seat belts weren't fastened, so she buckled them. She continued on to work, driving on a service road that was covered with ice. All of a sudden, the car started to slide and then overturned. The next thing she knew, her head was resting on the roof of her car with the rest of her



body held in by her seat belts. She wasn't injured.

- Two airmen were on their way to a party on Friday night and were wearing their seat belts. Doing the speed limit, they approached an intersection where the driver of another car turned into their path. The cars collided; both were totaled. The airman driving was not injured, and his passenger suffered only a minor head injury.

- This one's more serious, but seat belts still made the difference. Two airmen, both buckled up, were driving back to the base from a weekend trip in a small, lightweight car. At the same time, a driver who had been drinking pulled his large car out of a grocery store parking lot onto the road. Instead of looking ahead, he was looking back at something. His car started to drift over the centerline into the path of the airmen. The airman driving saw the car coming over to his side of the road, so he tried to take evasive action, but he didn't make it. The cars

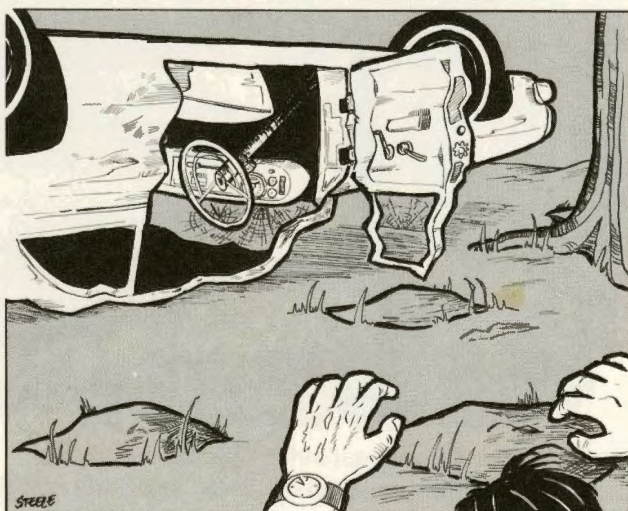
DOWN TO EARTH

hit, each doing about 55 miles an hour. The big car was totaled but the small car was crushed. Both airmen had to be cut out of their car. The driver did receive serious injuries, but he survived. The passenger had some minor cuts on his face.

Counterpoint

Ready to fasten your seat belts the next time you get in your car? If not, read on. These people didn't wear their seat belts:

- After working an 8-hour shift, an airman decided to go out for a few drinks. We don't know how much he drank, but he stayed out for about 8 hours. He left the base and was driving about 55 miles an hour when his car left the road. He tried to right the car by jerking it back onto the road, but the sudden maneuver caused the car to roll over several times. Since he wasn't wearing his seat belts, he was thrown



from the car. He died ten days later from head and chest injuries.

- Another airman had worked his regular military shift and then had gone to work at a civilian job, so he was very tired when the accident took place. He was on the freeway headed home when he caught himself about to rear-end the car in front of him. His speed was about 70 miles an hour when he swerved to the left to keep from running into the other car. He skidded across three traffic lanes; then the car rolled several times. The airman was thrown through the windshield of the car and landed on the highway head first. He lived for three hours.

Convinced yet? The odds are that someday you'll be in a car accident. Which group of stories do you want to be in? Those who did, or those who didn't.



Beware Carbon Monoxide Poisoning. If you use a wood stove, kerosene heater, or any open-flame auxiliary heating unit, make sure you have a continuous supply of fresh air coming in. More than 1,000 people a year are accidentally killed by carbon monoxide poisoning. Signs and symptoms include headaches, irritability, confusion, dizziness, visual disturbances, drowsiness, nausea, vomiting, and unconsciousness. Cherry-red discoloration of skin and mucous membranes also can be a symptom. The best first-aid is lots of fresh air.

Seat Belts Work. For every increase of 1 percent in the use of seat belts, about 180 lives would be saved. About 75 of 100 victims of fatal car crashes would have lived if they had been wearing seat belts. Why is it that only 11 of every 100 American motorists actually use their seat belts?

Smokers Glow in the Dark. Doctors from the Centers for Disease Control recently publicized the fact that cigarette smoke is a comparatively potent source of radiation. They found that a 1½-pack-a-day smoker gets a yearly dose of alpha radiation equal to 300 chest x-rays. This exposure alone exceeds the Nuclear Regulatory Commission standard for total body radiation exposure for nuclear powerplant workers.

