

JANUARY 1964

TAC ATTACK

TAC Attack January 1964 3 1/2 Sec. to Eternity



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Pride

In my opinion our multi-million dollar aircraft should be crewed by non-commissioned officers. Unfortunately, this is not universally true today.

There are those who consider an aircraft crew chief, working under today's specialized maintenance concept, to be little more than a glorified filling station attendant . . . the man who checks the oil, airs the tires, puts in fuel and washes the windshield. Nothing could be further from the truth. A crew chief who does his job correctly plans much of the work schedule on his aircraft, requests the work orders and then supervises all maintenance done on it.

He does much to establish the quality of this maintenance. By taking pride in his work, he is in a position to insist that all who work on HIS aircraft take an equal pride in their work. They are there to satisfy him and he should be satisfied with nothing short of the best.

A good crew chief provides continuity between all tasks performed on his aircraft. He insures that everything is done that needs to be done . . . that no tasks are omitted when work is transferred between various specialist work crews. In essence, the crew chief is an aircraft manager. As such, he manages a highly complex and extremely expensive machine. He is responsible for it, and for the lives of those who must use it. Few tasks compare. We must man these positions with our best and most experienced non-commissioned officers.

W. C. Sweeney
W. C. SWEENEY, JR.
General, USAF
Commander



AND PROFESSION

Blind Obedience

*Forward, the Light Brigade!
Was there a man dismayed?
Not tho' the soldier knew
Someone had blunder'd
Their's not to make reply,
Their's not to reason why,
Their's but to do and die
Into the valley of death
Rode the six hundred*

WHO GOES TENNYSON'S "Charge of the Light Brigade." To many minds this poem symbolizes the perfect organization, the perfect military discipline. Just for fun, let's take a look to see if such blind obedience is really so perfect for the military.

First we'll take an aircraft commander who insisted on it from his crew. He told his copilot, in so many words, that he would do nothing unless ordered. All he wanted was an extra set of hands to pull up the gear and flaps. No distracting advice or comments—unless favorable to his ego. The copilot soon lost the habit of studying letdowns and doing other things not directly related to his own meager chores. He wasn't monitoring the letdown the night his proud leader turned right instead of left during the penetration turn and tried to knock the t 0 feet off a very solid moun-

Consider for a moment a tactical fighter squadron commander who has a squadron full of men who will give their all in blind obedience. His squadron is assigned a particularly nasty target. The commander must assemble all available intelligence to plan his mission. He will then have to brief his men in great painstaking detail on every single thing he thinks might happen during the attack and tell them how he wants them to react. This is a must. Remember, these people will do only what they are told to do.

As a consequence he will have to brief on many, many things that will never take place in the futile hope that his briefing will cover everything that will happen. His mission is doomed to chaos. This business of flying is too complex to consider every possi-

bility and his briefing is going to be too long and tedious for his men to recall everything they will need.

Far fetched? The MIG pilots tried to fight aerial combat that way in Korea and were slaughtered 12 to one by their self-sufficient foe . . . a foe who seldom briefed longer than half an hour and who limited his briefing to a few pertinent comments on weather, times on target and a general description of friendly activity.

We could afford brief briefings. We had a mutual trust in each other and relied heavily on that trust. Our tactics were rather simple, limited to fundamentals and, again, were tied closely to our trust in each other. They can be summed up in one word; Teamwork.

Another form of discipline is necessary—a discipline that is quite different from blind obedience. This is the discipline that makes a good wingman able to cover his leader thru a hot fight. It is a discipline born of pride. It is the reason some men are able to press-in to accurately bomb a heavily defended target. It isn't blind. The same man, flying wing in weather, will make a quick check of his instruments if he feels he is turning when he knows the flight should be going straight. If his instruments confirm the turn he'll advise his leader. If the leader fails to take appropriate corrective action and things start to look bleak, he'll again advise his leader and break out of the formation rather than knowingly dive into the ground!

Careful selection helps us get effective men to maintain and man our aircraft. By itself, this is not enough. Thinking takes a certain amount of practice. If we don't let our people think—don't encourage

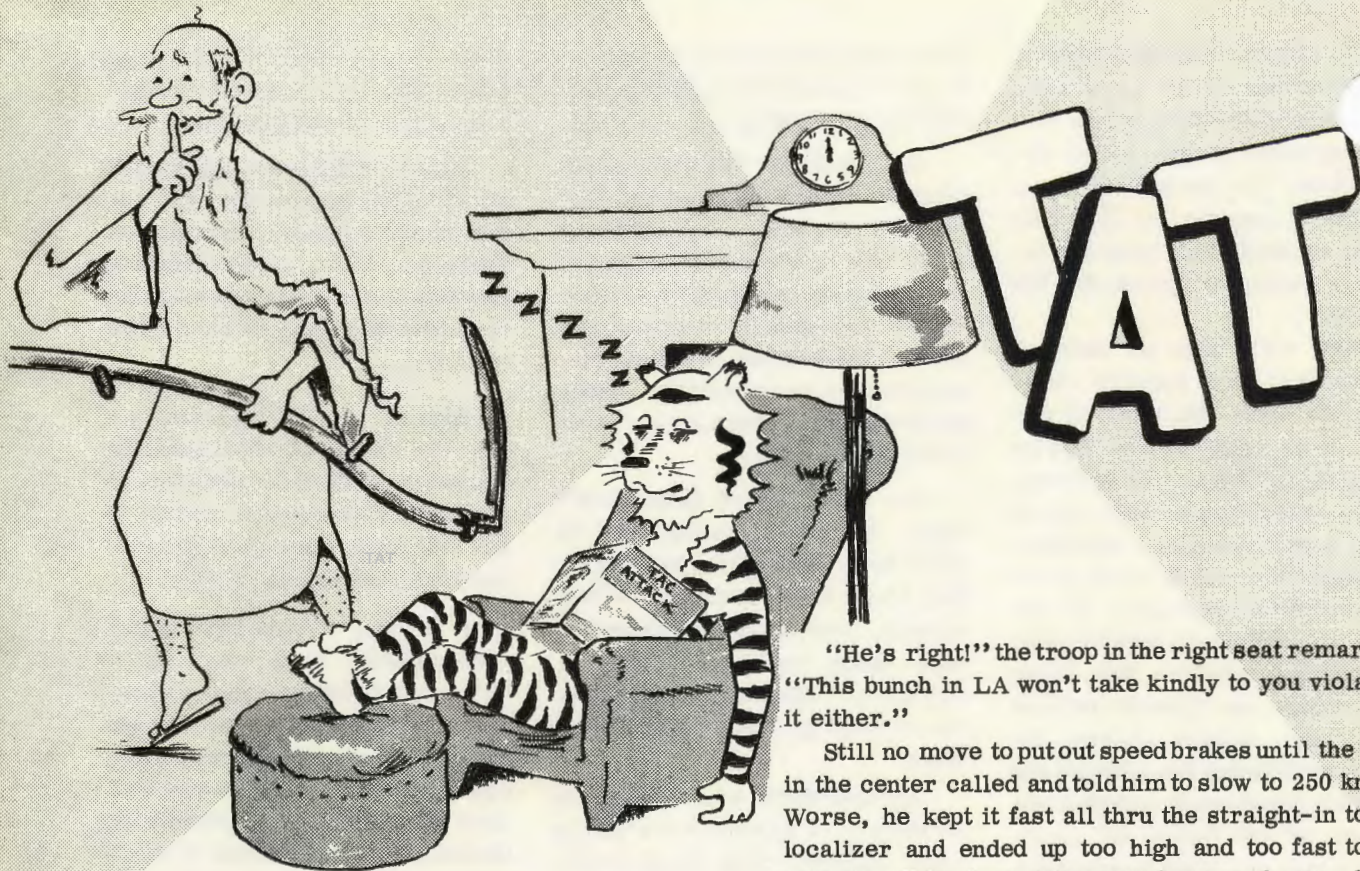
them to use their heads, they won't. They'll retrogress and become one of the six hundred.

This is why a good flight leader or aircraft commander has his men do their share of the mission planning . . . why he asks for their opinions and accepts and honestly evaluates their suggestions or criticism.

