

TAC ATTACK

SEPTEMBER 1981



REALISTIC TRAINING
IN PERSPECTIVE...Pg 4



READINESS IS OUR PROFESSION



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Angle of Attack



Labor Day signals the end of summer. Vacations are over and the kids are headed back to school. Our outdoor activities and associated hazards won't abruptly stop, but they'll begin to change. This is no time to drop our guard.

Fleagle reminds us not to overindulge on Labor Day or any day. While drinking and driving are a terribly dangerous combination, drinking and walking aren't any guarantee of safety, especially if, like Fleagle, you've pickled your brains.

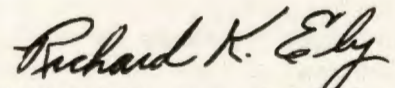
Your head deserves to be treated better. It also deserves to be protected better than many motorcyclists have protected their own skulls. "Motorcycle Safety: The Trend Is Bad News" tells us about the results of not wearing helmets. Some people must have low regard for their brains.

Let's protect ours. And then let's use our brains to avoid the kinds of problems written about in "Chock Talk," "Down to Earth," and "Weapons Words." Common sense and good use of tech data would have

prevented most of these stories from happening. Supervisors are expected to show a little extra common sense and job know-how. In a couple of cases, supervisors didn't exercise their brain power. I hope we can learn from their stories.

Learning from our experience in combat is the message of "Realistic Training in Perspective." The discussion is not about whether or not to have realism, but what realism is. Recent history holds some heavy lessons. Let's remember them as we train in exercises like "Gunsmoke '81," which is underway at Nellis. Our lessons are all bought at a price.

As our kids go back to learning their lessons, let's relearn ours. Then we can better enjoy the new season.



RICHARD K. ELY, Colonel, USAF
Chief of Safety

REALISTIC TRAINING IN PERSPECTIVE

By Col Everett M. Sutton
Chief, Plans Division, USREDCOM

"Train like we will fight," Few argue with the logic for realistic training because there is a proven relationship between the quality of aircrew training and both effectiveness and survivability in combat. There is considerable ambiguity, however, in the threat we are training to counter. Crew and fighter losses during peacetime training give us a reason to review some history regarding where we are and to project what the future may hold if we don't collectively rethink our approach to realistic training.

Specifically, the current emphasis on realistic combat training has survived only because of the logical argument for this approach and the full support of commanders who are faced with explaining why we "flew through a tree," "lost control during DACT maneuvering flight at 250 knots," "entered a spin proving the fighter will fly and maneuver below 200 knots," "flew into the water after DACT knock-it-off," and did other things which are difficult to explain.

Historically, we have scaled back our emphasis on realistic combat training following each war. This scaling back has generally taken the form of maneuvering and altitude restrictions following peacetime losses of aircrews and aircraft. We don't want or need to lose headway gained since our last period of air combat. History reminds us, however, that maintaining realistic training becomes more difficult as the time since our last aerial combat increases.

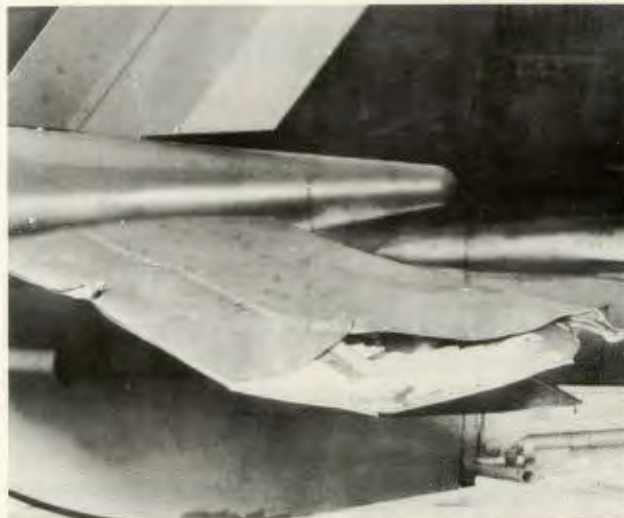
For these reasons, let's look again at some things we could do to keep "realistic training" truly realistic. Since the threat is the first consideration, a look at

this fertile area should be fruitful. If you ask a cross section of pilots who flew in WW II, Korea, and SEA what combat was like and how they reacted to the threat, answers will vary according to individual memory and experiences they've heard from others. Discussing combat with those who have been there, reviewing unit histories, and applying current intelligence provides an excellent framework to begin threat analysis. There is, however, a necessary caution. *There is not now, has not been in the past, and probably will not be in the future, a threat weapons system which we cannot face with a reasonable degree of mission success.* There is no argument that a combination of SAMs, guns, and fighters tied together with a good command and control system poses a serious challenge; but there is a tendency to overestimate new systems. As each threat becomes known, we need a cool and unemotional look at the facts.

Over the years we have moved away from in-depth study of each threat and combination of threat systems. Terms such as "traversing rate, detection range, reaction time" and others have given way to acceptance of each threat system or combination of threats as absolute. As an example, you will recall the hue and cry during the late sixties regarding the SA-7 and its impact on fighter tactics in the lesser defended areas. Have you shouldered a Redeye (comparable with SA-7) and tried to track an F-4 at 1,000 feet in a valley? During a recent visit to an exercise, we did. We were on an optimum hillside location and the F-4s were virtually straight and level; because of terrain we knew the approximate inbound route. With a skilled Redeye team, we managed to reach launch parameters less than 30 percent of the time. Okay, you say, 30 percent losses are pretty

high. Agreed; but we said no evasive action, 1,000 ft AGL, and launch parameters, not hits. In fact, the SA-7 has been credited with few actual kills.

Although multiple weapons create a more difficult tactical situation, enemy ground and air defensive systems also have problems. There are constraints, limitations, and restrictions which limit the effectiveness of all known defensive systems. Obviously, capabilities of systems employed for point defense are enhanced by early warning systems. The early warning system may be composed of visual observers, point or area radar coverage, or a combination of these. Should the system depend upon radar, we should remember that all field deployable radars are limited to line of sight. This is a serious limitation. For example, over flat terrain or water, a single surface-based radar, under perfect conditions, cannot, because of the earth's curvature, detect a target operating at 300 feet above the ground more than 26 nautical miles from his site. Tying radars together helps provide overlapping coverage, but it calls for adjacent area handoffs and coordination which take time. Assuming we are flying at 400 knots and 300 feet, the surface-based operators have only 3 minutes to detect, identify, pass data to a radar guided



A tree did this damage to the fuel tank. Again late target acquisition under a low ceiling. This time, with a slow and late dive recovery, altitude and terrain almost became equal. This was the only damage; the tank was changed and the bird flew the afternoon frag.



Battle damage? Not really. This aircraft flew through the CBU pattern of the flak suppression flight. The strike flight briefed to release at 5,000 feet and stay close to the flak suppression flight. The flak suppression flight briefed CBU opening at 10,000 feet. Neither flight knew of the other flight's plans.

weapon, track, and fire. The surface-based operators are further hampered by terrain, vegetation, multiple targets, ECM, threat of antiradiation missiles, training, fusing time, weapons supply, and proximity to populated areas. In one published news story, a SAM battery commander became very unpopular after firing SAMs at fighters overflying a small town on three successive days. Each day, the SAMs missed, did not destruct, and exploded on surface contact in the town.

I'm not saying that SAMs aren't effective; rather, I'm trying to point out that SAM operators have problems which detract from the assumed lethality of the red SAM rings we use to mission plan. Obviously, we need to keep these limitations in mind. It may be that the greatest single threat from a SAM site is the concern it causes the aircrew. Sure we have lost aircraft to SAMs, but many SAMs have been evaded, jammed, or otherwise rendered ineffective. Combat history shows few, if any, fighter losses to SAMs while operating at 300 feet and 480 knots or faster.

Look at the mobile or fixed AAA gun, too: we find a gun operator also has his share of problems. The operator must see the target, then identify it, aim, track, and fire in the limited time he can see the target. If he's radar directed, his problem is similar to the SAM site. Constraints in field of fire also apply to the gunner; perhaps more so. Since many AAA sites are partially revetted, there is normally a physical

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field of fire limit. Coordination between gunners is especially difficult because of the noise of battle, apprehension, multiple targets, and the other problems mentioned. Spending some time with a US Army Air Defense Unit will give you a better feel for the problems associated with point or area defense.

Considering these problems faced by the threat operators, the other side of the equation merits some thought. Although it's an unpopular theme, there is absolutely no question that many of our fighter losses in combat have been self-induced. Tactics employed have in many cases taken us too close to the edge of the envelope. Our reaction to a real or perceived threat has at times resulted in exceeding aircraft and/or stores limitations, resulting in damage to or loss of the aircraft and often the aircrew. I base these conclusions on personal experience, battle damage study, and flight data recorder information derived from aircraft in combat. There is also little question that midairs, trees, and impact with the ground also took their toll. Power loss from fuel exhaustion and overtemped engines occurred during all three combat periods. There are cases where entire flights or strike forces were lost during adverse weather inbound and during recovery.

So, what is the point? Recently a briefing destined for high level audiences indicated that 70 percent of our losses in Southeast Asia were to AAA and small arms. Statistically, this can be shown. Unfortunately, these statistics are based on questionable data. During past combat periods, there has been a natural reluctance to show losses due to aircrew error. When a bird was lost due to undetermined reasons, the cause was generally listed as AAA or small arms. Who could argue? There was seldom any way to find out what actually happened. The pressure of combat operations and rotation of people caused a loss of corporate knowledge; and documentation of real reasons for combat losses, if it was ever available, became obscured. But information from some sources, such as returned POWs, lends credibility to the idea that many of our "combat losses" are simply mishaps.