Building or Remodeling? Keep fire safety in mind. Dry wall (gypsum) or plaster provide considerable fire resistance. Wall paneling contributes to fire spread, so put a 1/2-inch layer of gypsum board between paneling and insulation. Wall paneling, ceiling tiles, and insulation should have a testing laboratory label and flame spread rating. Don't pile insulation around recessed lighting fixtures; keep at least a 3-inch clearance to avoid heat buildup.

PERSONAL DISCIPLINE AND HUMAN FACTORS your key to survival

mental condition. Even the most benign mission can be fatal if stress, fatigue, illness, or nutrition adversely affect an individual's performance. What should be an easy decision can oft times develop into a conflict of interest. Circumstances surrounding a flight (i.e., TDY, mission profile, outside pressures) may prevent the proper decision.

A recent safety crosstell addressed some important lessons learned. The most significant was the pilot's personal decision not to fly, based upon his physical condition. In this particular situation, a decision to "guts-it-out" and fly the mission would have resulted in at least one fatality.

The key to such a decision is an environment which promotes the personal discipline required to recognize and admit when stress, fatigue, illness or improper nutrition will adversely affect individual performance. Recent physiological incidents and Class A flight mishaps indicate that some aircrew members lack the personal discipline required to recognize and admit when their emotional or physical condition will not allow for safe mission accomplishment. Therefore, supervisors must utilize all available means to educate aircrew members on the hazards associated with flying under extreme stress, fatigue, or illness.

Because stress-related problems are easily masked by an individual, supervisors must ensure to the best of their ability that an "open door" policy exists and that the first discussion of stress-related illness in their unit is not the result of a mishap.

In conclusion, aircrews must be made aware that daily stress, coupled with fatigue, illness, or improper nutrition, may prevent them from making a fair evaluation of their own abilities. Aircrew members must exercise mature judgment and inform supervisors when they should not be flying. Commanders must ensure that their ops officer and flight commanders are aware of the important role human factors play in successful and safe mission accomplishment. They must be alert to the signs of stress, fatigue, or illness in their personnel. As supervisors, they must be knowledgeable of the work and off-duty environment in which aircrews are required to function. Mishap prevention requires it, and our combat readiness demands it. ➤



**By Maj Mike Lichty
HQ TAC Flight Safety**

Human factors engineering is a part of all present-day aircraft development. It should reduce task saturation resulting from poor cockpit design and play a key role in combat capability and the Air Force mishap prevention program. Human factors studies are also part of every flight mishap investigation and recently have revealed violations of personal discipline.

The personal discipline referred to involves the decision to fly based on the aircrew's physical and

WEAPONS WORDS

LET EOD DO IT

The weapons crew was dearming a SUU-20 bomb dispenser on an F-16 after flight. One of the breeches held a live cartridge that couldn't be removed by hand. The weapons crew chief tried tapping the side of the loaded breech with an empty breech to free the live cartridge. After he tapped the side of the breech three or four times, the cartridge suddenly fired, flew out of the breech, and hit an-



other crewmember in the right thigh. Fortunately, he wasn't hurt.

The Air Force spends time and money training explosives ordnance disposal (EOD) troops to handle these kinds of munitions problems. So why don't we turn the problems over to them and let them do their job?



OOPS, EXCUSE MY BOMB

The F-16 pilot turned base for his first 30-degree dive bomb pass on the range at night. After letting the instructor pilot in the back seat know that he had the target in sight, the pilot rolled in and prepared to drop a BDU-33 practice bomb. As the bombing pass continued, the instructor pilot began to get a bad feeling about it; they seemed to be pointed short and to the left of the target. At about 6,000 feet the instructor took control of the airplane, began to pull out of the dive, and called, "Off dry."

The call was wishful thinking—the pilot up front had already dropped a bomb. The bomb hit 30 feet from the range control tower.



The range crew wasn't drawing combat pay, so the range officer was surprised, and he let the flight know he wasn't pleased. He suggested they safe it up and go home. (That's not where he really wanted to tell them to go, but he restrained himself.)