Similarly, it is the reason we have the form 847 which permits the greenest of green wingmen to complain if there is something in the stdn/eval manual or aircraft handbook that seems in error.

It is easy to lose sight of our responsibility along these lines. To accept direction without question. For example, not too long ago an experienced pilot made a practice GCA at 120 knots with over 400 gallons on board his T-33 because a note in the new dash one stated to add 5 knots for each 100 gallons over 500. Altho this resulted in an approach speed that could be as much as 15 knots slower than normal, this man accepted the note without question and proceeded to follow it. Under slightly adverse conditions such blind obedience to a typographical error could have resulted in a major accident.

If we, as an Air Force, expect to maintain our ability to dish out punishment on a 12 to one ratio, we should do our best to nurture the qualities that made this feat possible in Korea. We must keep alive the team spirit that makes every man want to do his part, share responsibility, and which keeps every man vitally interested in all factors affecting the operation . . . we must avoid becoming one of the six hundred in all phases of our operation.



YOU'D HARDLY KNOW it from checking the TAT house, but the new year actually arrived. Yes sir, it came in quietly and soberly. An undiscerning observer might think this tiger had finally learned to profit from past mistakes. That this almost disgusting lack of spirit(s) for 1964 resulted because I wanted to avoid a hangover and other next-day unravelings associated with tying one on.

It ain't so. Instead, I got to thinking about how fast time was getting away and simply could not work up any enthusiasm for celebrating this sad fact. Age may have its compensations, but I have yet to find one, even after polishing my glasses.

True, I don't pull quite as many bonehead stunts as I did ten or twenty years ago . . . but I still pull 'em, usually one or two minor ones on every flight and some not so minor. For instance, four of us tiny airline types went to LA to pick up a new bird. During the letdown into LA I glanced at the true airspeed as we approached 10,000 feet and went forward to remind the man at the wheel that 250 knots is the speed limit once you get below 10,000 feet within 30 miles of destination. You see, my name was on the clearance.

"Hunh?" sez he without making a move.

"He's right!" the troop in the right seat remarked. "This bunch in LA won't take kindly to you violating it either."

Still no move to put out speedbrakes until the man in the center called and told him to slow to 250 knots. Worse, he kept it fast all thru the straight-in to the localizer and ended up too high and too fast to get onto the glide slope. The second approach was a little better.

We left our speedy friend at LA to ferry back the new bird and climbed toward flight level 330, heading for home while more or less bad mouthing his technique. The center had cleared us to 330 and had us on a 050 vector. After some minutes on this heading the controller said, "495, you are cleared to climb unrestricted and to return to course beyond Palmdale."

"TAT, are we supposed to hold this heading?"

"Beats me. Hell, he said climb unrestricted, why don't you home in on Palmdale?"

He cranks her over to about 100 degrees and almost before he's completed the turn the controller asked, "495, what heading you on?"

"Ah, 100."

"You're supposed to be on 050."

"Ah, understand 050. What happened to our unrestricted climb?"

Very patiently, "495, you were cleared for an unrestricted climb on a heading of 050. I have a Boeing 707 letting down between Palmdale and LA."

"Ah, thanks, we're steady 050."

See what I mean about goofs? When a controller says unrestricted climb, he means you don't have to report at any intermediate altitudes. The unrestricted part does not apply to headings.

HEY, HERE'S THE KIND of story I like to tell. This tech sergeant out at George was disabling a J-75 when he noticed the splines on both the accessory drive coupling and the mating splines on the N2 compressor front hub were worn out of tolerance. He realized how serious this could be, particularly since the engine was 200 hours short of a time change overhaul.

The shop had two other J-75s in repair status, so he checked the splines on them. Both were worn. He fired off an emergency UR, recommending all J-75-17s be inspected for spline wear at 400 hours.

The AMA said they were making a factory mod to lengthen the splines and get oil to 'em and that this mod should solve the problem. Meanwhile the sergeant knew the AMA had previously extended five engines with nearly 600 hours on 'em to 1000 hours. His EUR grounded these and an inspection showed two had dangerously worn splines with almost four times the acceptable wear. The sergeant fired off a repeat EUR to re-emphasize the seriousness of the problem. As a result of the second EUR the AMA set up a mandatory spline inspection.

A hearty tip of TAT's old hard hat to TSGT Walter L. Fulkerson, Jr. of the 355th Field Maintenance Squadron, George AFB. With men like you to guard birds, Walt, flying will become safer than preaching in church.

RIGHT AFTER ROTATING their tiny airliner into takeoff attitude, an aircrew from another command heard a loud hiss and felt the left wing drop. They pushed the go handles further forward, got into the air, and made a pass by the tower. The tower operator confirmed that the left main wheel apparently suffered from chronic fear of flight and had decided to stay on the ground.

The crew held a conference with a couple of T-39 flight examiners, the wing commander and local chief of safety. All hands decided a gear down landing would do less harm than plunking it in on the belly skid. Foaming was out, the fire department couldn't hack it and have enough left over to fight a, gulp, crash fire.

When fuel was reduced to 1000 pounds the pilot brought the bird in at 105 knots, eased her on and stopcocked both throttles. Meanwhile, the co-pilot turned on the auxiliary hydraulic system and shut off the engine master, generator and inverter switches.

As the left and nose gear touched, the right tire v. The pilot extended speed brakes and this de- the auxiliary hydraulic system. He lost nose

gear steering and at about 50 knots, around she went, wiping out the nose gear and right main.

The wheel came apart because someone used fiber lock nuts on the wheel tie bolts. The nuts stripped off. The report didn't explain why the hydraulic system failed. Both the normal and auxiliary systems are fed from pumps driven by electric motors and either should hack speed brakes no sweat . . . unless the co-pilot included the battery switch or electrical master switch in the list of things he turned off.

This tiger has never been able to get very excited about turning off battery and generator switches before the dust settles on a hash. It would surprise you how many times these items are left undone during a crash with no ill effect—other than to give the board something to talk about. Perhaps this is why they've disappeared from the bold face items on many of the newer check lists.



More important, by hurriedly turning off switches, a pilot is very apt to deprive himself of a control or system he needs to cope with the emergency. Handling an emergency is tricky at best and you ain't always able to remember which items are electrically controlled or, for that matter, which are electrically operated.

NOW THAT MANY CENTERS have graciously taken over position reporting, this tiger's ears should last one more decade. Aside from the reduced radio chatter, I must admit that I miss going thru the reporting ritual.

While talking to another troop about the new procedure, he gallantly admitted that it caused him some embarrassment. Some distance short of a passenger stop, he had started filing his next leg with the FAA

service station. When he came to the estimated time-off he had to ask 'em to stand-by while he frantically figured out when he'd reach the passenger's stop. Yeah, he'd forgotten to bring his form 21A up to date! Reckon he'd have been more than embarrassed had a heat and vent duct busted or some other emergency come up to make him want to get to the nearest air pasture.

I can't very well bad mouth the guy. On my last haul I forgot to do something I long ago resolved never to omit. That's to run out the string on the map to check total distance against the distance on the flight plan. Sure 'nuff on one rather lengthy leg, the troop in the center asked me to verify the next ETA. I dutifully readded the time enroute to the time over the last reporting point and came up with the same number I had before. Four past the next hour, I think it was.

Shortly, they switched us to another sector. Again the request to verify. TAT still had this big empty space between the headset but did crank the distance entered on the 21A into the old E6B . . .

"Watzamatta them guys, their computer gone nuts?" Once again, the zero four estimate looked good. Comes the half way point and time to tune TACAN to the next station . . . it won't hack it. Neither will Omni. A few minutes later the light begins to dawn—helped by the DME which had now locked on. This stupid tiger is just about 100 miles further out than he's supposed to be!

A little quick map work showed what was wrong. I'd left one leg completely off the 21A! If that won't shatter a flight plan I'll fill the dang thing out in Sanskrit. After giving the good heads down below a revised ETA, along with some mumbled comments about botched flight plans, I cranked some fuel flow data into the old E6-B, sighed a huge sigh and pressed on.

I've said it before, but will say it again. Next time a controller asks me to verify a guesstimate I'm going to haul out the map and check the whole nine yards . . . those guys just don't goof.