There are absolutes in aerial combat. Airspeed and G limits do not change because we are in a hostile environment. In fact, carriage release limits for external weapons dramatically reduce G-loading



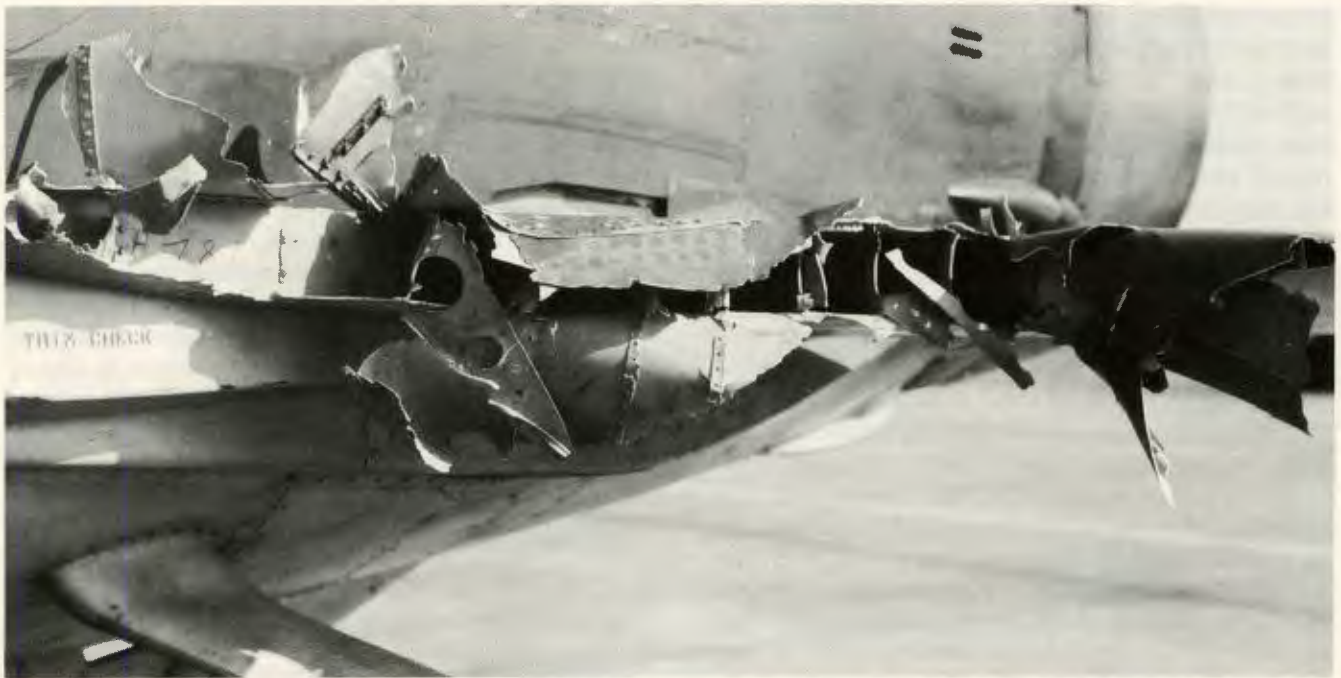
Over-G: Partially filled fuel tanks can fail in many ways when exposed to excessive G-loading. This tank rolled up to the inside of the main wing pylon. Afterwards, during landing gear extension, the pilot had to apply increased G's so the gear would crush the tank and fully extend and lock.

allowable without structural damage, which can be catastrophic. Flight data gained from recorders in combat revealed that pilots pulled as many as $9\frac{1}{2}$ Gs with external tanks and weapons. That data was part of a study of battle damage made by our wing in Southeast Asia. We also found that combat losses increased during periods of adverse weather, on sorties after the first one each day for the same crew and aircraft, and during carriage of weapons which have the most restrictions and/or least operational testing. We also found correlations between large aircrew turnover periods and dramatically increased losses. From reconstruction of battle damage, we learned that bomb fins are prone to separate when carriage limits are exceeded and especially if they are inadequately attached, which happens in the rush of combat. Loss of a bomb fin at high speed can be catastrophic. Releasing a bomb which has no fin is equally destructive. Bomb release systems which do not function properly can also prove destructive by subjecting the fighter to asymmetric loading dur-

Col Sutton is this month's winner of the FLEAGLE T-Shirt

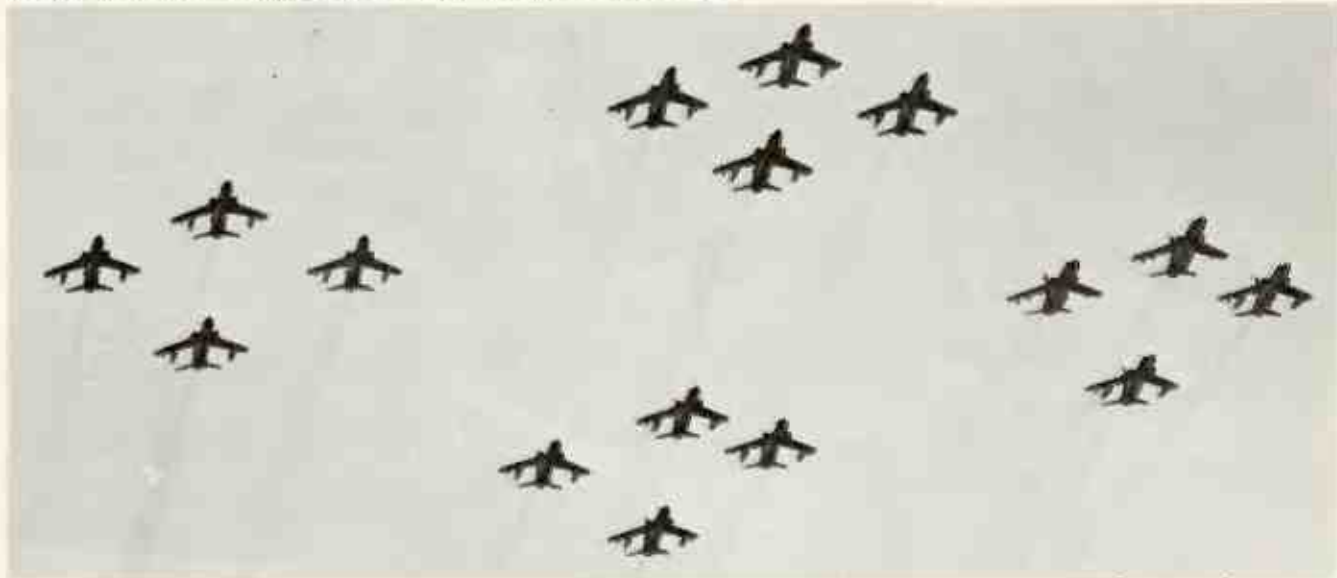


Route Pack VI strike. This was a normal release with good parameters, but one bomb had no fins. The wingman saw the fins come off on the way inbound; however, no one in the flight recognized the potential problem. When released, a bomb without fins tumbles end-over-end. Even low-speed jettison should include the rack when possible.



This "battle damage" came from the aircraft's own bomb. Late target acquisition under low ceilings led to a bunting release. The bomb floated into the tail. The area marked "Trim Check" has an imprint of the bomb's nose.

REALISTIC TRAINING IN PERSPECTIVE



The ideal mission: They all returned.

ing dive recovery. During each war, many fighters have been lost during dive recovery. We know some aircraft suffered extensive structural damage and made it back. We believe many others were lost because of induced damage.

There is an interesting sidelight to this analysis. Units conducting fighter training during SEA, Korea, and WW II experienced high accident rates. In all three cases, combat units had, *according to the statistics*, a much lower mishap rate. Could there have been rationale to declare losses as combat related because "if the mission had not been combat, the loss would not have occurred," or "Prove he didn't take a hit"? The problem is, you can't prove or disprove this logic. However, I submit that those aircrews who questioned each loss and modified tactics accordingly have generally been the most effective. During our eight months of investigating all "battle damage" occurring to a fighter wing, we found that very little actual damage from adversary weapons was present (less than 15 percent).

Where does that leave us? The adversary threat is an estimated danger, albeit the best one which can be constructed. (I hope there's an in-depth exchange between intelligence and operators prior to all missions.) Aircraft structural limits, weapons carriage limits, aircraft systems limits, and the ground are known and certain dangers. A piece of gun camera film or tape showing a superimposed pipper is not a kill. Tracking and kills are far different, as any

banner or dart shooter will tell you. Our realistic combat training programs today are the best we have had and probably the world's best. But as good as they are, we must keep our tactics sufficiently far away from the ragged edges of those known dangers to allow for error.

No phase of flight can be ignored. Granted, we need to concentrate on the time in the heavily defended environment, but not at the total expense of coping with en route and recovery weather. Nor does it necessarily track that the faster we go and the lower we fly the better the chance for survival and mission accomplishment. In tactics development, we must remain flexible. There are times for the fully supported, all-out jamming strike package; and there are also times for small flights using surprise while simultaneously providing mutual support through saturation of adversary air defenses. Above all else, logic must prevail. The fighter aircrew member who knows his equipment, knows his enemy, has confidence in his compatriots, is disciplined, and can remain calm in the face of adversity will prevail in the future as he has in the past. ➤

Colonel Sutton has over 7,500 hours of jet time, including time in the F-84, F-86, F-89, F-94, F-102, F-105, F-111 and F-4. He completed 100 missions over North Vietnam in the F-105 while serving as chief of safety for the 355th TFW. He later returned to Southeast Asia in the F-111 as DO of the 347th TFW.

TIPS

A ship in harbor is safe, but that is not what ships are built for.

—J.A. Shedd

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

WHERE'S THE FIRE?

The A-10 pilot overseas had started the APU and the left engine normally. As he cranked the right engine, the APU shut itself down. The right engine core RPM was at 15 percent, but ignition hadn't yet occurred as far as the pilot could tell. The pilot turned off the APU switch and moved the right throttle to off. The crew chief told the pilot that this APU had shut down during start before; he recommended aborting. However, the pilot decided to try again.

The APU restarted without any problems. But then the crew chief noticed smoke and flames coming from the right tailpipe. He told the pilot to shutdown and motor, but he didn't say what was happening. The pilot thought he had an APU problem, so he shut down the APU. The crew chief continued to tell the pilot to shut down. The pilot asked what the problem

was. The crew chief answered, "Fire!"; but he didn't say where.

The pilot looked for a fire warning light but none were lit. Then he saw the smoke and flames in the right engine. By this time the crew chief had begun spraying corrosive foam from the fire extinguisher into the engine. The pilot began to push the left engine up to 85 percent RPM to use it to motor the right engine. But he pulled the left engine back to idle when the crew chief again shouted, "Shut it down!"

Finally, the line chief stopped at the airplane, climbed the ladder, and told the pilot to motor the right engine. The pilot pushed the left engine back up to 85 percent and used it to motor the right engine. The fire quickly went out when the engine was motored. The engine was not damaged by the fire, but it may have to be overhauled because of the corrosive foam.

The incident stirs a couple of thoughts. First, the whole thing never would have happened if the pilot had used the Dash One procedure for loss of pneumatic power during a start. The Dash One warns of an overheat and calls for motoring the engine. The pilot apparently felt that the procedure didn't apply because he didn't see the engine light off before the APU quit. He'd have been better off playing it safe and following the whole procedure.

Second, no damage would have occurred if the crew chief and the pilot had communicated well. Fire is scary. But we've got to think about what we're saying, even when it's urgent. It really helps if we think about it ahead of time: then, when it happens, we know what we need to say or ask. And by staying calm (or, at least, sounding calm), we can help each other think more clearly.



TAC TIPS

RUNAWAY DUMP

An F-15 pilot in another command chose to dump fuel to lighten his aircraft for a wet runway landing. He had 6,000 pounds of fuel remaining when he started. When the fuel decreased to 4,000 pounds, the pilot returned the dump switch to normal. The fuel kept dumping. The pilot tried cycling the air refueling slipway door with no effect. So the pilot declared an emergency and made an immediate landing. The fuel continued to dump until the engines were shutdown.



The pilot was close to home when he dumped the fuel, so he still had 2,200 pounds remaining when he landed. Knowing what can happen, we ought to hold off dumping fuel until we're sure we'll have enough gas to land even if we can't turn off the dump. This pilot was sure glad he hadn't begun dumping fuel 100 miles out.