The briefing before the flight had covered the range layout pretty thoroughly. The flight leader had gone over the target lighting, including the target relationship to the run-in and the tower complex, and had emphasized the pattern of the target smudge pots and lanterns. When the flight arrived at the range, they found the lights were laid out the way leader had said. The only exception was the strobe light on the tower, which was left off because its flashing reflection was disorienting inside the tower. However, the distinctive pattern of lanterns around the target was just as briefed and should have provided enough cues to identify correctly.

This pilot's most recent night gunnery before this mission had occurred more than 3½ years earlier. Most of his experience at night had been on uncontrolled ranges, using flares and illuminated targets. On those missions, the target was generally the only light in the area. So when he rolled in this time, he locked his attention on the brightest light in the area. By the time the instructor could see what the pilot in front was pointed at, it was too late.

When we get tunnel vision like that, we can make ourselves believe that just about anything is what we're looking for. That's why we are repeatedly taught to triangulate, to find what we're looking for by locating it in reference to the features around it. Otherwise—day, night, or looking through a scope—we can too easily lock on to the wrong target.

AIM-9 GAS GENERATOR FIRES

An A-7 was loaded with an AIM-9E on station 5 without the captive adaptor plug installed. The load was part of weapons load training in which the plug normally isn't used. But this airplane was also scheduled to undergo an AWM-49 check later. The AIM-9 was left on the airplane.

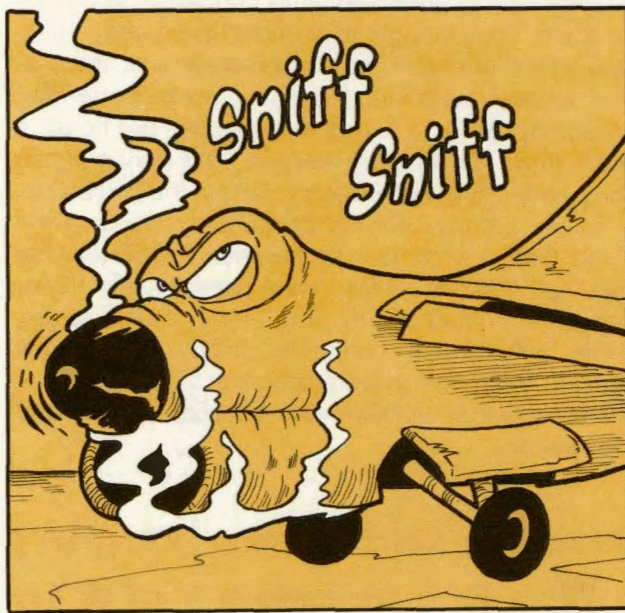
The team that came out later to run the AWM-49 check should have disconnected or downloaded the AIM-9 if they were going to follow the tech data. They didn't.

The AWM-49 test equipment was self-tested, and the test was normal. Next, the testing cables were connected to wing stations 1, 2, 3, and 6, 7, 8. The team member in the cockpit then selected those stations to check fuzing and release continuity. All the stations checked OK. Then stations 4 and 5 were se-

lected to check their priority over the other stations. This step isn't part of the tech data.

After the priority check, stations 4 and 5 were deselected; then the rest of the stations were deselected and the test equipment reset. After that, the entire sequence was repeated.

At the end of the test, the technician in the cockpit started turning off the switches. He was deselecting the weapons stations by feel, while looking outside at the test equipment, when the gas grain generator of the AIM-9 on station 5 fired.



Afterwards, a complete weapons circuitry test indicated that all systems were working properly. So, most likely what happened was that the worker in the cockpit failed to deselect the station or inadvertently reselected it and at the same time brushed against the armament release button on the stick.

But the whole problem can be traced back to a failure to follow the tech data when setting up the test. The technician's possible inattention to where his hands really were only capped off the original error.

IF ALL ELSE FAILS, READ THE BOOK

Three F-4s from the same unit flew as tow aircraft on several dart missions. The airplanes were each configured the same: one 370-gallon tank on the right outboard, a 600-gallon tank on the centerline, an ALQ-131 pod in the left forward missile well, TISEO, and a dart rig on the left outboard station. On the missions, each airplane was flown in the combat

WEAPONS WORDS

dart pattern, and each encountered the same problem.

At indicated airspeeds between 430 and 475 knots, as G-loading reached 4 Gs, the tow airplane would abruptly depart controlled flight. In each instance, after the departure the pilot quickly recovered the airplane with immediate application of forward stick.