WITH JANUARY HERE, TAT will attempt to enthrall you with a gripping story about a B-57 that came to grief on a wet runway at an overseas base. The bird was shod with an ice grip tire on its right foot and a standard tire on the left. Each time our hero applied brake the bird swerved hard right. The fight to maintain directional control was using more runway than usual, so with 2000 feet to go he gave up,

sucked up the gear and brought it to a halt the hard way. There are two points of interest in this. First, the wrench and plyers set should do their not to intermix these tires even tho TO 4T-1-3 authorizes 'em to do it. Finally, TAT scratches his head on this sliding act. I know it's one of those things that has been with us since the first unwelded gear . . . but that doesn't make it a good all 'round procedure.

The reason I question it, in this case, is because a fella can do an awful lot of good stopping in 2000 feet using more conventional methods. There's a good chance this troop gave up just when he was reaching a point where he could really hack the program. Natch'ly if the runway terminated in a cliff or brick wall, or if the bird has no brakes, this tiger would figger to start sliding with a thousand foot or two of runway yet in front. That is if I was certain that I couldn't get it stopped. However, if the overrun was reasonably smooth, nuts to sliding—the mud makes an excellent barrier. Just keep the critter going straight . . . and keep on the binders until



you're off the end. Mind you, we make these comments not from personal experience operating off in the mud, but from having observed the antics of others.

I firmly believe this yanking up the gear act is a carry over from conventional geared birds which were prone to flip when they strayed off the landing pasture.

Incidentally, most of us have fairly well accepted the fact that you get max braking by holding the binders on just as hard as you can without skidding tires. However, when water in any of its forms or mixtures makes a runway really slippery it's danged hard to feel this point . . . So, if you are trying to stop a bird on a really slippery one without anti-skid, do your braking with a series of short applications until the bird slows enough for you to get some

from the brakes or until you get the critter plumb ped. The same techniques works with an auto on or with wet brake linings.

THIS LIEUTENANT TYPE started to launch a century F at an overseas smogpatch assisted by an IP type in the aft office. The launch was AOK until about 175 knots when the windshield fogged up. The lieutenant - gulp! - aborted at this point by yanking back the throttle and deploying the drag chute. He dropped the hook and headed for the center of the barrier. In fact, he was right on centerline with the hook dragging on the centerline stripe. An irregularity in the paint caused the hook to bounce over the BAK 9.

Despite two 450s and a centerline pylon, the MA-1A snagged the whole hurtling mess to a safe halt. The aircraft went over 1100 feet beyond the runway end and pulled the entire chain - some 93,000 pounds worth. Considering the configuration, this pair was lucky they ain't still rolling across the countryside like a steamroller gone berserk.

Most pilots wouldn't even consider continuing an approach which would result in a 170 knot touchdown, much less a 170 knot touchdown some four or five thousand feet down the old pad. Why then should anyone consider an abort for a relatively minor item this distance down the runway at this speed and at heavier than normal landing weight? This worries me. I get the feeling that these lads represent a certain segment of the pilot population. A segment which considers an abort to be a more or less routine operation or which approach each flight looking for some excuse to stay on the ground. I can't understand them. To me, a high speed abort is one of the most demanding and dangerous things a pilot can be forced to undertake.

Before I would abort a takeoff at 170 knots, the flying machine is going to have to prove itself to be in sorry shape. The wings are gonna have to fall off, the controls refuse to work, or the engine expire. Sure I trust the barrier; particularly the BAK-9. It never misses, except when the hook bounces over it!

To me it's the FLIGHT line, not the FRIGHT line and airplanes are dependable critters that, except for a few notable exceptions, are eager to fly. Pilots should be likewise.

TAT WAS READING where an overseas pilot was id to go button 17 for GCA final when four miles out. accidentally went to 18 and as soon as the radio

channelized heard the controller give instructions. Being rather close in, he assumed they were talking to him. About a half mile out the GCA controller said, "You are now two and a half miles from the runway."

This was the pilot's first indication that all was not well with the world. Seems the controller was talking to another bird making an approach to a nearby airpatch. Oooo haw! The happy hunting ground is pockmarked with holes dug by pilots who made assumptions. I tell ya—don't trust nobody—particularly yourself.

Incidentally, the discrete frequency set-up we have here in the states should make it harder to repeat this goof . . . plus making it unnecessary for a fighter type to make a channel change this low and this close in, but don't bet on it.



HEY! DID YOU HEAR about the Navy type who was flying along minding his own business in smooth cirrostratus when, ZAP! POW! BANG! BOOM! four bolts of lightning struck his fighter? The altimeter froze at 22,000 and the airspeed at 200 knots. He tried to make a radio call but was interrupted by an explosion that sent heavy blue smoke thru the cockpit and took RPM to zero.

After the control system failed, even tho he extended the RAT, the poor guy decided to eject. This was good for a 10 to 15 minute turbulent 'chute ride to the water. In the water he tried to use his survival radio, but received a strong electric shock. He was rescued nine hours later after someone spotted his signal flare.

Moral: Stay on the good side of the chaplain . . .but just in case, carry flares and know how to use them.



HIT-AND-RUN

A contract crew found the left elevator bent up on their C-46 after they deplaned. From the damage it was obvious that someone had bumped into it with a fork lift. The crew had completed a thorough pre-flight before departing on their trip, but had not checked it during a quick turn-around at an enroute stop.

All drivers cleared to operate vehicles on the flight line must realize that altho it is vitally important to stay well clear of aircraft, it is even more important to let someone know if they fail to! The flight line is no place for hit-and-run drivers.

WHO DONE IT

From a report: Two months prior to the incident all control surfaces had been removed, reinstalled and checked OK. Some work was done on the elevator 12 days before the incident, but again, the aircraft passed all checks and was released for flight. It flew 105 hours after the controls were removed and replaced before the missing nut and cotter pin were discovered.

We will never know if the nut and cotter pin were overlooked during the control reinstallation or if they came off in flight . . . but one fact is significant; the reinstallation task was transferred from one maintenance crew to another midway during the job. From past experience, if something is going to be over-

looked during maintenance it is most likely to happen when a job is interrupted or when changing hands in mid stream.

QUICK THINKING

A pilot from another command found that an F-100 was without brakes or nose gear steering just after he turned off the active. OK, so he had run out of brakes and stuff, he hadn't run out of ideas. He shut the engine down and radioed his plight to an IP in an aircraft being dearmed some 200 feet away. The IP yelled to the armorer working on his bird, and pointed toward the ailing aircraft, now rolling about 10 miles per hour straight toward a parked F-84. The armorer ran to the free wheeling F-100 and put his full weight against the left wing tip. He succeeded in swerving the 25,000 pound bird until only the right wing snagged the F-84. A new nozzle and tail pipe put the 84 back in business while the F-100 got by with a new hydraulic hose and some minor sheet metal work to iron out four small dents in the right slat. Better, much better, than having the 84 speared amidship.

PRECISION PRESSURE

From an incident summary issued by another command: "After the tire gage failed, tires were inflated by 'sight' until a nose tire failed and damaged the aircraft." Believe it or not, the aircraft was one of the latest fighters, and tire pressure is critical on it.

WHOOAA MAN WOE

While backing a C-119 into a hangar with a tug, the trailing edge of the left rudder struck an overhead beam. The tug driver did not receive the signal to stop in time to prevent damage. The walker who was guarding the tail of the aircraft used a whistle to signal for a stop, but the whistle failed. Aside from not properly preflighting the whistle, this bunch didn't have a man in charge of the operation as per SOP.

By the way, after two tries on the whistle, tail-end Charlie finally yelled . . . but by then it was too late.

RAG REPLACEMENT

How would you like to have a new rayon reinforced paper wiper instead of rags for general shop use? A paper wiper that is soft, pliable and lint-free? One that can be soaked with oil, grease or hydraulic fluid then dipped in ordinary solvent, wrung and reused? Paper wipers reduce the risk of foreign object damage if they are accidentally ingested by a jet engine. They will not scratch plexiglass or finely machined surfaces, yet they cost less than rags and take about one fifth the storage space. If you're interested, order them from supply . . . supply can get 'em from GSA.