HIGH G AND LOW FUEL

An F-5E driver overseas returned from his mission a little low on fuel. As he neared the base, he was told to hold for an opposite direction departure. He climbed up to 20,000 feet and declared minimum fuel (900 pounds remaining). After the traffic was clear, he descended at idle power to initial for an overhead pattern. He arrived at a 2-mile initial with 475 knots. Fuel was 700 pounds. Since the airspeed was high, the pilot left the throttles at idle power. Overhead the runway, he rolled into a hard 7-G break turn to downwind, advancing the throttles. Both engines flamed out. The pilot immediately rolled wings level and pushed the throttles up to max power. Both engines restarted. After declaring an emergency, the pilot completed an uneventful landing.

Nothing was found wrong with either engine. The combination of low fuel and high G caused a shift in fuel which allowed air into the system, causing the flameout when the pilot increased the demand on the

system by advancing the throttles. After the engines flamed out, the pilot rolled out to 1-G flight, which allowed the fuel to return to a normal level, making the restart possible.

That's a lesson for all of us: when the fuel gets low, it's time to be gentle with the airplane. Treat it nice, and it might take you home.

BIGFOOT LOWERS F-5 GEAR

Another F-5 overseas was flying air-to-air tactics against an F-15. At 300 knots, he unloaded to zero G. When he pulled back in to 4 or 5 G's, he heard a noise that sounded like something dragging. He checked to see if the speed brakes were up. They were, but he noticed the gear handle was down. He left the gear down, slowed down, and returned for an uneventful landing.

This pilot had a technique to brace himself when he unloaded to zero G—he hooked his feet under the rudder pedals. This time he may have hooked his left foot under the bellcrank end of the landing gear linkage, which is located to the left of the left rudder. By hooking the bellcrank end, he lowered the gear with his foot.



Now we know a new alternate gear lowering procedure for the F-5. If you have the feet for the feat.

CALL AHEAD, IT'S CHEAPER

An aircraft from another command suffered hail damage when it was forced to penetrate an area of thunderstorms because of low fuel. The aircrew had launched on the third leg of their cross-country flight expecting only isolated thunderstorms en route. Half an hour after they took off, their destination airport put out a new forecast calling for an intermittent condition of thunderstorms and hail. At the halfway point in their flight, the aircrew recomputed their fuel and

decided they had enough fuel to make it to their destination. But they didn't call METRO or flight service to update the weather forecast, nor did they query center about the weather. That was their last chance to divert. When they found out about the worsening weather, they no longer had the fuel to divert. So they had to penetrate the area of thunderstorms. After they were peppered by hail, they got to land in 40-knot gusting winds. They made it—through Providence, not prudence.

A call ahead to check on the real weather, especially when we're in an airplane without radar, is worth our time. It's hard to make a good go/no-go decision without it. And, best of all, it's free.



TRAINING TRANSIENT MAINTENANCE

Did you know that we, as aircrews of transient airplanes, conduct training of transient alert workers? It's true. Some training received by transient alert people comes from on-the-job training with airplanes that pass through the base. The aircrews become the instructors, but not always good ones.

A recent FOD incident at a non-TAC base pointed out that the transient maintenance people had been misled by visiting pilots. The base is frequented by F-16s from another command whose pilots were apparently not complying with a Dash One requirement to have the EPU pinned before engine shutdown. When a TAC F-16 pilot landed at the base, he insisted on shutting down properly. In the confusion that resulted, a pin was dropped and swallowed by the engine.

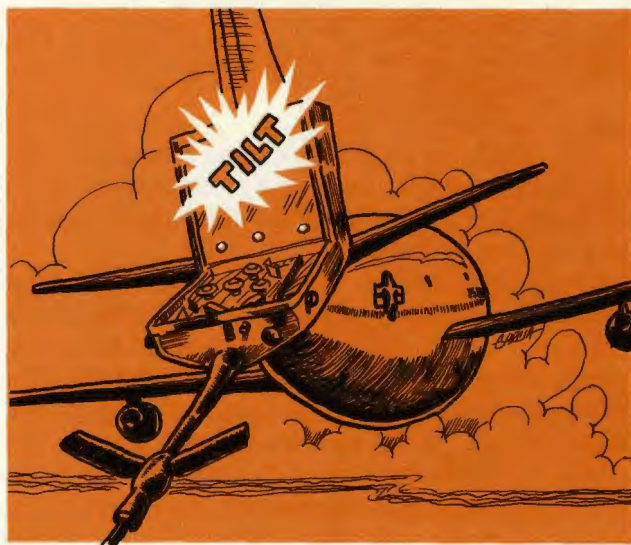
The real cause of the confusion was the poor instruction given by the other F-16 pilots. Think of that the next time you're tempted to take a shortcut at a cross-country base. Don't you really want to teach transient alert to do it the right way?

TAC ATTACK

PLAYING PINBALL

A student aircrew was air refueling an RF-4. Their instructor was in another RF-4 on the tanker's wing. The aircrew did very well on their first hookup, smoothly holding position while they took on 6,000 pounds of fuel. After that, they set up for a dry hookup, just for practice. This time, after holding good position for about a minute, the student crew let the airplane descend and move forward toward the lower and inner limits of the boom. The rate of descent increased, and the boomer called for a breakaway. But it was too late. The boom was fully extended, and it was abruptly and forcibly disconnected, overextending the RF-4's IFR door and tearing the aircraft's skin. The student aircrew went home and landed without any further problems. The tanker boom wasn't damaged.

That's the way it happens sometimes in the training business. Our students do well, we start to relax, and they scare the wits out of us. The decision on when to say something and when to let the student correct his own error is a difficult one; at times it seems to require superhuman wisdom. In this case, the student went from a good position to a brute-force disconnect in about 10 seconds. Neither the instructor nor the boomer made a corrective call in time.



The student aircrew blew through the envelope because the pilot wasn't watching the whole tanker. He had fixed his attention on the receiver director lights. When he began moving down, he didn't judge his rate of movement. The director lights blinked on and off like a pinball machine. The next thing he knew, he was no longer hooked to the tanker. Tilt!

DR. SAM



"DR. SAM. I'm an F-15 pilot and I frequently get small red spots on my skin after pulling high G. Some of the other pilots call them *high-G measles*! What do you know about them?"

The proper medical term for high-G measles is *petechiasis* (pa-tee'-kee-eye-ah-sis). They result from the rupture of very small blood vessels called capillaries when high pressure is generated within the vessel and not enough external counterpressure is present to counteract the internal pressure. The internal pressure is a result of physical hydrostatic pressures which is a product of the number of G's. The small red spots represent ultrafine hemorrhages in the skin. They resolve in a manner similar in the way that a bruise heals. Generally the only symptom a pilot has from high-G measles is a warm flush or tingling sensation as they first happen. Tingling and itching are the usual persistent symptoms that last until the spots have completely disappeared (approximately 1 week). These symptoms are probably

due to the breakdown of blood products that slightly irritate the nerve endings in the skin. We believe that these high-G measles most commonly occur on initial exposure to very high G-forces or after a long layoff and re-exposure to high G occurs.

Introduction of both the F-15 and F-16 into the USAF inventory makes it possible to identify two different "strains" of high-G measles. The measles occur in those areas where the highest pressure within the capillaries is generated. This pressure occurs highest in the "dependent" or lowest areas of the body in relation to the G-forces where the greatest hydrostatic pressures develop. For this reason, the "strain" that affects F-16 pilots can be identified by their unique distribution of spots more frequently in the buttocks, abdomen, and underside of the upper extremities. This distribution results from the 30°-tilt-back seat and raised heel-line in the F-16. The lower extremities of the F-16 pilots get fewer measles than their F-15 (or F-4) counterparts. F-15 pilots, on the other hand, without the tilt back seat and raised heel line, much more frequently have a strain of high-G measles primarily in the legs (ankles, calves, and

thigh), with fewer in the abdomen, low back, and buttocks areas. They also frequently have them on the underside of the arms.

There is an additional side effect from a severe case of high-G measles (although no reports from the field have come in relating to this problem). In centrifuge riders this relates to an extremely suspicious spouse who had reacted to the initial observation of a massive case of high-G measles. The pilot,



on the morning following high G exposures, undresses to shave or shower, and the spouse wildly accuses the mate of extramarital activity because of a giant "hickey." Not knowing about the high-G measles can lead to the pilot not having a ready explanation, and that only serves to increase the spouse's suspicion.

The friendly flight surgeon may be called upon to play an important role in helping the pilot (or centrifuge rider) make the spouse understand.

With more advanced aircraft, as pilots are subjected to higher and higher G-stress, we hope to have advanced life support equipment in the form of an improved anti-G suit to give additional support and prevent high-G measles. Work already performed at USAFSAM has shown that using an anti-G suit which offers more uniform body coverage below the waist than the current anti-G suit, which uses bladders and gives spotty skin pressure, enables subjects to double the amount of time that they can withstand sustained high-G on the centrifuge. Also, the uniform pressure provides more uniform counterpressure to the abdomen and lower extremities resulting in fewer cases of high-G measles. However, unsupported arms in both F-15 and F-16 (and future aircraft) will continue to develop measles.

High-G measles is not contagious on the ground, but pilots keenly competing to achieve an advantage in aerial combat maneuvering have been known to cause an outbreak of high-G measles in adversary pilots, who have been forced to go to higher G to avoid a "Fox 1" or "guns, guns, guns!" ➔

DR. SAM eagerly solicits questions, ideas, and comments (both friendly and unfriendly) from aircrewmembers. All letters will be considered confidential and will be used as the basis for future articles.

Write: **DR. SAM**
USAFSAM/CE
Brooks AFB, TX 78235

SAFETY PEOPLE IN TAC



Congratulations from TAC ATTACK!

To Colonel:

Li Col Keith N. Lacey II, 347 TFW
 Li Col John K. Sloan II, 57 FWW

To Master Sergeant:

TSgt George Foreman, 347 TFW
 TSgt Justin D. Hughes, USAFTFWC
 TSgt Ryland S. Jenkins, HQ TAC

To Technical Sergeant:

SSgt Harold R. Samuels, USAFTAWC

To Staff Sergeant:

Sgt Cindy Mount, USAFTFWC

(And congratulations to the six former wing chiefs of safety who also made colonel.)



SAME OLD STORY, DIFFERENT ENDING

The airman went to town and drank too much liquor. His friends drove him back to the dormitory. But he borrowed a car and headed back to town. As he entered a graded curve, he drifted off the road and then overcorrected trying to get back on. He lost control, struck an embankment head-on, and overturned, demolishing the compact car he was driving.

Eighteen months earlier, on this same curve, the same thing happened. There was one difference: in the earlier accident, the driver was thrown from the car and killed; in this case, the airman only suffered cuts and back strain. This time, the driver was wearing seat belts.