The unit was understandably concerned about the problem. They thought they might have uncovered a heretofore unknown loading problem with the F-4, and so they recommended flight tests be performed to identify the flight restrictions needed. But no tests were flown. None were needed. The configuration they were flying was not authorized in the first place.

In the External Stores Limitations charts in the Dash One, a comment in the section covering the modified A/A-37U-15 tow target system reads: "Configuration limited to tow target only; or tow target, wing tank, and/or centerline tank." That hardly leaves room for misinterpretation. The airplanes should never have flown with the pods and the dart rig together.

WRONG CHECKLIST POORLY FOLLOWED

When the aircrew arrived at their F-15, they found it was still loaded with AIM-7M missiles that were supposed to have been downloaded. The aircrew immediately notified maintenance that the missiles had to be taken off. But the AMU's weapons supervision was involved in an integrated combat turn (ICT) taking place at the same time. The AMU dispatcher sent the only weapons crew available.

When the load crew arrived, they used the ICT checklist to download the missiles. In positioning the jammer, the operator moved it too far forward. As a result, the missile couldn't be secured to the Raytheon adapter with the restraining strap unless the top fin on the missile was taken off. The missile had been removed from the forward ejector foot (Eagle Claw) and was just resting on the adapter.

The load crew chief left his position to try to remove the top fin from the missile so it could be strapped down. When he grabbed the fin, no one had hold of the aft section of the missile. The missile slid backward off of the adapter and struck the ramp, causing some \$8,000 estimated damage to the missile.

TINSELTOWN

Early in the morning, a weapons troop headed out to load chaff magazines onto two F-4s. The occasion was a local operational readiness exercise. Although the weapons troop had two magazines to upload on two separate aircraft, he took along only one AN/ALE-40 safety pin.

After the weapons loader finished loading, or thought he had finished loading, a chaff magazine onto the left inboard pylon of the first airplane, he removed the safety pin to use it on the second airplane. When the second magazine was loaded, the weapons troop looked around for the weapons line truck to get another safety pin. When he couldn't find the truck right away, he busied himself with other work and soon forgot about the missing pin.

Later, a fuels specialist was sent to the first airplane to check out the fuel system. When he flipped the generator switch to external power, a BBU-35/B squib fired and dumped chaff onto the ramp.

Besides not pinning the AN/ALE-40, the weapons loader had forgotten to reset it after loading it. And the fuels specialist hadn't made sure that all safety



devices were in place on the explosives-loaded aircraft before turning on the power. So everybody got to clean tinsel off of the ramp.

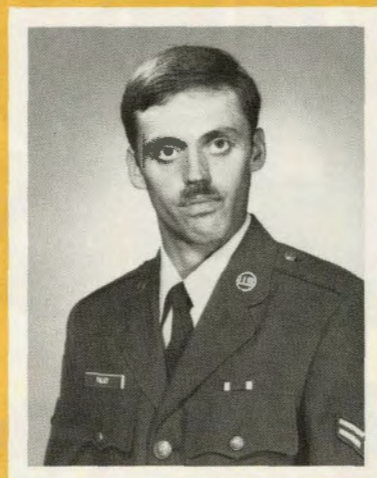
TAC Safety Awards

Crew Chief Safety Award

A1C MARK L. FALLEY is this month's winner of the Tactical Air Command Crew Chief Safety Award. He is a crew chief with the 59th Aircraft Maintenance Unit, 33d Aircraft Generation Squadron, 33d Tactical Fighter Wing, Eglin Air Force Base, Florida.

When an oil leak was found on the left engine of an F-15 during launch, Airman Falley took immediate action. He had the pilot shut down the left engine. Calling for a specialist's help, Airman Falley stayed with the airplane to monitor the oil leak.

The oil leak worsened, and then the hot oil caught fire. The specialist had the pilot shut down the right engine and leave the airplane. Other aircraft were cleared out of the area. By then, Airman Falley had discharged a fire extinguisher on the burning oil. He continued to fight the fire even though he was repeatedly burned on his arm by hot oil.