FOR THE BIRDS

There's a new switch on cannibalization . . . while preflighting their KC-97, a SAC crew found several holes on the top surface of the left aileron. The big bird had been parked for about a week and investigators finally determined that some large ravens had been pecking on the control surface. That's right, the little birds were eating up the big one. That SAC crew obviously could use some of us cool cats from TAC.

TRIM TIP

A test pilot noticed the elevator trim on his T-33 was operating the wrong way . . . apparently the motor was wired in reverse and the mechanics who installed the trim motor hadn't checked out the system.

This is one of those errors which can get someone into trouble in a hurry. It's also an error that is easy to make, even when checking the system. A good rule to remember for aircraft having a conventional stabilizer-elevator arrangement with the trim tab on the trailing edge of the elevator, is to pull the stick or wheel full aft. The elevator should come up. Roll in nose down trim and the trim tab should come forward you (up). However, this check is not intended to replace those checks required by the TO.

TAC ATTACK

DELETION OF CERTAIN TIME CHANGE ITEMS

Recently, AFLC has deleted many aircraft items from time change to a conditional status. This policy will undoubtedly eliminate much work and will certainly improve the spares situation. Watch these areas closely for signs of trouble and immediately let the prime AMA know if problems start to develop. In addition, all of you should recommend any additional items you believe should be changed to conditional status. Be sure and substantiate your recommendation when you send it thru channels to AFLC.

DAMAGE TO JEFM PARTS

Throughout the command, engine shop personnel, in their eagerness to do an outstanding job during JEFM, are condemning or performing local repair on many items with minor cracks or damage. In numerous instances these minor flaws are well within TO limits for continued service. Premature rejection or repair results in a shortage of replacement items, or possible improper repair. Eagerness is appreciated and we surely want an outstanding job, but please gentlemen, check the TO.

UHF RADIO RELIABILITY

An undercurrent of operations type chatter tends to make our maintenance people grit their teeth when someone mentions the AN/ARC-34 UHF set in the F-100. Maintenance deficiencies are apparent and TAC Letter 121-4 was written to prod commanders into prodding maintenance supervisors into prodding maintenance technicians into plodding. However, this does not seem to be the final answer. Shades of De Forest, we got troubles in the valves, the aeriels, and all that rot. More paper work coming. Letter on the way from Maintenance asking for pictures of the problem and to heck with the IBMonkey. You Ops guys get ready to sing loud and clear to the maintenance group when they ask for troubles.

QUESTION OF THE MONTH

What weapon systems are covered by TO 002-20E-1?

- a. Aircraft
- b. GAM's, GAR's and drones
- c. Missiles, space vehicles, ground CE and associated AGE.
- d. Training devices.



SEG NEWS

4450th Standardization Evaluation Gp.

Know your Stdn Evaluators

A native of Tacoma, Washington, Lt Col Ferris was originally commissioned a bombardier in June, 1944 and subsequently completed a combat tour in B-17s with the 8th Air Force in the ETO. Following WWII, he completed pilot training and has been in fighter aviation since. He flew 101 missions in the F-80 in Korea with the 51st Fighter Group in 1951 and spent the following six years in the Combat Crew Training business at Nellis, Luke and Randolph. Col Ferris was assigned to SEG in September after four years in USAFE with the 48th Tac Ftr Wg and the Standardization and Training Division at Hq, USAFE.



AF FORM 8C ERRORS

The Office of Data Analysis has conducted two error surveys in the past ten months. The first survey was conducted from 15 March to 15 April 1963 and the total number of errors found for the period was 2,520.

The second survey was conducted from 15 August to 15 September 1963 with 1,321 errors found. This is nearly a 50% reduction in the number of errors committed. The vast improvement is noted. However, a great deal still remains to be accomplished.

The more common AF Form 8C errors found during these surveys were:

- * Graded an area not in the manual.

- * A three score given for a two-zero item.
- * Too many items scored for an area.

The best remedial action is to thoroughly review Chapter 6, AFM 60-2, and your specific grading document. An honest effort to eliminate these errors will result in saving a great deal of effort, time and money.

In the interest of a regular flow of 8Cs, the SEFs are reminded that paragraph 6-16 (5) indicates that the 8Cs will be sent to the SEG for data reduction on a weekly basis. Your cooperation on this point would eliminate slack and peak periods on the key punch machine.

TRAIN AS WE DO

In the past, our practice weapons deliveries were accomplished at lower slant ranges than those required for live ordnance. When an exercise called for a live ordnance delivery a different set of release conditions were required. This created a situation where we trained by one set of conditions and performed the mission by another. SEG Operations and TAC Office of Operations Analysis resolved this problem by designing standard release conditions which are suitable for training, fire-power demonstrations, and actual combat.

The 4450 Stdn/Eval Gp has changed the appropriate 55 series manuals to reflect these new release conditions. All future conventional weapons delivery maneuvers will be designed with safe escape as the prime consideration. It is hoped that this new emphasis on realism during training will result in improved delivery techniques and create combat effectiveness.

SEFE NOTES

SEFE course schedule for first 6 months of 1964 is:

<u>Jet</u>	<u>Conventional</u>
Feb - 18-21	25-28
Mar - 24-27	31-3
Apr - 21-24	28-1
May - 5-8	12-15

Please, all flight examiners bring the grading document for your weapons system to school with you.

There always seem to be a few who show up a day early for school. We purposely started the school on Tuesday so you could spend Monday traveling. There is no requirement for you to report to SEG upon your arrival. Be seated in the classroom at 0830 on the first day of school and completing your attendance card at that time will satisfy the sign in requirements. Class and transportation schedules will be in the BOQ.

THOUGHTS FROM AN OLD OBSERVER

The fact that certain weaknesses exist within TAC's stdn/eval program is no mystery to anyone familiar with the program. Nothing encompassing so many facets of a major command's flying operation has ever been developed from a blunder-proof format. However, as we examine the broad picture, two inescapable conclusions always emerge. For any given weapon system there must be one best set of basic standard procedures and, two, a periodic evaluation

of every aircrewmember's individual proficiency is invaluable.

After examining these conclusions we find that standard procedures for any aircrew position can be developed which will satisfy most of the aircrewmembers involved. However, when we look at methods for accomplishing the individual aviator's periodic evaluation, the thorny problem of widely divergent opinion always arises. A great deal of the controversy centers around the feeling that an individual crewmember can be hurt when his overall grade is lowered due to circumstances over which he has no direct control.

When an individual is awarded an unqualified grade in a specific area sometimes the responsibility must be shared elsewhere within his unit. For specified items, this grading problem is solved by using a slashed zero when an unqualified item grade is awarded as a result of a clear deficiency on someone else's part. This joint responsibility is often brought to the attention of a commander when a number of his crewmembers turn up short in one area.

What can be done to reduce the occasions when the aviator is docked because training material just wasn't presented or because he didn't receive enough sorties after maintenance fell down or somebody in supply forgot to order practice bombs?

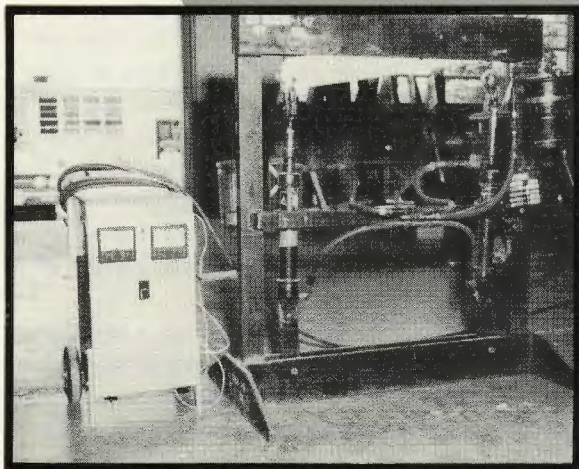
As a starter, let's assure a close liaison between the unit standardization/evaluation flight, the unit commander and the commander's staff. The highly qualified aircrewmembers within the unit SEF are the logical people to identify trends and bring them to the attention of the commander and his staff before they bring on such things as a non-OR unit rating or a rash of distasteful activity in the flying safety office.