OFF-ROAD DRIVING

Off-road vehicles are a popular means of getting away from civilization. But the National Highway Traffic Safety Administration reminds us to be sure to know the limits of the off-road capabilities of these

vehicles. *Off-road* doesn't mean they can go anywhere and do anything.

Four-wheel-drive vehicles, such as Jeep, Bronco, Blazer, Scout, Range Rover, and Ramcharger, have a high center of gravity that can cause them to roll over while making sharp turns or while driving along steep slopes. Any sharp turn in an unfamiliar area can be dangerous, especially where the space is limited and there are drop-offs.

Use seat belts. They not only protect you in an accident, they also help you maintain control when you hit bumps and ruts. Seat belts will keep you from falling out of the vehicle. It would ruin your whole trip to hit a rough stretch, fall out of the vehicle, and watch it continue on into the great unknown without you. Besides using seat belts to keep your whole body inside the vehicle, protect your hands, arms, and head by keeping them inside also.

If you plan on doing your off-road driving in the mountains, remember that most vehicles lose power when operated at higher altitudes. Know your engine's capability before you leave the road. Otherwise, you may end up driving down into a place your vehicle can't climb out of.

After you've driven over rough terrain, check your brake lines and tires for damage. You don't want to find out about brake failure on your way back down the mountain. And a blowout on a mountain curve could be too thrilling.

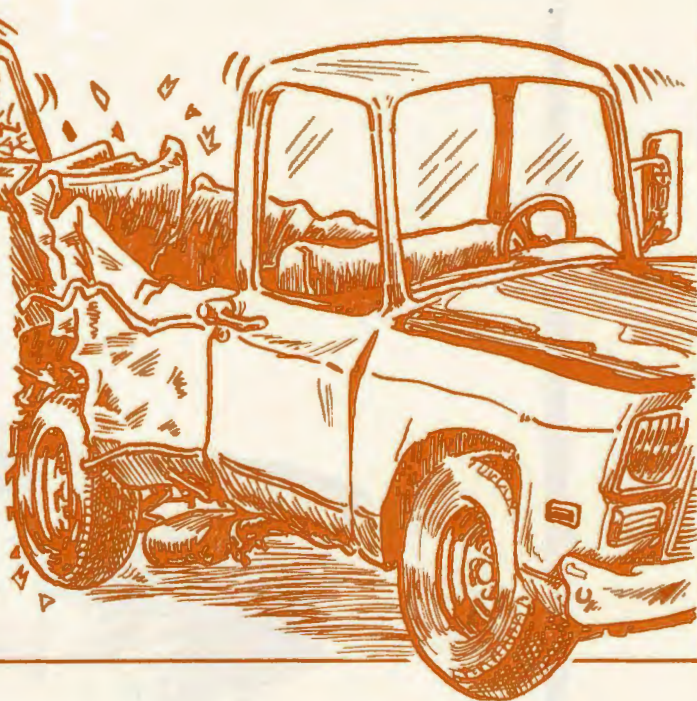
Off-road driving can be a terrific experience or a terrifying experience. Keep it terrific. Know your vehicle, and don't push it beyond its limits.



THE MISSION MISTOOK

The vehicle had starter problems and should have been turned in for repairs. But the repairs would take time—time the unit felt couldn't be spared from the mission. So they used a shortcut: a screwdriver to short-circuit from the battery terminal to the starter solenoid and start the vehicle. That method bypasses the lockout which prevents the car from being started in gear. Eventually, of course, someone started it in gear, and it promptly backed up 15 feet and smashed into the front of another vehicle.

Now the mission does suffer. Two vehicles are out of commission. Maybe we all need to take a broader view of the mission.



TAILGATING IS IRRATIONAL

Anyone who follows another car too closely is simply betting that the other car won't hit the brakes for any reason. A car at 55 mph is covering 80 feet each second. The average driver's reaction time is three-quarters of a second; the car travels 60 feet while the driver reacts. So, by the time a tailgater sees the brakelights on the car in front, it's too late: if the car in front is braking hard, the tailgater is going to run into it. He has to; he's thrown away all his other options.

The strange thing is the tailgater doesn't gain anything by following too closely. He's not getting to his destination any faster. He's wasting gas because he has to overreact to every slight change the car in front makes. And he's wearing out his nerves because he's put himself in an unnecessarily tense situation. It's all loss and no gain for the tailgater.

Even though it makes no sense, most cars still follow too closely. Nowadays, the rule-of-thumb is to stay 2 seconds behind the car you are following. That equals 160 feet at 55 miles an hour. How many cars on the highway are at least 160 feet apart? Express your own individuality: if you follow at the correct distance, you'll be one of the few sensible drivers on the road.

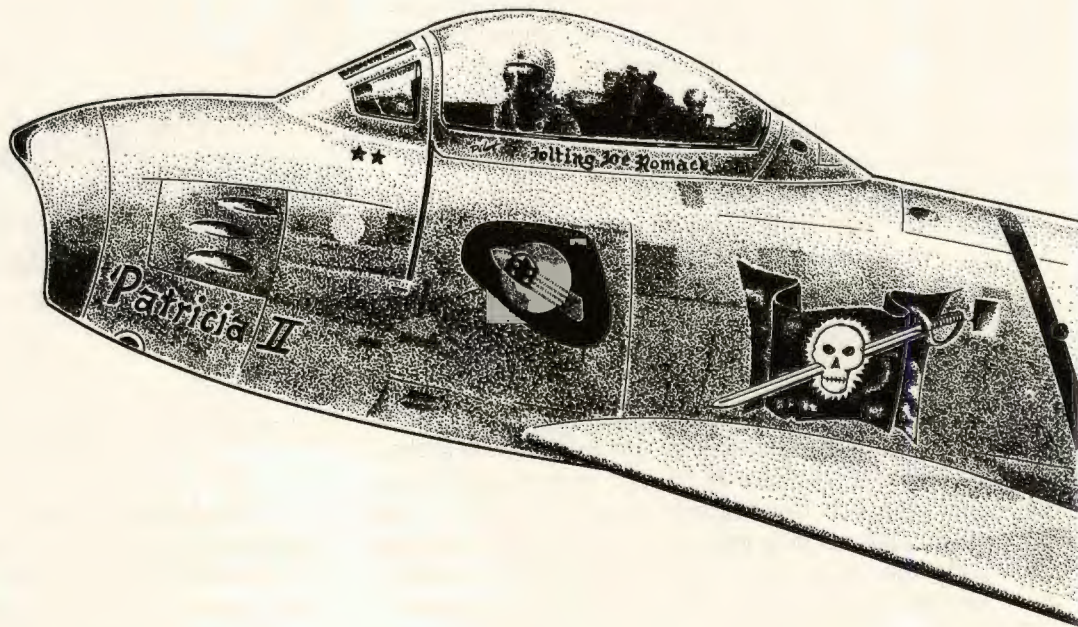
DANGER AT THE OL' SWIMMING HOLE

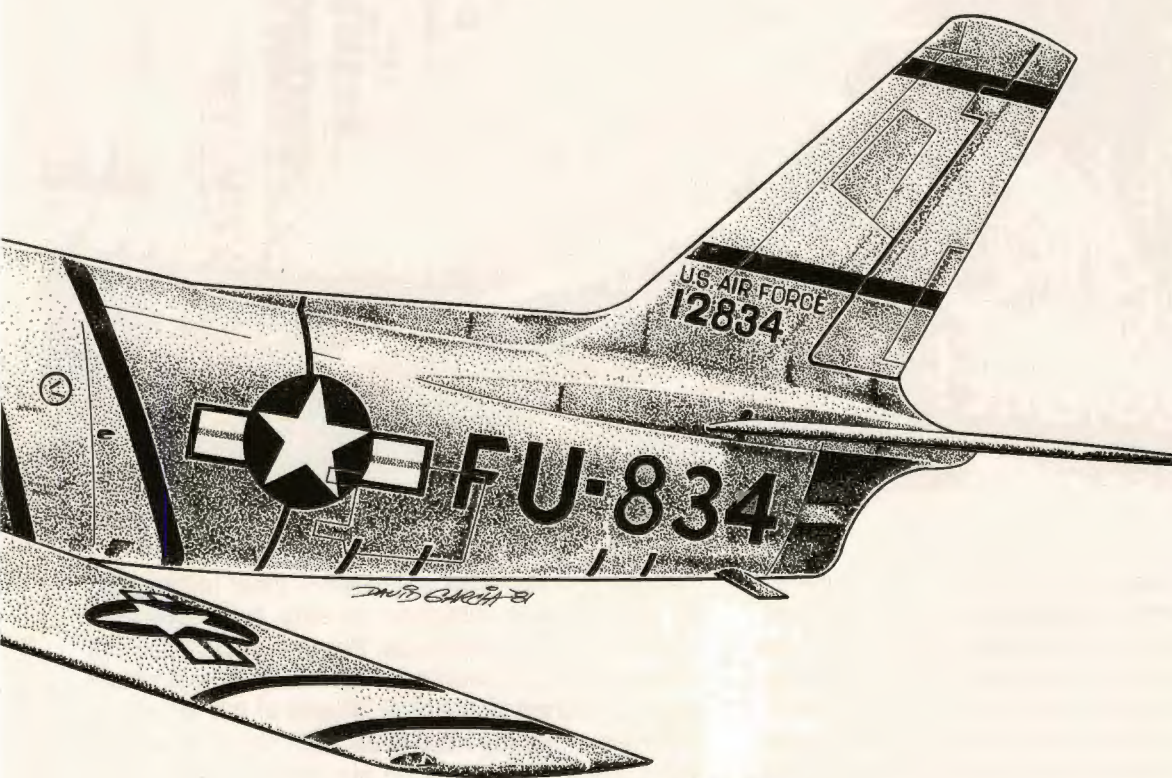
The group of airmen had heard there was a swimming hole near the base, so they set out to find it. Eventually they came upon it, ignoring the no-trespassing signs in the process.

One of the airmen climbed a tree on the shore of the pond. The tree had a platform over the water. At the same instant that he dove from the platform, another airman swung on a rope attached to another tree; the two of them collided 5 feet above the water. After they fell into the water, only one of them came back up to the surface. The body of the airman who dove from the platform was found 2 hours later in 40 to 50 feet of water.

This case points out a problem with swimming holes, quarries, and the like, besides the danger of swimming in unknown waters. When something does go wrong, it takes a while to get help. And in water that deep, you can't save someone without the right equipment. In a supervised swimming pool, this incident wouldn't have happened; but if it had, the airman could have been pulled out of the water immediately and given medical treatment.

F-86 E





BARRIERS AND CABLES

Editor's note: Last year, an F-5 in TAC suffered heavy damage when it engaged an MA-1A barrier. Even though it was his home field, the pilot was not aware that the arresting gear was modified for hook-equipped aircraft, so he didn't put the hook down. When the airplane took the barrier, the main gear collapsed due to side loads; the airplane came to rest on its nose gear and stowed tail hook. Maybe a quick review of the different types of arresting gear could keep the same thing from happening to you!