A1C Mark L. Falley

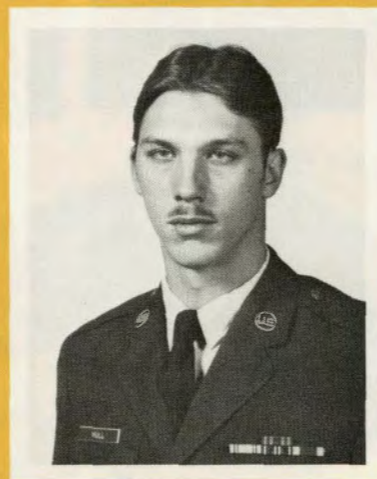
Airman Falley's correct action in response to the oil leak and knowledge of how to fight the fire kept the aircraft from being extensively damaged. He has earned the Tactical Air Command Crew Chief Safety Award.

Individual Safety Award

Sgt ROBERT D. HULL is this month's winner of the Tactical Air Command Individual Safety Award. Sergeant Hull is an aircraft maintenance specialist with the 354th Aircraft Generation Squadron, 354th Tactical Fighter Wing, Myrtle Beach Air Force Base, South Carolina.

Sergeant Hull was a passenger on a C-5 aircraft when the loadmaster reported a liquid oxygen cart was leaking. Sergeant Hull, accompanied by a senior NCO, went to the lower cargo area and confirmed that a loose valve connector under decreased atmospheric pressure was allowing liquid oxygen to vent and flow along the floor of the aircraft.

Sergeant Hull recognized the potential for fire and explosion in flight if the liquid oxygen contacted any petroleum product or encountered an errant electrical spark. He got a clean container to catch the venting liquid oxygen and informed the pilots to descend to a lower altitude.

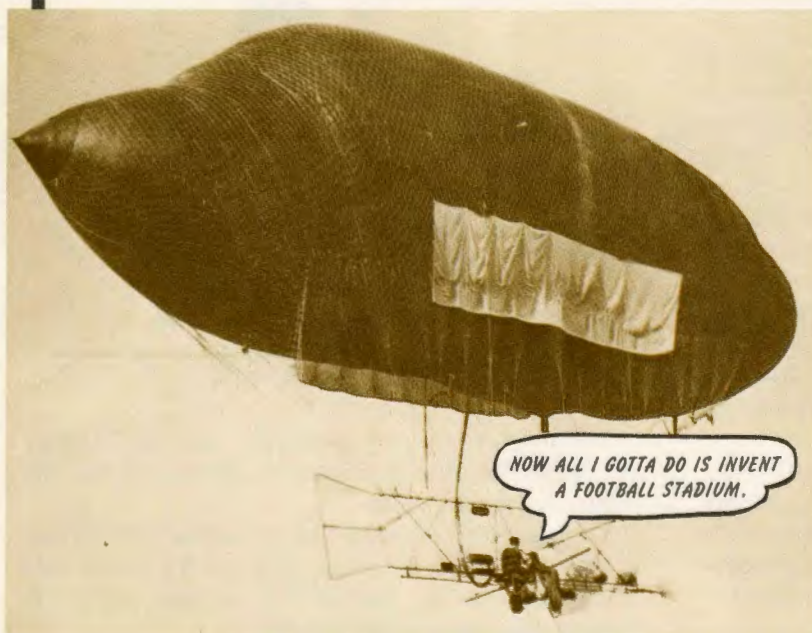
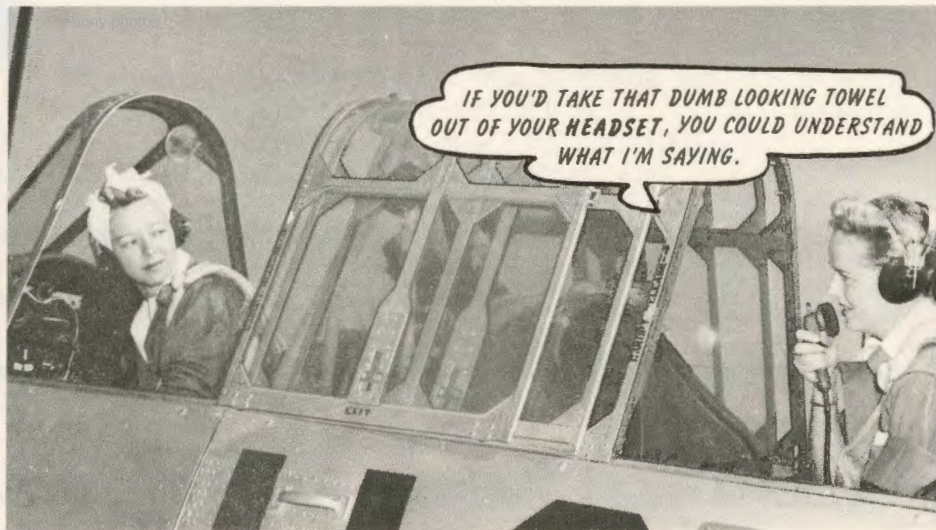