The stan/eval flight members should always bear in mind that their primary responsibility is not to just identify the individually deficient aviator but to strive for an overall unit improvement in reliability and capability. This makes everybody happier.

COL HENDRY REASSIGNED

After a year in SEG, Colonel A. M. Hendry was reassigned to Luke AFB, Arizona, to assume command of the 4510th CCTW. Under Colonel Hendry, the TAC Standardization/Evaluation program has evolved from a concept to a realistic management system to improve aircrew effectiveness. Lt Colonel Devol Brett was designated to take the SEG helm when Colonel Hendry departed on 26 October 1963.

Pampering the...



BY CAPTAIN JAMES T. HARWOOD
31ST TACTICAL FIGHTER WING
HOMESTEAD AFB, FLORIDA

**M
A
R
K
VII**

AS FAR BACK as I can remember, we have had type VII pylons which, for various reasons, have failed to release MD-6s. Checking back through the first of January 1963, we found that our wing had six failures out of 177 attempts for a 3.4% malfunction rate. This, as a random number, does not appear excessive; however, apply this figure to the parent weapon under wartime conditions and it would be outrageously high. A weapons system is only as reliable as its weakest component and the type VII pylon is that component.

Looking back over our failures, we found that only one was definitely attributed to a LABS malfunction, narrowing the problem still further.

We had devoted as much time and talent as possible to maintaining our 30" racks and pylons, even at the expense of other work. Yet, the failures continued . . . something had to be done.

So, to simulate flight condi-

tions and G loading on the rack, we designed and constructed a test stand using two hydraulic actuators, plus a four-way valve, pump and pressure gage. The 30" bomb rack is mounted by two bolts at the top of the unit, lugs down. The hydraulic actuators are connected by a bomb lug to each of the rack lugs. The actuators are then pumped to their retracted position until a hydraulic pressure of 2650 pounds is reached. This pressure has been calculated to exert a downward pull of 10,000 pounds on the lugs of the bomb rack. The rack is then operationally checked by connecting a locally manufactured test box to a 28 volt, DC rectifier.

The test box has a release button, a toggle switch to test the TOC 712 function and an indicator light. Our original design called for mounting the entire pylon on the test stand, but the hydraulic shop second guessed the system and built it to house only the 30" bomb rack. This is better than nothing; however, this test stand

does not check through the pylon wiring, a feature we originally wanted.

The second test unit is a Hunter-Force Indicator, Model Nr D-150-A-M, S/N 6670-557-3237. This is a common item normally used by field maintenance to check drag chute rigging. This indicator has a circular dial that measures inch-pounds of pull or push. It is the best unit we've found for this check because it has an automatic feature which stops the indicating needle at the position of maximum deflection and is both sensitive and accurate. For testing, the solenoid assembly of the bomb rack, P/N C8662A, is bolted to a wooden table top. The force indicator is then connected to one of the two pins of the solenoid assembly and located so that its shaft is perpendicular to a line running through the center of the solenoid assembly and pin. It will then measure the maximum torque of the solenoid assembly when the solenoid is connected to a 28 volt DC power supply. New solenoids will pull between seven and nine inch pounds of torque. If a 28 volt DC rectifier is used, the amperage check meter can be used to check the manufacturer's rated amps of the solenoid, or a close approximation can be made using the formula $E=IR$, after measuring the solenoid's internal resistance.

The linkage in the bomb rack should be inspected for burrs and flat spots. We use an 18X magnifying glass for this. Any, and I emphasize any, flat spots on the roller, P/N 223-63443, that come in contact with the rocker, P/N 235-43436, will prevent a release. The steel in both the rocker and roller is fairly soft, so these items should be frequently inspected. Replacement is the only solu-

for parts that are bad.

Another part of the bomb rack which should be checked is the clearance between the rear edge of the rocker and solenoid plate arm (ref page 2 of T.O. 1F-100-883). This TOC does not specify a maximum or minimum clearance as previously stated on an EUR and Nuclear Hazard Report. If there is insufficient clearance, the rack will bind and fail to release. If there is excessive clearance, an inadvertent release can result. We recommend a clearance of 3/64" minimum and 3/16" maximum.

Binding may occur if the rack cover is installed with the rack lying on a flat surface. This allows the crank to be pushed inward slightly and moves the rocker detent lever, P/N 235-63434, off its

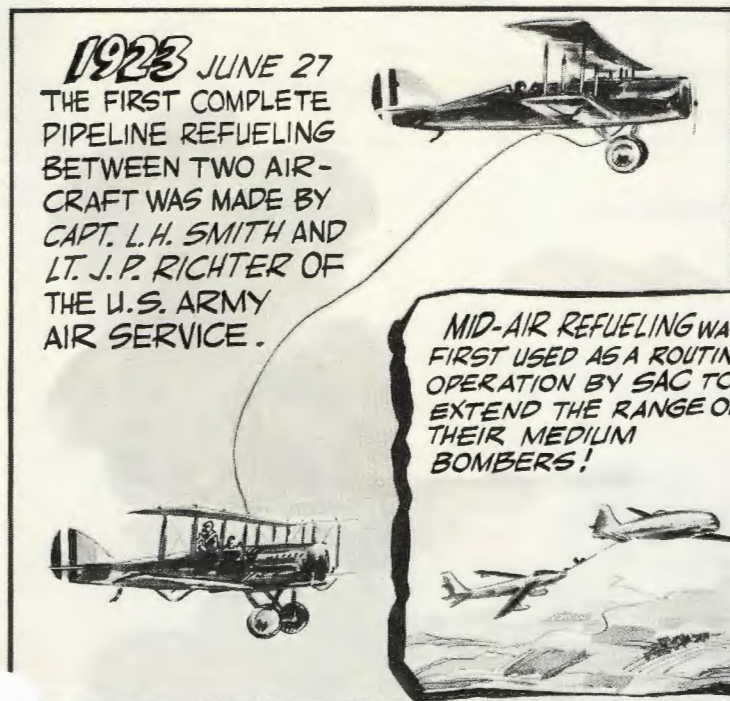
normal position on the shoulder of the crank shaft. This will bind the crank when the cover plate is installed. Moving the rack so that the shaft of the crank is off the edge of the table during cover plate installation will correct this situation.

Checks made with our equipment will definitely ease the failure rate. However, I believe we have one basic problem - a design deficiency. The solenoid assembly does not develop sufficient torque to pull the rocker out from under the roller and trip the rack. Under ideal conditions such as with new racks and parts, our no-release rate could be drastically reduced; but we do not have new racks, parts or sufficient personnel to replace them after each mission. Furthermore, each time a store is loaded,

a very small flat spot is made on the roller. Additional loadings enlarge this spot, eventually resulting in a release failure. Doubling the torque of the solenoid would almost completely eliminate malfunctions within the rack. Additionally, the roller should be either a time change item with an acceptable service life, or, preferably, replaced by one with a harder bearing surface.

This pylon should be the most rugged and dependable pylon in our inventory, yet it is the poorest. I predict that it will remain so until another solenoid is installed which is strong enough to overcome the normal and expected wear of daily usage and the present rocker and roller are replaced by more rugged components.