By Mr. Donald N. Cain
Senior Engineering Technician
4700 ADS, Peterson AFB, CO

The Air Force didn't have an arresting system of any kind until 1953. Then we installed the first MA-1 system. Back in those days only the Navy and

Marines had tailhooks so the MA-1 (later redesignated MA-1A) was designed to stop our "hookless" USAF tricycle-gear birds. The system consists of a 4-foot high nylon webbing "barrier" and a pendant cable stretched across the far end of the runway or the overrun. As the nosewheel strut hits the webbing and pulls it along with the aircraft, the webbing, in turn, pulls the cable upward so that it lodges against the main gear struts. There are about 500 feet of ship anchor chain hooked onto each end of cable. The progressive weight of each additional link dragging behind the plane creates the increasing drag that slows, then stops us. Because the MA-1A arrests without the use of a tailhook, it is known as an aircraft arresting barrier or simply "barrier." The MA-1A Modified is the same as the MA-1A as far as "non-hook" airplanes are concerned. The modification is that we've stretched another cable 36 feet in front of the original pendant cable. Rubber disks spaced 6 feet apart along the cable hold it 2 1/2 inches above

the runway in order to catch hook-equipped airplanes. This hook cable is also attached to the anchor chain and it works just like the MA-1A. Thus, the MA-1A Modified is capable of arresting both hook and nonhook equipped aircraft.

One thing to keep in mind is that the MA-1A is unidirectional. You can only safely engage the MA-1A at the far end of the runway, and it has no provisions for an approach-end arrestment.

The BAK-9 is a bidirectional (you can hook it from

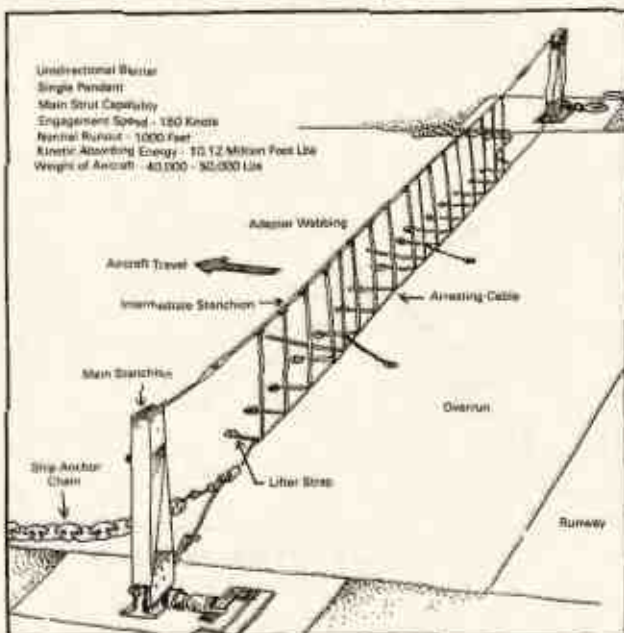


Fig 1. MA-1 and MA-1A

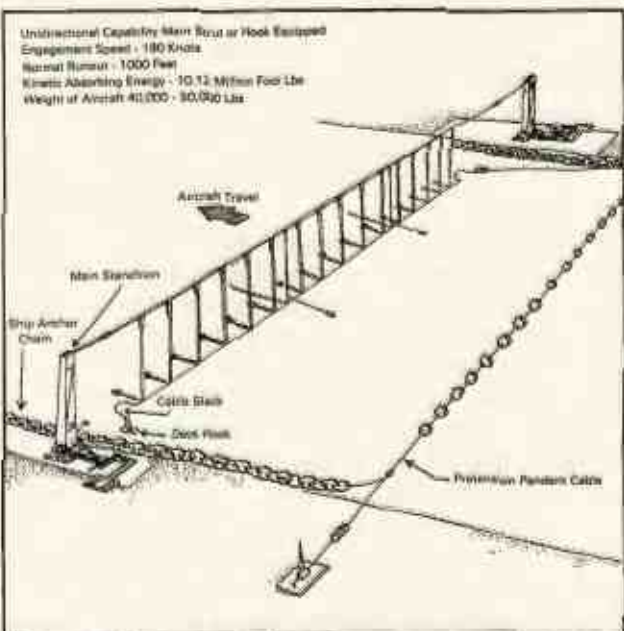


Fig 2. MA-1/MA-1A Modified Arresting System

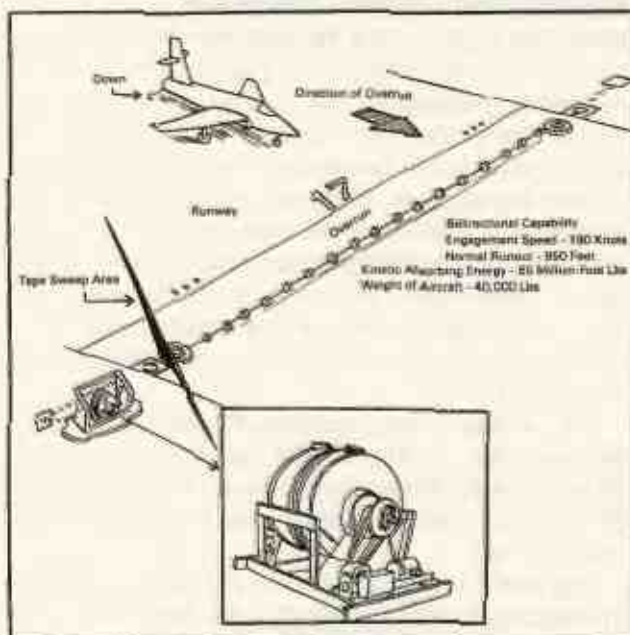


Fig 3. BAK-9

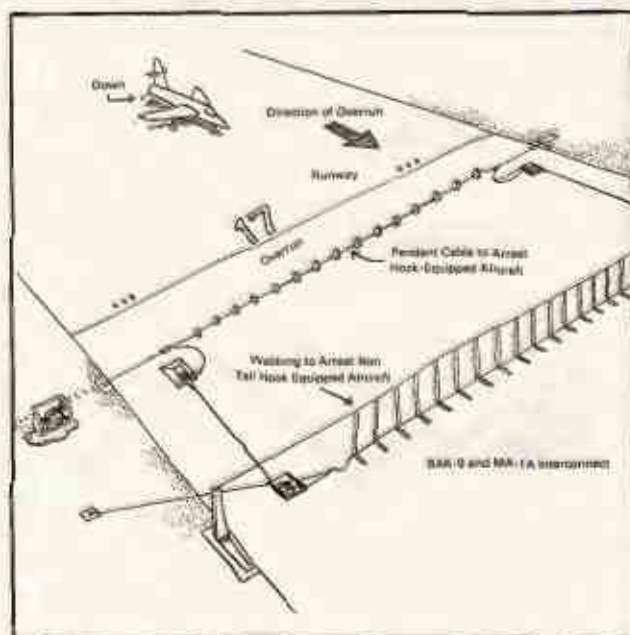


Fig 4. BAK-9 and MA-1A Interconnect

either direction) arresting system that uses two B-52 wheel brakes to slow and stop airplanes during the arrested runout. We assume the designers figured that anything that can stop a "Buff" can surely stop a fighter. The brakes are mounted on a common shaft and each controls a rotating drum which holds about 1,200 feet of nylon-and-steel-mesh "tape." Each tape is connected to one end of a cable stretched across the runway. The tape is attached to the far end of the cable through rollers and a channel under the runway or overrun. As our hook catches the

BARRIERS AND CABLES

cable, we begin to pull the tape from the drums. As the drums spin, they drive pumps which supply hydraulic pressure to the brakes. The faster the drums spin, the more pressure these hydraulic pumps send to the brakes and the harder they work to stop the airplane. After the arrestment runout, an electric motor retrieves the tape and the cable, and residual brake system pressure holds tension on the cable. Theoretically, all runouts should be about 950 feet. This distance will vary somewhat based on system setting, aircraft weight, or ground speed at arrestment.

We can also interconnect the MA-1A system to the BAK-9 system to stop aircraft that don't have hooks. When the MA-1A pendant cable is connected to the BAK-9 hook cable, it eliminates the need for the anchor chain.

The BAK-11 device is a more recent development in arresting nonhook aircraft. Like the MA-1A, the BAK-11 system places the arresting cable across the front of the main landing gear struts to slow, then

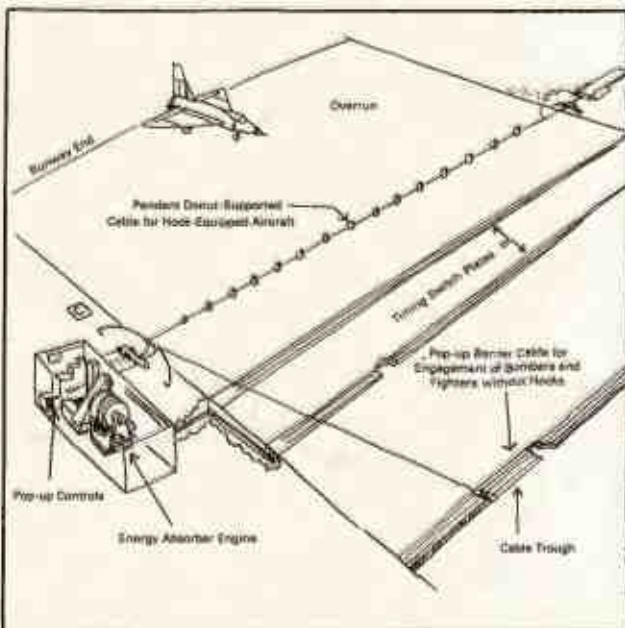


Fig 5. BAK-11 or "Pop-up" cable for nonhook aircraft and pendant cable for hook-equipped aircraft

stop the aircraft. The cable lies in a reinforced concrete trough across the runway or overrun and can be connected to any standard energy absorbers. Before engaging the cable, the aircraft tires pass over two timing switch plates stretched across the runway or overrun. These switch plates tell a computer how fast the aircraft is rolling and when it should engage the pendant cable. Compressed air then ejects the cable out of the trough and in front of the

main gear struts at the precise instant to assure a successful engagement. Although the BAK-11 is designed primarily for nonhook aircraft, we can delay firing the cable so that it ejects to catch the tailhook rather than the main gear.