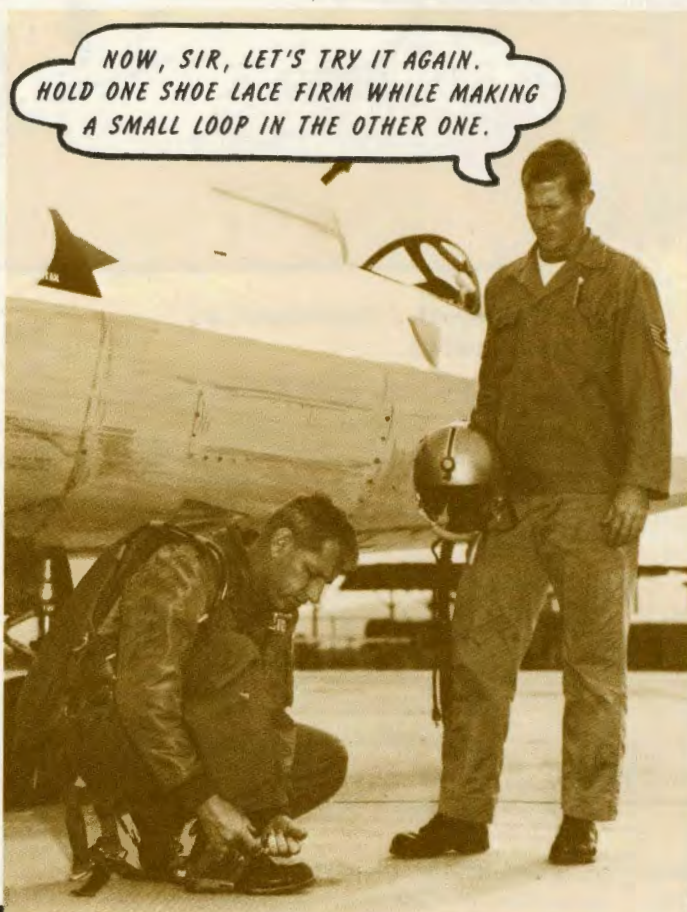
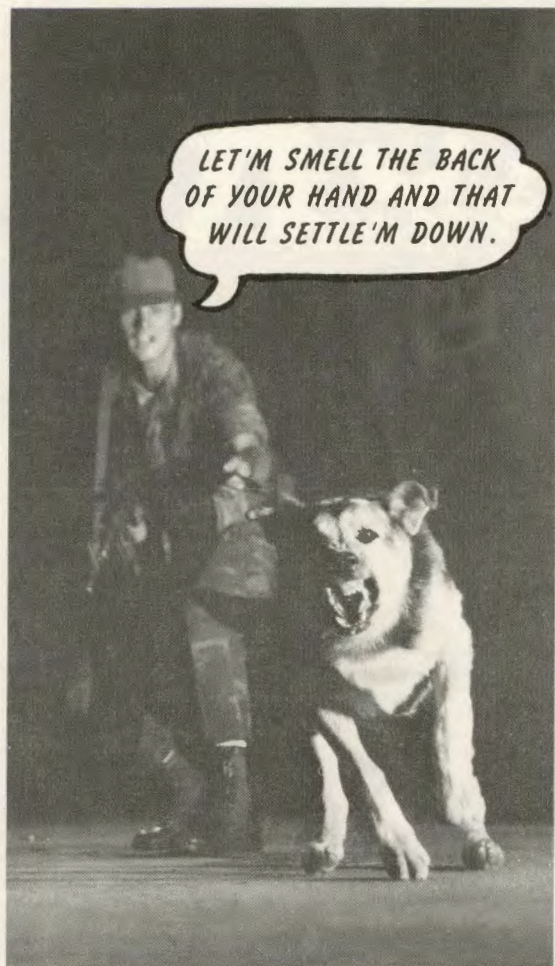
Sgt Robert D. Hull

When atmospheric pressure was sufficiently increased to slow the venting, Sergeant Hull secured the loose valve.