EVOLUTION

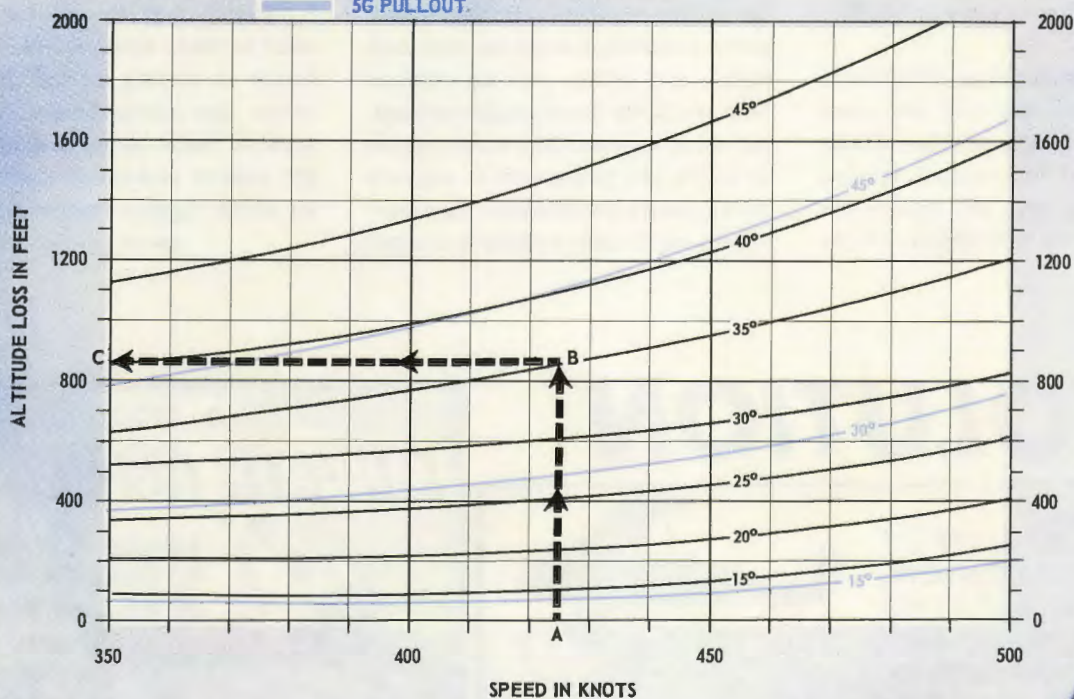


3 1/2 sec. to Eternity

ALTITUDE LOSS DURING RECOVERY

— 4G PULLOUT. NO REACTION TIME, NO SAFETY FACTORS:

— 5G PULLOUT.



AS RANGE OFFICER, I watched Green three make his rocket pass. His base was a little closer than normal and the final slightly steep . . . I'd say about 35 degrees. He started a good positive recovery right after he fired his rocket but the aircraft continued descending and munched into the ground, wings level, tail first."

"I was plotting hits from the number two tower when this pilot made his first rocket pass. He



fired and I noticed he looked a little steep. I plotted the hit at about 15 feet at one thirty and watched the pullout. I thought to myself it was going to be a close one when he suddenly dropped in. He exploded when he hit."

This is how two of the witnesses described an F-100 accident. All who watched agreed that the pilot was in a bit closer than normal and started his pullout a little on the gentle side. He then seemed to realize that he was getting into trouble and tightened the pullout.

Since the aircraft flew smoothly thru the first half of the recovery, this fairly well discounts an elevator control malfunction or pilot incapacitation. Okay, then what happened?

Let's explore some of the things that can affect a weapons recovery. The three most significant factors are dive angle, true air speed, and Gs held during pullout. Less significant but of some effect, are aircraft gross weight, outside air temperature and pressure altitude.

High gross weight slows the aircraft reaction time by requiring more effort to overcome its kinetic energy. This F-100 grossed out at about 29,700 pounds when it crashed. This is heavy, but not excessively so. Temperature and pressure altitude get in their licks by affecting true airspeed. For instance, on the day of this accident the temperature was 35°C and pressure altitude was plus 150 feet. At the rocket release point this would give about 32°C and 1650 feet . . . a quick pass thru the computer will show you that 400 knots indicated will be just under 425 knots true.

After experimenting with simulated bomb runs, investigators concluded that the dive angle itself had very little effect on airspeed build-up during the run as long as the dive angle was above 25 degrees and airspeed below terminal. Extra speed on base had far more effect, as did power setting.

So much for the preliminaries, now let's take a look at the simple chart we prepared for you. It shows the distance needed to recover from an ordnance run at varying airspeeds using a 4G and 5G recovery. Look this chart over very closely and you will start to understand some of the reasons TAC has upped the rocket release and minimum recovery altitudes.

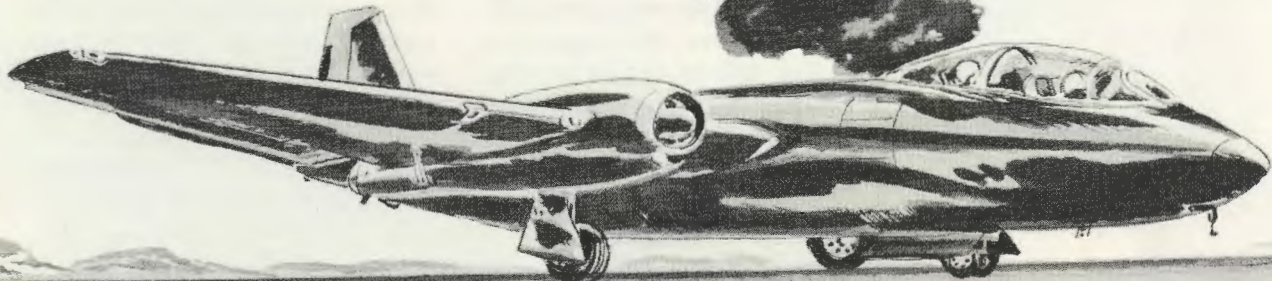
One thing we haven't discussed, but which is quite pertinent, is time. You can't start your recovery immediately after releasing ordnance without being in danger of lousing up its trajectory. Most of us delay one second. This second is cranked into the desired release altitude and represents a little over a fourth of the time available for recovery. To put it another way, if you followed the unrevised AFM 55-100 and flew a 30 degree dive at 400 knots, released at 1500 feet and then made no effort to recover, you would die just three and one third seconds later, right on target.

An accumulation of little things caused this accident. The pilot made his run a little steep. He probably had a little higher true airspeed than normal, which was made even higher by the high ambient air temperature. Any of these alone would have gone unnoticed. Added together, they ate a huge chunk out of his margin for error. The delay before really pulling Gs finished the sequence.

This story has a lesson for every fighter pilot . . . try not to get your run too steep or too fast, fly an indicated airspeed corrected for temperature and altitude when these variables are higher than standard . . . and above all, don't delay a recovery more than one short second for any reason whatsoever!

STARTERS

Adapted from an article by Harry L. Meredith and Harley E. Storer, which appeared in AFLC Safety Tips



THE CARTRIDGE STARTER was developed in the mid-thirties to replace the hand-crank for starting aircraft engines. The first one, the E-3, was used in the P-36. The starter breech was mounted in the cockpit between the pilot's legs and resembled a stockless shotgun. The cartridge looked like an 8 gauge shell.

As many pilots can testify, the shotgun starter was not very reliable. Two shots before contact were the rule rather than the exception. After each failure, a five-minute wait was required to cool the breech. A few impatient pilots received embarrassing personal wounds when they attempted to speed up the process and inserted a new cartridge into a hot breech.

The shotgun starter lived a

short life, due principally to development of efficient electric inertia starters. The Navy continued to use the shotgun starter for some time after good electric starters were developed, but in time they too adopted the electric starter.

The cartridge starter returned to the Air Force with the B-57. However, other United States built aircraft continued to use the electric starter generator as their starting source up through the B-47 and the F-86. As aircraft engines became larger they outgrew the electric starters and another method was needed. This led to pneumatic starters using an air turbine motor geared to the engine rotor through a clutch. The turbine is driven by high flow, low pressure air (45 - 75 psi) which, on

fighter aircraft, is provided from a ground auxiliary gas turbine compressor unit.

The fuel-air combustion starter is another way to start the larger jet engines. It consists of a turbine geared to the engine through a clutch. A mixture of aircraft engine fuel and air at approximately 250 psi is ignited to drive it. This starter does not incorporate a compressor and air is taken from a high pressure tank (3000 psi). This system has the advantage of being lightweight. But it is complex, expensive, and requires highly skilled maintenance.

It also needs a long cooling period between shots.

A third method is the cartridge starter. The combustion gases of the burning cartridge furnish energy to drive a turbine. This starter is all in one package and the system is relatively simple, light, and compact. The disadvantage is that cartridges demand special storage and handling since they are sensitive.

The cartridge starter and the pneumatic starter have been combined to provide dual starting capabilities. Both are effective.

There are two basic types of engine starter cartridges in the Air Force inventory used with the cartridge/pneumatic or cartridge starters.