Like the BAK-9, the BAK-12 is bidirectional and uses B-52 brakes. In the BAK-12, one B-52 brake is

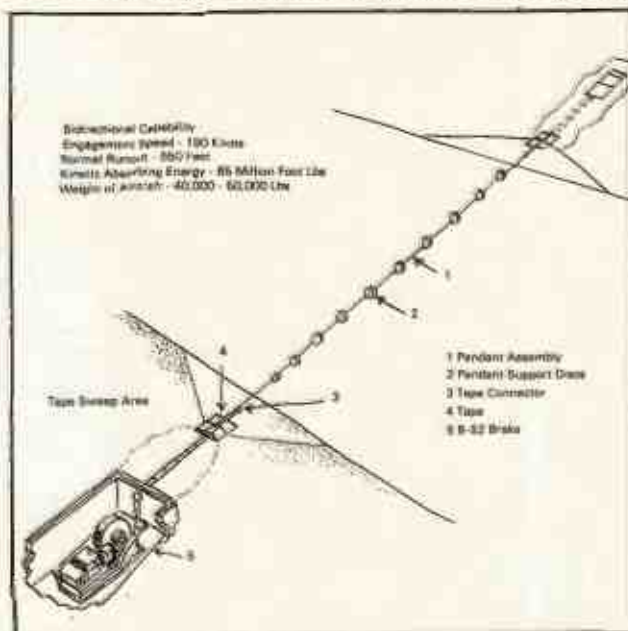


Fig 6. BAK-12 Pit Permanent Type

on each side of the runway. Separating the two brakes increases the BAK-12's capability and makes it more portable. When installed in an "expeditionary" (portable) configuration, the braking systems are merely secured above ground. When, "semipermanently" installed, they are mounted above ground on a concrete pad, and in the "permanent" configuration, they operate below ground from a concrete pit.

The Dual BAK-12 is exactly what the name implies. This system uses four sets of B-52 brakes (two on each side of the runway) that can be interconnected to a single hook cable thus providing significantly greater stopping power. Because the additional absorbers may be interconnected, the system can be configured for either single or dual operation. In the single mode it's like a normal BAK-12.

The BAK-13 is like the BAK-12 except that it uses water/glycol-filled liquid turbines instead of B-52 brakes. The hydraulic turbulence created between the rotor vanes and stator vanes creates a braking effect directionally proportional to the force created by the aircraft pulling out the tape—much like an

automobile's automatic transmission.

The BAK-14 is a retractable hook cable support system used in conjunction with the BAK-12 (or other comparable system). The hook cable is recessed beneath the runway and raised or lowered by remote control from the tower.

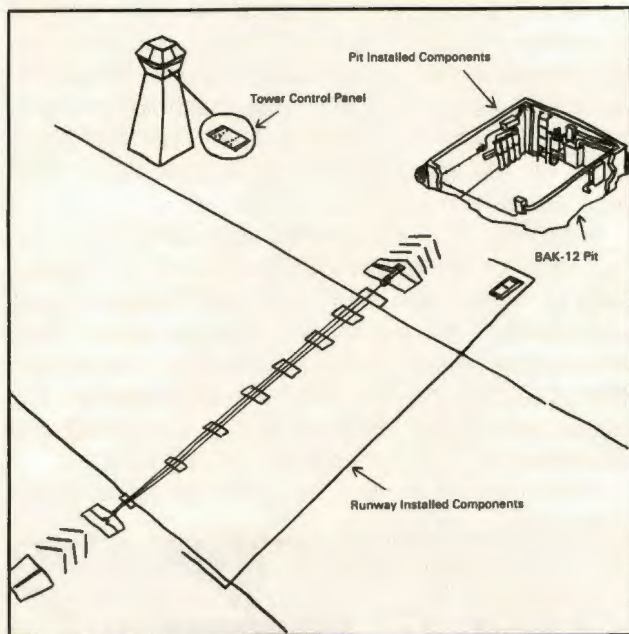


Fig 7. BAK-14 Hook Cable Support System

These, then, are the different kinds of arresting systems we can expect to find at most Air Force bases. You can find the kind of system and its location on each runway by looking at the runway sketch on the terminal letdown plate or by turning to the proper page in the FLIP-IFR Supplement.

It might not be a bad idea right here to mention some terminology. An arresting system that engages without the use of a tailhook is a "barrier." FLIP documents refer to this as a "Jet Barrier" or "J-Bar." Our basic MA-1A is the only true barrier USAF uses. The thing to remember is that, in most cases, you have to call "Barrier, Barrier, Barrier" to alert the tower operator to erect the webbing.

Arresting systems that require a tailhook for arrestment are referred to as "Arresting Gear" or "A-Gear" in the FLIPs and as "Arresting Cable" or "Hook Cable" in other publications. With the exception of the BAK-14, all arresting gear or hook cables are normally set in the ready position and you need not call the tower to ready them at any U.S. base. Since the BAK-14 is remotely controlled, you must call "Cable, Cable, Cable" to have the hook cable raised for engagement.

Now don't say, "Oh, everyone knows this," be-

cause some time ago a pilot on a cross-country found that he had marginal braking on a wet runway and purposely steered his fighter off the side of the runway, shedding his gear in the process, rather than going off the far end. The base where this happened had issued a "J-Bar inop" NOTAM and the tower told him that the barrier was out of service. Now what the NOTAM and the tower were talking about was, in fact, the Jet Barrier—in this case the MA-1A—and it was out of order. Unfortunately, the pilot didn't know that the BAK-9 arresting gear that he rolled over (with his hook up) was fully operational. All he had to do was drop his hook and he would have gotten a "Tape Dragon" plaque rather than a mishap.

It's probably safe to assume that all of us have landed at many a strange field and never given a thought to what kind of arresting systems the runway had and where they were located. We've all landed on them and run over them, but how many of us really know, as we bump over that cable, if it will stop us when we need it. How much can we weigh and/or how fast can we be going for that cable to safely grab on and hold us. In a way, barriers and arresting gear are sort of like fire extinguishers: we all see those extinguishers standing in a corner or hanging on a wall, but how many of us could use them effectively? As you read this, can you say at what airspeeds and weights the arresting systems at your base can stop your plane on your next mission? That may be the mission on which you'll need to know.

We have all the necessary information available; the secret is knowing this information at that instant when we really need to know it—when a barrier or arresting gear engagement is the only way to safely stop our aircraft. We can do that by making a complete review of the arresting systems a part of our mission planning. Really get into the FLIP IFR Supplement and find out which systems are where. Then review their location on the letdown plate before starting the descent. Most of us usually check the runway length, width, and elevation before we land; checking the J-Bar and A-Gear locations will take only a few more seconds.

Arresting systems are like emergency procedures: we use them very rarely, but when we need them, we need them right now!

[P.S. Now that you know all about J-Bars and A-Gears, have you thought about what to do after you engage one?—Ed.]

—Adapted from February 1977 *Interceptor*

chock talk

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

A-7 FLAMEOUT

Toward the end of an air combat training mission, the A-7 pilot was rejoining with his leader when the engine flamed out. The pilot quickly switched to the manual fuel control and was able to restart the engine. He returned to base and landed, streaming fuel along the way.

Investigation showed that an engine specialist had improperly installed the starter fuel line to the high-pressure-fuel shutoff valve while accomplishing a TCTO. He had incorrectly inserted the bracket for the T-5 wiring bundle between the faceplates of the starter fuel line and the high-pressure-fuel shutoff valve. This error resulted in a small gap between the faceplates. The gap meant that the O-ring seal was bearing all the pressure of the fuel, which eventually caused it to fail. The resulting fuel leak interrupted the fuel flow enough at idle thrust to cause the flameout.

The relight attempt in manual fuel worked because the throttle was out of the idle position. The starter fuel line was bypassed and more fuel flowed to the manifold through the main fuel line. So the engine ran well enough to make it home with the leak. It's a good thing, because when your engine quits in a single-engine airplane like the A-7, you either restart it or walk home.

PROFESSIONAL OR AMATEUR?

By SSgt Michael A. Prato
58 EMS, Luke AFB, AZ

We've heard the story about the doctor who left a forceps inside of his patient during an operation. We wonder how a professional could do something as amateurish as that. Yet, daily, technicians leave wrenches, nuts, or pieces of safety wire inside aircraft. We too are professionals like that doctor, and that aircraft is a lot like a patient.

A professional is someone who conforms to the technical or ethical standards of his or her chosen field of work. Does your daily performance fit that definition? If not, maybe you need to take a close look at your values and characteristics. I'm sure no one wishes to be accused of being amateur, because an amateur is one lacking in experience and competence in an art, science, or field of work.

If you do not want to be called an amateur just follow these helpful hints:

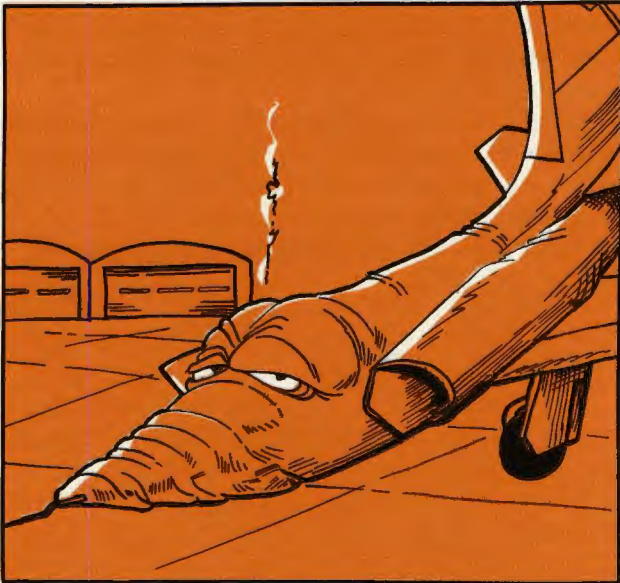


1. Use your FOD bag as it is meant to be used.
2. Use a screw depth gauge to determine the proper size screw for use.
3. Use screw bags when removing panels.
4. Know what and how many of each item you took with you including nuts, bolts, washers, and fasteners. When you're done make sure you take back the balance of the items taken with you.

If you do all this, you can truly be called a professional.

SUPERVISORY SLIP-UP

The aircrew arrived at their T-38 and did their normal walkaround. They got in, started the right engine, and began to start the left engine. As the RPM increased, the hydraulic pressure also increased. Then the landing gear warning horn came on, together with the red light in the gear handle; and the gear down indicator lights went out. At the same time, the nose gear retracted, and the airplane came to rest on its nose. Both gear handles stayed in the



down position throughout this sequence of events.

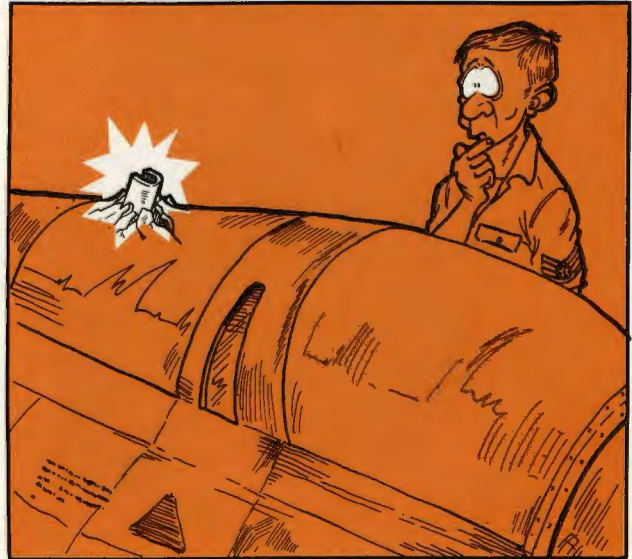
Turned out that on the flight before, the airplane had a speed brake malfunction. A specialist who was not properly qualified was dispatched to change the speed brake cannon plug. He changed the landing gear cannon plug instead. Working without supervision, he attached the wires on the landing gear cannon plug so that the gear would retract with the landing gear lever down. Later, the supervisor didn't notice the error when he inspected the work.