Sergeant Hull found the problem quickly and knew what actions to take to correct a hazardous situation. He has earned the Tactical Air Command Individual Safety Award.

Funny Photos







**By Maj Kenneth J. Stromquist, Jr.
Minnesota ANG**

Editor's Note: Maj Ken Stromquist tells us that the investigation leading to this article began when he took a "shiny, new Tapley gage out to the mobile truck to test out the first snow of the season." The purpose of the article is not to change any tech data or regulations—those changes will come through channels—but to warn you that our day-to-day decisions could be based on the wrong numbers. Whatever you do, don't use the old RCR to decide what your minimums are and then use the new reading to determine what the actual conditions are. Mr. Roger Carpenter at AGMC estimates that aircrews will find braking efficiency reduced about 10 percent from what they're used to at a given RCR.

Base Operations takes runway condition readings (RCRs) to determine the adhesion qualities of a run-

way—how slick it is. The actual measuring is done by a decelerometer mounted in a vehicle that is braking in a full slide. These values are customarily expressed in whole digits and are referred to as RCR values, even though the instrument measures deceleration in feet per second per second (ft/sec^2). For example, a reading of $15 \text{ ft}/\text{sec}^2$ is referred to as a 15 RCR.

The only decelerometer available to the military until recently had been the American Instrument inspection decelerometer (NSN 6695-99-766-3927). But recently, a new meter became available through the supply channels, the BM-5 Tapley Brake Testing meter (NSN 6695-91-113-6740). This decelerometer reads in percentages of one G-force. Since one G (Tapley 100 percent) is equal to $32.2 \text{ ft}/\text{sec}^2$, a rough but accurate enough method of conversion should be to divide the Tapley reading by 3 to convert to ft/sec^2 and so get our customary RCR.

All well and good to this point, but we discovered that if a Tapley and an American Instrument decelerometer are subjected to the same deceleration, the converted Tapley reading will always be higher numerically than the American Instrument reading. The reason for this is that the American Instrument gage has been calibrated wrong all these years. It will always show a deceleration (RCR value) less than the actual ft/sec². This didn't make much difference as long as only American Instrument decelerometers were used and they were all calibrated to the same, albeit inaccurate, standards. But now accurate Tapley is available. When we tried to use a Tapley reading to determine RCR values, we obtained a higher RCR value. For example, a Tapley reading of 60 percent should convert to 20, but it would actually be a 16.3 by the old meter's standard.

Therein lies the problem. If Base Ops takes an RCR check with a Tapley alone and expresses it in ft/sec² or RCR value, the actual condition will be slicker than expected, because what we expect is based on the wrong readings we're used to. The danger to flying operations is obvious. Our flying tech order RCR performance standards may be based on inaccurate data, derived from tests with the improperly calibrated American Instrument meter. These standards cannot be compared directly with the new Tapley gage, even though it would appear possible to do so by the current tech data.

Since our discovery, we have worked with the Duluth ANGB Precision Measurement Equipment Lab and the Aerospace Guidance and Metrology Center (AGMC) at Newark AFS, Ohio, to get a long-term solution. AGMC is issuing a change to T.O. 33-1-23, "Procedures for Use of Decelerometer to Measure Runway Slickness," so that the American Instruments decelerometers will be recalibrated to read the proper deceleration. As the old American Instrument gages are recalibrated, they will read the same as the accurate Tapley. Following that change, RCR criteria tables in such regs as 55 series and aircraft Dash Ones that were based on the wrong criteria may need to be raised to reflect the accurate readings.

As an interim solution, we suggest users consult the attached table, which we have calculated mathematically and tested physically, to equate the new readings to the old values. For example, TACR 55-4 now says that landings will not be conducted on runways with an RCR less than 12. To make that equivalent to the Tapley measurement, you would need a converted Tapley, or recalibrated American Instrument, reading of approximately 15½.

Some will ask, Why not make the Tapleys read the same as the old American Instruments? Answer: Don't perpetuate a false standard. If the American Instrument gage says it measures ft/sec², make it read that way. Secondly, American Instrument gages are being phased out, and soon only Tapleys will be available. Their presently accurate readings should not be altered to some false standard.

But many of us will now have to recalibrate our way of thinking to match the more accurate RCRs.