The MC-1 cartridge, a dry base propellant, emits k

smoke when fired. The MC-2 cartridge, a single base smoke-propellant using an ammonium nitrate oxidizer, was developed to eliminate the smoke and dirt problem of the MC-1 cartridge. This cartridge, while curing the one problem, added storage, handling, and other problems. An improved version, the MXU-129/A will soon be in the inventory.

Another major cartridge type, the MXU-4/A (8 pound cartridge), is used or programmed for the F-100, F-105, F-4C, B-52 and C-135. This cartridge uses a single base propellant with an ammonium nitrate oxidizer. It also has storage and handling problems.

As malfunctions occurred, it became necessary to add checks and more checks to overcome specific problem areas. With each series of malfunctions, more restrictions were imposed by letter, page and TO.

Let us examine some of the incidents that led to the restrictions.

An ANG pilot attempted to start the right engine of his B-57. The cartridge exploded, disintegrating the starter. Fragments destroyed the engine and cowling, penetrated the cockpit area severing wires, and put holes in the dive brakes of a nearby B-57. The pilot suffered a slight head wound from a flying fragment. The malfunction was caused by a defective cartridge and a dirty breech. The B-57 starter breech must be cleaned after each shot using a clean rag but no cleaning fluids.

A frequent malfunction is characterized by low RPM, unusual noises and excessive smoke and heat. This is known as a HANGFIRE. A starter malfunction resulting in no action is known as a MISFIRE.

A pilot on a training mission attempted to cartridge start his F-100, a hangfire resulted. The rubber band seal on the cartridge had been removed, resulting in loss of energy and a fire hazard.

On two occasions, one week apart, F-105 starters exploded. Deplorable storage and handling conditions caused the cartridges to deteriorate rapidly. Both of these explosions occurred during normal maintenance starts.

Hq USAF recognized the need for better ways to govern the use of cartridges and established the following criteria:

*The pneumatic mode would be the primary way to start the B-52, F-100D/F, KC-135, F-100, and the F/RF-4C aircraft for all normal and routine flying and maintenance.

*The cartridge mode may be used for aircraft on active alert status, at recovery bases where pneumatic starting equipment is not available and during periods of national or local emergencies when the strategic or tactical fleet might be required to stand active alert.

*Cartridges can also be used during operational readiness inspections and tactical evaluations directed by major air commands, or higher, and for familiarization purposes. The rate is to be determined jointly between AFLC and using commands.

*Cartridge starts are also authorized during en route flights to and from overseas rotational bases, including overseas ferry flights. Starting modes at deployment bases would be determined by the availability of cartridges and type of mission.

Due to design peculiarities of the F-105 STU-12 C/P starters, the primary starting mode continues to be the cartridge. The

pneumatic mode is used for all maintenance requirements and as a backup for the cartridge mode. After the F-105 is retrofitted with the new STU-15 starter, the procedures in the above paragraphs will apply. SUPERVISORS SHOULD READ AND HEED.

The Air Force bought and qualified cartridge/pneumatic starters for a certain number and type of start. Pneumatic starts rarely damage the starters. On the other hand, the starter deteriorates a little each time a cartridge is fired. Flight line personnel who use a \$37.00 cartridge to make an unauthorized cartridge start (a MA-1A pneumatic compressor start costs approximately \$5.50) are not only wasteful, but are also slowly deteriorating the starter.

Exhaustive tests and experience has proven that the ammonium nitrate cartridge can become an explosive monster when subjected to abnormal storage and handling.

Each malfunction has been directly or indirectly traced to poor storage, handling or use. The activity experiencing the malfunction is not always responsible for the mishap. Somewhere between the production line and the cartridge firing, someone, somewhere, may have subjected the cartridge to either rough handling, an extreme environment, or improper storage.

The ammonium nitrate is hygroscopic and readily absorbs water under humid conditions. The absorbed moisture may reduce the capability of the igniter, resulting in a hangfire. If there is no smoke and if the breech can be readily opened (after a specified waiting period), the malfunction should be considered a hangfire. If the breech cannot be readily opened,

it is an indication of pressure against the breech cap.

The propellant goes through a chemical change at certain temperatures and literally grows inside the steel case. This growth may result in faster burning or an explosion depending on the severity of the growth and internal design of the cartridge. Rough handling can crack and damage the propellant, and again cause it to explode when it is fired.

The heavy requirements for

careful base storage, and storage aboard aircraft, together with the other restrictions would cause one to wonder if the ammonium nitrate cartridge is practical. Yes, the problems are numerous, but they are answerable.

By exercising proper care and enforcing restrictions, we can be reasonably certain that a cartridge malfunction will not occur. Newer types of cartridges with better and more reliable propellants, are being developed. Re-

gardless of new developments, accidents and incidents will continue as long as we tolerate ball handling of these items. Education will help prevent cartridge activated device accidents. Better engineering can reduce the inherent danger of cartridges and starters, but only YOU as a commander, pilot, crew chief, or maintenance technician can remove the goof that causes mishaps.

Editors note: Cartridge starters are a sore subject in TAC . . . two and a third million dollars sore to be exact. Recently, a crew chief used one to start an F-105. Due to poor handling somewhere along the line, the cartridge exploded instead of burning. Parts of the starter ripped thru the main fuel line and when the excitement subsided, a once proud F-105 was reduced to melted aluminum and ashes.



the REAL MCCOY

Captain Douglas A. McCoy from the TAC OI shop was telling us how his father, jockey Jimmie McCoy, introduced safety into horse racing.

On a horse named Secret Greeting, McCoy was up in the thick of the field when something cracked him in the left eye. He came to his senses standing in the stirrups with the horse stopped. Apparently another horse had kicked up a rock or clod and slammed it into him hard enough to knock him out. Needless to say, his eye was badly injured.

After the injury healed, McCoy found himself a bit timid. In defense, he bought a pair of welder's goggles and replaced the dark lenses with clear ones. In those days people were more worried about being called sissy than losing an eye, so McCoy carried his goggles in his racing silks and would sneak them on at the gate.

On a particularly close race he was too busy racing to think of removing the goggles at the finish line and inadvertently wore them into the winner's circle. Perhaps he got too excited about winning one of the bigger handicaps of that era. Regardless, the secret was out and with it, he received a new name,

"Goggles McCoy."

From that point on he no longer hid the fact that he wore eye protection. It didn't take the other jockeys long to see that they were missing a bet . . . that the goggles not only offered protection, but gave McCoy the definite advantage of being able to see more clearly thru the flying dirt of a race. It wasn't long before others adopted his idea.

McCoy was responsible for another safety innovation. In the early days the rail around the inside track was supported by posts set straight up and down. It's no secret that the shortest distance around the track is right on the inside rail and that jockeys do considerable maneuvering to get a position on the rail.

The old style supporting posts took their toll. On occasion, horses and riders used to hit them with obvious results. McCoy reasoned that the hazard would be eliminated if the posts were slanted in at the bottom, away from the track. Since horses are expensive, and hitting a pole could permanently cripple one, the idea was soon adopted.

Next time you start to use a grinder or other machine that can endanger your eyes, remember Jimmy McCoy and wear a protective shield or goggles. If you see a better, safer way of doing a task, remember the slanted posts and tell someone about it or turn in a suggestion. It will be adopted even if it just keeps humans from getting hurt.



WHEN THE OLD SARGE walked thru the door, the first thing he noticed was Capt Green's desk. It was spotless except for a single sheet of paper which Green was reading. Even his IN basket was empty. "For Pete's sake, sir," the Old Sarge exclaimed, "Am I in the right office?"

"Oh, you're back," Green replied with considerable unconcern. "Hardly knew you were gone it's so quiet."

Getting suspicious, the Old Sarge turned slowly toward his own desk. His IN basket was completely hidden by a huge stack of paper reaching half way to the ceiling and spilling out onto the center of the desk. For one long moment the Old Sarge knew he'd been had. Capt Green could see the Old Sarge's neck turn red under his vacation tan. Green laughed. "Welcome home! A few things did come up that I had to save for you, but . . ."

After helping the Old Sarge return the mess on his desk to the files and various other places in the office, Green found himself a cup of coffee and asked, "Well, how was the vacation?"

"Aside from some car trouble, pretty good, sir."