That kind of "supervision" doesn't do a trainee much good. And it sure doesn't do the aircraft any good.

CANOPY PUNCTURED

An RF-4C crew chief was servicing the aircraft pneumatic system. He manually opened the rear canopy and installed the safety strut, but he didn't install the safety retaining pin. As he applied high pressure air to the pneumatic system, he noticed the

canopy strut was cocked and wasn't holding the canopy fully open. He tried to physically raise the canopy to replace the strut; but when he did this, the strut fell completely away from the actuator rod. The freshly charged pneumatic system drove the canopy down, and it was punctured by the strut.



The crew chief had failed to follow the tech data in two ways: he didn't install the safety pin in the strut, and he didn't place the normal canopy selection lever in the up position before charging the pneumatic system. But he was lucky. In the past, jammed struts have caused inadvertent seat ejections and seriously injured people. This time it only cost a canopy, not a life.

MISRIGGED AFTERBURNER

The aircrew was practicing air-to-air combat in an F-4 overseas. The pilot pushed the throttle up to get afterburner as he started a climbing turn into the fight. The right engine flamed out. No longer in the mood for dogfighting, the pilot leveled out and restarted his engine. It started okay, and the aircrew took the bird home and landed.

The night before, the afterburner fuel control had been replaced. While rigging the controls after the replacement, a technician had inserted the rig pin into the nozzle area control while the control was set incorrectly. There is another opening in the cam which allows insertion of the pin just as if it was being inserted in the proper slot in the cam.

The fact that the pin fits is no guarantee that it is in the right place. We need to crosscheck more than that alone to be sure of the rigging.



Motorcycle Safety:

the trend is bad news

Motorcycle fatalities were so bad over the summer holidays up in Wisconsin that there was talk about making motorcycle helmets mandatory again—either that or making all motorcyclists agree to donate their organs for transplants. That would give some meaning to the loss of lives taking place among cyclists without helmets. At least somebody, somewhere, would benefit.

The problem isn't confined to Wisconsin. Nationwide, motorcycle fatalities have increased over 40 percent since 1976, the year Congress removed the sanctions against states without laws requiring safety helmets. In the last 4 years, 28 states have repealed or weakened their helmet use laws.

During this same 4-year period, the Traffic Safety Center of the University of Southern California did a study of motorcycle accidents for the Department of

Transportation. Harry Hurt, a professor of safety at USC and a motorcyclist himself, directed the study. The findings are based on detailed, in-depth investigations of 900 motorcycle accidents in the Los Angeles area and a review of police reports of 3,600 motorcycle accidents, plus interviews with more than 2,300 cycle riders.

The study shows that 78 percent of the riders who suffered fatal injuries were not wearing helmets. The study notes that the use of safety helmets provides motorcyclists with the most significant protection against critical head and neck injuries. On the other hand, the investigators found that helmets do not limit the hearing or vision of motorcyclists in conditions before a crash.

Visibility was also an important element. Some 51 percent of the accidents were caused by motorists who said they did not see the cyclist at all or not until it was too late to avoid a collision.

Other key findings of the USC study show that:

- More than half of the riders involved in accidents had less than 6 months experience with the particular motorcycle on which they had the accident.
- About 93 percent had no professional or formal training. They were either self-taught or received instructions from friends who were also self-taught.
- In multi-vehicle accidents, 65 percent were caused by drivers of cars or other vehicles.
- Vehicle failure accounts for about 9 percent of the single vehicle accidents, and most of the failures are due to faulty tires.
- Alcohol consumption and drug use by the motorcycle rider are present in only 12 percent of all accidents, but are involved in 43 percent of the fatal accidents.
- About 12 percent of the cyclists had no license or were riding with a revoked license.
- More than 50 percent of the cyclists involved in accidents are between the ages of 15 and 25.

The study also notes that the use of gloves, heavy footwear, and heavy garments is clearly effective in reducing minor and moderate injuries of abrasion. It also shows that motorcycle riders without eye protection are more often involved in accidents.

If we don't want to become one of the fatal statistics, it looks like we should wear a helmet, eye protection, and bright protective clothing. We should ride with our headlights on to further increase visibility. We should be sober, well-trained, and licensed cyclists who drive defensively. Maybe we can reverse the trend in motorcycle deaths. ➤

TAC Safety Awards

Individual Safety Award

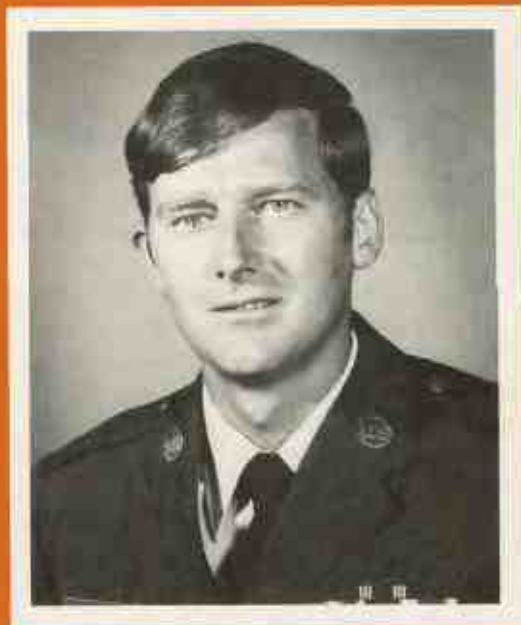
MSgt Joseph S. Kellison is this month's winner of the Tactical Air Command Individual Safety Award. He manages ground and motorcycle safety programs in the 4756th Aircraft Generation Squadron, USAF Air Defense Weapons Center, Tyndall Air Force Base, Florida. Sergeant Kellison has developed vigorous and informative programs which have resulted in a significant decrease in ground accidents. To enhance job safety, he incorporated training in Air Force occupational safety and health (AFOSH) standards into squadron in-processing. He also devised a computer-assisted method of scheduling motorcyclists for motorcycle safety training, and he has been personally involved in the training and testing of new cyclists. Sergeant Kellison's efforts in all areas of ground safety have led to increased safety awareness throughout the squadron. He has earned the TAC Individual Safety Award.



MSgt Joseph S. Kellison

Crew Chief Safety Award

A1C Roy M. Williams is this month's winner of the Tactical Air Command Crew Chief Safety Award. Airman Williams is a dedicated crew chief in the 27th Aircraft Generation Squadron, 27th Tactical Fighter Wing, Cannon Air Force Base, New Mexico. He has shown high concern for safety day-in and day-out while still resolutely accomplishing the mission. He demonstrated his safety alertness recently when he discovered a fuel leak under his F-111's right engine. He obtained assistance from a fuel systems specialist who traced the problem to a bad fitting on the engine's main fuel control. The problem was quickly corrected, and the aircraft took off on time. On another occasion, Airman Williams found the cockpit ejection handles were not properly safed. He contacted an egress specialist who agreed that the ejection system safety pins needed replacing. Airman Williams' attention to detail may have prevented an inadvertent ejection of the F-111's crew capsule. His vigilance on behalf of safe and effective mission accomplishment has gained Airman Williams the TAC Crew Chief Safety Award.



A1C Roy M. Williams

WEAPONS WORDS

SUPERVISION WASN'T ENOUGH

It was a highly supervised flight of F-4s. Number 1 was getting a tactical flight evaluation from number 2, a unit flight examiner; at the same time, number 2 was being checked by a higher headquarters flight examiner in the number 3 airplane. Number 4 had the group DO in the back seat to keep an eye on the checkers and the checkees.

They all went up to the tanker to get some gas before they went to the gunnery range, but they never got to the range. When number 4 disconnected from the tanker, five BDU-33 practice bombs fell off his airplane. Fortunately, they were over a sparsely populated area, and no one was hurt.

It turned out that the pilot had set up his switches ahead of time. He rotated the station selector knob out of the safe position, not noticing that the master arm switch was also out of the safe position. As he finished refueling, he hit the pickle button and released the bombs when he meant to hit the air refueling disconnect button.

Needless to say, in that unit they no longer turn the station selector out of the safe position until they are on the gunnery range. At least they're not supposed to. But, no matter how closely you supervise, you can't check somebody else's switches. That's why self-discipline is the most important form of discipline.



SUPERVISORY SLIGHT

A weapons troop was removing the armament control panel from the cockpit of an F-15 overseas. A yellow and black striped handle was in his way, so he asked his supervisor if he could move it. Without checking to see which handle the man was talking about, his supervisor said okay. The weapons troop removed the safety pin and pulled the lever, which happened to be the canopy thruster lever used to jettison the canopy. He heard a loud bang. The canopy did not jettison because it was secured up. Not realizing what had happened, the man continued to remove the weapons panel. After he finished the job, he told his supervisor about the loud bang he'd heard; but his supervisor didn't investigate to find out what had happened.

Later that day, an egress specialist found the canopy thruster lever extended while he was checking the ejection seat. Further investigation showed that the explosive initiator had fired and the canopy jettison system had functioned.

Effective supervision may not eliminate all our mishaps, but it sure improves the odds.

FORCE FEEDING A JAM

While unloading the 20 mm gun in an F-106, the load crew encountered a couple of minor jams which they quickly cleared. After the last expended cartridge case came out, they cycled the gun to make sure it was empty. Next, they began to reload it. They loaded the first 15 rounds by hand and, after that, used the pneumatic system. The pneumatic system loaded 500 rounds and then jammed.

The crew first tried to clear the jam with the handcrank, but that didn't work. The crew chief decided to try to clear the jam using the pneumatic system; it loaded 15 more rounds very slowly. Finally, the crew chief stopped the reload operation.

It was a little late. When they force-fed the last 15 rounds in, one of the rounds bound in the drum partition. The inner drum continued to rotate the



ammo forward which forced that round out of the drum partition track and turned it sideways. It bent the inner drum, and 14 projectiles were separated from their cartridge cases. One of those 14 loose projectiles lodged between the drum partitions, where it was forced halfway through the outer drum housing.

The damage to the drum assembly was over \$11,000. That's why the basic loading tech data says to check out a sudden stoppage instead of trying to force it.

UMBILICALLY UNDONE

While downloading an AIM-9 captive training missile after a mission, the load crew noticed black residue around the missile's exhaust ports. The gas grain generator had fired; that shouldn't happen on a captive missile. It fired because the captive-flight adapter plug was not installed on the umbilical plug of the missile.



Apparently, the weapons crew hadn't followed the tech data when they loaded the missile. The aircrew didn't check the umbilical on their preflight because the umbilical cover was closed. So, assuming it was okay, they flew the airplane.

Next time, we expect the aircrew will have the crew chief open the cover for them. And we hope they'll find that the weapons crew has learned to follow the tech data.