Old RCR (calibrated wrong)	Correct RCR	Tapley Reading (percent of 1G)
1	4	12
2	5	15
3	6	18
4	7	21
5	8	25
6	9	28
7	10	31
8	11	34
9	12	38
10	13	41
11	14	44
12	15	48
13	16	51
14	17	54
15	19	58
16	20	61
17	21	65
18	22	68
19	23	71
20	24	75
21	25	78
22	26	82
23	28	86
24	29	89
25	30	93
26	31	96
27	32	100

For more information, contact Major Stromquist at AUTOVON 825-7262 or Mr. Roger Carpenter, AGMC/MLD, at AUTOVON 580-7514.



Dear Editor

In your October issue there is an article titled "Learn the Language" which I feel comes down heavily on the wrong group of people.

It is true that the assistant crew chief did the wrong thing, but perhaps we should look further. How many T-33 drivers know or use the proper power-off signal? How many times have aircrews used a casual thumbs-up-and-wave-away for the power off? I have done it and I expect a lot of others have. A crew chief then is trained to react both to the proper signal and to the wave. Now we have a new crew chief who has prob-

ably seen more waves than proper signals coupled with an aircrew who is *blatantly disregarding the checklist*. If you'll check a T-33 checklist you'll find that by step #2 of a 50-step list that backseater should have been strapped in. An engine start is not the time to be waving arms. As a matter of fact an engine start is a time to be sitting, getting ready to egress.

We the aircrew are supposed to be the leaders. I suggest we do this or be gentlemen enough to shoulder the responsibility for incidents of this kind.

John A. Pratt, Major, VtANG
Assistant Aircraft Maintenance Officer

Dear Major Pratt

What you say may be true. Perhaps the pilot was strapping in, or maybe he was just trying to adjust his shoulder harness. The simple fact that he reached for his shoulder harness doesn't make him guilty of "blatantly disregarding the checklist." And if T-33 pilots are regularly using sloppy hand signals, then they are also responsible for the poor communication involved in this incident. But that assumption is not proven by the facts of this incident.

The story simply states that the assistant crew chief looked to the wrong cockpit and misinterpreted the hand signal. That's what happened in this instance.

The point is not to find someone to blame. There's plenty of responsibility for everyone to share. The point is, How do we prevent poor communication in a situation like this? The only way is to make sure that pilots and ground crews alike understand the language of hand signals.

ED

Pass it along... nine people are waiting



TAC TALLY



CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
NOV	THRU NOV	
	1982	1981
2	26	30
3	17	18
0	21	29
0	18	22

ANG		
NOV	THRU NOV	
	1982	1981
1	6	6
1	3	3
0	5	1
0	4	1

AFR		
NOV	THRU NOV	
	1982	1981
0	1	1
0	0	1
0	2	1
0	2	0

TAC'S TOP 5 thru NOVEMBER '82



TAC FTR/RECCE	
class A mishap-free months	
50	1 TFW
37	49 TFW
36	355 TTW
27	347 TFW
24	354 TFW

TAC AIR DEFENSE	
class A mishap-free months	
118	57 FIS
71	5 FIS
68	48 FIS
27	318 FIS
18	87 FIS

TAC-GAINED FTR/RECCE	
class A mishap-free months	
127	188 TFG (ANG)
119	138 TFG (ANG)
118	917 TFG (AFR)
115	116 TFW (ANG)
105	434 TFW (AFR)

TAC-GAINED AIR DEFENSE	
class A mishap-free months	
105	102 FIW
101	177 FIG
67	125 FIG
50	119 FIG & 142 FIG
37	120 FIG

TAC/GAINED Other Units	
class A mishap-free months	
160	182 TASG (ANG)
153	193 ECS (ANG)
148	26 ADS
144	110 TASG (ANG)
140	USAF TAWC

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

TAC	1982	7.8	5.7	5.9	5.2	5.9	5.7	5.1	4.7	4.4	4.1	4.1	
	1981	4.0	3.0	3.2	5.6	6.0	5.9	6.3	6.2	6.0	5.3	5.0	
ANG	1982	0.0	2.7	3.2	3.4	3.6	2.9	3.1	2.7	2.4	2.1	2.3	
	1981	9.3	4.8	4.6	3.3	2.6	2.2	1.8	1.6	2.4	2.6	2.4	
AFR	1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.2	2.7	2.5	
	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.4	3.0	2.8	

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

FLEAGLE