AN ATTENTION GETTER

The tech sergeant was loading BDU-33 bombs into a SUU-20 dispenser on a Phantom. After loading the first bomb, he reached for a safing pin with his left hand, keeping his right hand on the bomb. The bomb fell out of the dispenser's holding arms and the man's grip. It dropped nose-first to the concrete and fired, even though its safety block was still installed. The blast from the spotting charge blew by the sergeant and dented the SUU-20 dispenser.

The tech sergeant had failed to fully lock the bomb into the dispenser's holding arms. Maybe he was a little bit complacent; after all, it was only a little practice bomb, and it still had the safety block in place. If he was complacent before, he isn't now. In weapons, these little things have a way of getting your attention.

the Instant Sea Level Button

By Lt Col Reg Fisher

TAC Asst Chief of Safety for Reserve Forces

Are high altitude, high temperature, heavy-weight takeoffs still biting us—after all these years? Yep! After all the articles, stories, and pictures of unsuccessful aborts, including smoking holes and molten metal, that have appeared in our safety publications over the last 30 years, can you believe that it still happens? Well, it does; we've added two more in recent months to the long historical list. And for the same well-known, widely publicized reasons.

A fellow from the north (sea-level country) finds himself out in the far west (5,000-foot-high-runway country) at a cross-country stop base. It's 98°F, with a 2½-mile runway and 49,000 pounds of potential flying machine. All set to go? Not really; but soon it's EPR OK, accel checks OK, and with over a mile of runway left, at exactly 177.63 knots, as computed, up comes the nose, right now, to takeoff attitude. The sea-level headbone is trying to minimize his time as the world's fastest trike, since this length of takeoff roll is not any part of his strong habit patterns. Well the hypersonic trike never gets above 3 or 4 feet (ground effect), and the abort is an abomination. Our northern-low-country dude walks away swearing that the thing just refused to fly: no "lift" in the air at that place, etc., etc.

So we all get to take a close look at it after the fact, armchair style. The tower confesses that at takeoff time it was actually 2 to 4 degrees hotter than the temp used by the pilot to compute. And the computations were, maybe, 2 knots short. He never really got to takeoff speed!

A formula used by many over the years works just swell to prevent this; it came from the days of heavy birds and marginal power engines. When you reach nose-wheel-lift-off speed, and everything else looks good, hesitate for a moment for insurance. The airspeed indicator is not a precision instrument: on any given day, more than 20 percent of your line aircraft will be off 2 to 3 knots, or more, in the takeoff

speed regime. Why gamble on yours being one of the few error-free birds? Also, when you rotate, pull back gently, just positively enough to reach takeoff attitude at or *slightly after* takeoff speed, but never before. Here the error mentioned above also applies, and we guarantee that if the book takeoff speed is, say, 187.3 knots, it will *always* fly at 189 knots, and even feel better! But we used more runway, you say? A few hundred feet maybe, not enough to argue about compared to guaranteed takeoff distance. If the accel checks are OK, at least you know that you are going to get off, provided you don't rotate too soon or too nose high.

So you've tried all this, and the thing still just doesn't want to fly. Have you forgotten the "INSTANT SEA LEVEL BUTTON"?

Yes—the "Emergency Instant Sea Level Button"! That's what it is to you at that moment! You push *that* button, and it's just like you were at sea level instantaneously: your bird that wouldn't fly leaps off the ground! Well, it's really termed the "EXTERNAL STORES JETTISON" button—the "No-No" button, the one you never get to push. And two full tanks on 2½ miles of empty runway look a lot better than a kneeling machine in the overrun, bashed gear, and rocks in the ninth stage blades! Think about it: one hard push inside the little red circle and you're instantly back at the beach!

So you say, but you don't fly a big heavy fighter or attack aircraft with only one engine. Well, how about an A-37 with six (count 'em) bags full? Standard equipment. Same thing happens; same rules apply; same "Sea Level" button works.

Stan Evalers and IP's take note: On those simulator checks of emergency procedures, when the procedure ends in "Ext Stores—Jettison if necessary," have the pilot push the Ext Stores Jettison Button—HARD, every time. Not, "I'd push this if I had to." Help break the "No-No" button syndrome. ➤

TAC Quarterly Awards



SSgt Steven M. Doss

Weapons Safety Award of the Quarter

SSgt Steven M. Doss is the recipient of the Tactical Air Command Weapons Safety Award for the second quarter of 1981. Sergeant Doss is a munitions inspector with the 24th Consolidated Aircraft Maintenance Squadron, 24th Composite Wing, Howard Air Force Base, Panama. He has consistently discovered and corrected safety hazards. He found a problem with the fire extinguisher squib system on the wing's UH-1N helicopters; he reported it and then personally monitored the removal and replacement of the squibs. In addition, Sergeant Doss developed a better system for tracking all squibs to make sure they are replaced at proper intervals. Besides contributing to safety in the U.S. Air Force, Sergeant Doss assisted the Panamanian Air Force in correcting defects he found in their foreign-made 2.75-inch rockets. Since the rockets lacked tech data, he used USAF tech orders as a guide and improved the safety of the rockets. Sergeant Doss has shown thorough job knowledge and personal commitment and has created a safer environment for both United States and Panamanian Air Forces. He is well deserving of the Tactical Air Command Weapons Safety Award of the Quarter.



MSgt Andrew DeBusk

Ground Safety Award of the Quarter

MSgt Andrew DeBusk is the recipient of the TAC Ground Safety Award for the second quarter of 1981. Sergeant DeBusk is the squadron safety and vehicle control NCO for the 24th Civil Engineering Squadron, 24th Composite Wing, Howard Air Force Base, Panama. He has developed a dynamic and innovative program. He began an AFOSH job safety training program for all work centers and conducted weekly safety meetings for civil engineering personnel on Howard AFB and Albrook AFS. To reach the large number of Panamanians assigned to the work force, he included Spanish safety films and brought a translator to his weekly meetings. Sergeant DeBusk also instituted a squadron "problem-driver" program and obtained CPR (cardiopulmonary resuscitation) training for the unit's workers. Thanks in good part to his efforts, Howard AFB has received the TAC Traffic Safety Award for two consecutive years; and a recent MEI rated the squadron safety program as excellent, with one of the best safety management books in TAC. Sergeant DeBusk's enthusiasm and involvement have resulted in a truly effective safety program and have earned him the Tactical Air Command Ground Safety Award of the Quarter.

the Haircut was Free but...



By Sgt Dale J. Nusbaum
507 TAIRCW Safety

"Well, well, if it ain't the Kripple Kid," Harry greeted George sarcastically.

"Hey, enough with the cracks; I still hurt," George answered as he limped up.

They ambled down the street, and Harry said, "Looks like a nice day for a cookout, doesn't it?"

"Yeah, sure does. Let's ask a couple of the ladies from work if they want to cookout," said George with a wink.

"OK, you start the grill and I'll ask the women," Harry said.

Well, as luck would have it, the wrong person was going to start the grill. George didn't quite know what to use to start a grill. He did fine up to the point where he had to soak the coals with charcoal lighter fluid. The Master of Disaster was about to strike. "Oh no, there isn't any lighter fluid," he thought. "Well, that's OK, I'll just siphon some car gas."

So begins our epic of how not to cook out. It looked like the blow to George's head hadn't completely healed, or the hospital wrapped the bandage a little too tight. Anybody with any sense knows you don't start a grill by putting gasoline over the charcoal. But then, George "ain't got no sense." About an hour later, Harry arrived with the girls and the fixin's for the grill.

"We have returned," announced Harry as he and the girls strolled onto the patio. "Are you ready to cook up these steaks?"

"Yep, ready as I'll ever be," replied Doctor Doom. Let's get these babies on and cookin'."

Everybody was standing around when George pulled out a pack of matches and a cigarette. He lit the cigarette and walked towards the grill to start it. As he got about a foot away—KA-BOOM! George didn't need matches to light the grill; his cigarette worked just as well. The heat from the ashes were hot enough to ignite the gas vapors rising from around the coals. When the vapors ignited, the flame soared about 7 feet high. The explosive blast catapulted George off the ground and bounced him up against the dorm wall. The fireball from the blast burned George's face, hands, arms, chest, and legs, not to mention searing the once abundant hair on those parts of his anatomy. Harry and the girls, who were standing about 5 feet away, were also singed by the flame.

Harry glanced over at George and saw the gas can that George had used when he siphoned the gas out of the car. "Look, that nut used gas to start the charcoal," stammered Harry in a shaky voice to the girls.

The girls shot back in quivering voices, "That guy is crazy!"

George, sprawled on the patio, moaned, "Wha' happen?"

Harry screamed back in a half-crazed voice, "You fool, why did you put gas on the charcoal?"

George, still moaning, said, "I don't know, I didn't have any lighter fluid so I thought I would use gas."

Harry, still shook from the explosion, grumbled, "One of these days you just might learn to use your head for something other than a place to hang bandages."

So off to the hospital went George to make use of his medical benefits again.

The moral of the story is: *With the price of gas so high, why get burned twice?*

TAC TALLY



CLASS A MISHAPS	▶
AIRCREW FATALITIES	▶
TOTAL EJECTIONS	▶
SUCCESSFUL EJECTIONS	▶

TAC		
JUL	THRU 1981	JUL 1980
5	24	19
3	13	12
3	21	20
3	20	16

ANG		
JUL	THRU 1981	JUL 1980
0	3	9
0	2	8
0	0	7
0	0	4

AFR		
JUL	THRU 1981	JUL 1980
0	0	1
0	0	0
0	0	1
0	0	1

TAC'S TOP 5 thru JULY '81



TAC FTR/RECCE	
class A mishap free months	
41	33 TFW
34	1 TFW
33	31 TTW
21	49 TFW
20	355 TFW

TAC AIR DEFENSE	
class A mishap free months	
102	57 FIS
55	5 FIS
52	48 FIS
11	318 FIS
2	87 FIS

TAC GAINED FTR/RECCE		
class A mishap free months		
111	188 TFG	(ANG)
103	138 TFG	(ANG)
102	917 TFG	(AFR)
99	116 TFW	(ANG)
89	434 TFW	(AFR)

TAC GAINED AIR DEFENSE	
class A mishap free months	
108	191 FIG
89	102 FIW
85	177 FIG
51	125 FIG
34	119 FIG & 142 FIG

TAC/GAINED Other Units	
class A mishap free months	
144	182 TASG (ANG)
137	193 ECG (ANG)
132	26 ADS & 4787 ABGp
128	110 TASG (ANG)
124	USAFTAWC

CLASS A MISHAP COMPARISON RATE 81/80

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

TAC	1981	4.0	3.0	3.2	5.6	6.0	5.9	6.4					
	1980	2.0	4.0	5.2	4.4	4.7	5.2	5.3					
ANG	1981	9.3	4.8	4.6	3.3	2.6	2.2	1.9					
	1980	5.0	7.6	6.6	7.1	6.5	6.1	5.8					
AFR	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
	1980	0.0	0.0	0.0	0.0	0.0	4.3	3.7					

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