"Car trouble? You?"

"Yes sir," the Old Sarge admitted, "but it's a long story."

"I'm all ears. What happened?"

"I could blame my wife. She's the one that had to fill up the car with junk. All that stuff coupled with a rear engine made it tricky to steer. The second day we spent at her uncle's place. I left the car at a front end shop and told 'em to check it over, thinking it might be a little out of alignment. Then went over to her uncle's for dinner."

"They called and said the lower ball joints and tie rod ends were worn." I didn't question them since the thing has quite a few miles on it, but asked how much. They said it'd be about 35 bucks. I told 'em to fix it."

"When I picked it up that evening they handed me a bill for 70 dollars. They'd replaced the lower ball joints and tie rod ends, test drove it, then replaced the upper ones. Well, it drove all right, so I paid off."

"Coming home we stopped at my sister's place. When we were getting ready to leave, I hit the starter and it wouldn't engage. Her husband's one of those guys who couldn't fix a light switch and I didn't have any tools with me, so we took it to a nearby garage. This time I baby sat with it.

"The mechanic was having trouble getting the starter off and decided to remove a flexible

heater duct to get at it. He started banging away with a hammer and screwdriver. Curious, I looked over his shoulder and saw he was knocking the duct apart, thinking he was under the flexible part. He'd already broken the spot weld and had a gap in it. I stopped him, and he said, "No, problem, I'll patch it with that plastic stuff." That's when I rolled up my sleeves, borrowed his tools and went to work. It still cost me 30 bucks."

"To make a long story short, when I got home I decided to grease the car, and you know that bunch hadn't greased a single fitting on the front end! I was so mad I coulda' cheerfully knocked some heads together if they hadn't been so far away. Can you imagine someone doing that kind of work? They sure wouldn't last long around aircraft, that's for sure."

"Ruin all the new fittings?" Green asked.

"Don't you know it did. Worse, another set of new fittings didn't completely stop the steering problem. So I had it realigned. I should know better than to let a job like that go unsupervised."

"Yes, but being on hand didn't stop that other guy from tearing your heater duct."

"Right sir, proving that supervision alone doesn't always hack the program. The guy doing the work has to use a certain amount of skill and care, too. They gotta have pride in their work, that's what."

Answer to Question of the Month

*Missiles, space vehicles, ground CE
and associated AGE*

AS YOU APPROACH GCA minimums you again glance out and this time are able to spot the runway. Heavy rain makes it glisten like a silver plank set in the dark soggy countryside. Your F-105 touches down just a little fast and you deploy the chute. This time, there is no reassuring tug from behind. You recheck the handle still without a response. You try the binders. From here

on and that hydraulic pressure is applied to the system. However, it does not guarantee the automatic functions.

On the D this check is now made as item 2 on the runway check by applying moderate to heavy brake pressure then turning on the anti-skid to check for the thump. The strength of the pulse depends on how far in you depressed the pedals. Don't expect an immediate

anti-skid, the bird will lurch ahead a couple of feet and rock to sudden stop. This is due to momentary dump signal given when the switch is activated. It puts quite a strain on the gear and is why the anti-skid is turned on before power is advanced.

Since the thump check only checks part of the system, we need a better procedure to check it during test hops. RAC test pilots



Adapted from an article by Mr JOSEPH MARTOCELLO, RAC, tech. rep. published in AIRSCOOP

on, what happens to you depends on your skill and on your confidence in the anti-skid system. If you belong to the group who distrusts the anti-skid (because you had trouble with it in other aircraft, don't understand it, or because you flew the dollar five before anti-skid was activated) chances are you will not have it turned on and are headed for an accident the anti-skid system could help prevent.

For some months now maintenance has been going all out trying to get the anti-skid system reliable and to keep it that way. In fact, a sick anti-skid system now puts the bird on a red cross in some commands. We can safely assume maintenance is doing their part, but how about you? Are you using the system or not?

If not, perhaps I can convert you. First, let me get some things straight on this business of pedal pulses or thumps. Despite what some of you think, a pedal pulse during the system checkout does not necessarily indicate a fully operational system. It does indicate that DC electrical power is

response. You may get the thump a full two seconds after you turn on the switch. If you apply brake after you turn on the system or as you turn it on, you may get no thump at all, or at best a weak one, even tho the system is perfectly normal. Understand this, and you won't write up a perfectly good system because you made an improper check.

Occasionally someone will squawk the system because they get a thump in one pedal, but not the other. This is usually caused by depressing both too lightly to get a good solid response.

The terms nibbling, thumps, pulses, cycling, kicks and chattering are frequently used to describe brake pedal anti-skid feel. Some also imply normal brake action! For example "chattering" is often used to describe cycling altho it more accurately describes strut walking or a grabby brake. Try to give the crew chief an accurate, clear write up. Be careful of your terms.

If you fail to follow the proper procedure and run the J-75 up to military before you flip on the

normally check it while rolling on a straight, dry, uncongested taxiway at about 50 knots. The test is simple. They turn on the anti-skid and then bottom both brakes.

The system will cycle two or three times before the bird proaches a complete halt, which indicates a good system. If it fails to cycle or cycles rapidly with no marked deceleration, they turn off the system and squawk it. An extremely short period of no obvious braking when the switch is first turned on is normal.

Momentary wheel lock-ups may cause a little smoke during this test . . . this is normal, provided it doesn't cause flat spots on the tires.

Obviously, you'll need a good straight dry taxiway or runway for this kind of a test—with no one behind you.

So much for thumps and jumps. Another misunderstanding is caused by the system itself. As long as one wheel is rotating faster than 10 mph and the other decelerated to 3.5 mph, the slow wheel will dump. This could happen in a tight turn during tax

you are using brakes to turn instead of nose gear steering. Usually, this will be a series of short dumps. However, if a single long dump occurs, you may get a 3 second dump signal which will cause the fail safe circuit to time-out the system. This is why you turn on anti-skid after you take the active and turn it off after you've slowed from your landing roll and



are ready to turn off the runway. During heavy braking, it isn't unusual to feel one wheel cycling, but not the other. Remember, brake cycling will depend on the brake pressure you've applied, lift, runway condition and tread condition and that brake pressure is only dumped on the skidding wheel.

According to the dash one, you can easily detect a skid since the brake dump (release) causes the main gear to roll forward. This is normal and more noticeable under 60 knots. Don't misinterpret this sensation and think you have a malfunction.

Pilots are similarly fooled during landing roll when they get a normal dump. Max brake pressure is limited after a dump by the modulating system. Increasing pedal deflection during this period does not immediately increase brake pressure and gives a false impression that the aircraft is not decelerating fast enough. A little anxiety induced by a rapidly approaching overrun generally helps create this impression.

If you get no braking for three seconds, the malfunction is for real, and you should turn off the anti-skid . . . or if little runway is left . . . consider this as a complete loss of brakes and simply pull out the emergency brake handle. A word of caution. Depending on speed, don't get caught with your brake pedals fully depressed when the system times-out, you turn off anti-skid, or pull the emergency brake handle. Any of the three puts you back on a normal or emergency system without anti-skid. The tires will go before you can unlap.

You get best braking by depressing the pedals to a point just short of cycling. Repeated cycling indicates excess braking and is the system's way of telling you to reduce brake pressure. During a hard stop, if cycling reaches a high rate the bird will not seem to decelerate as fast as it should. Relax brake just enough to stop the cycling, then gradually increase pressure as the bird slows. Back off each time you induce cycling. In other words, you apply brakes

just as you normally would without an anti-skid system—except you get system cycling instead of skidding tires when you tromp down too hard.

From this you can see that the anti-skid hasn't eliminated the need for skill. So get the idea out of your mind that all you need to do is put both brogans on the binders and push, 'cause it ain't true. Such uncouthness is still a sure way to blow a tire or use up a lot of nice runway while the system cycles itself to death. The fire department and your crew chief won't appreciate it either.

Okey, now for the loaded question. How do you know the anti-skid will work during landing roll? You don't. There is always a possibility that it will fail in spite of uncommonly good maintenance, a 'thump' check or even a taxi test. There are no warning indicators to tell you it has failed. But, if you apply brakes just as you normally would without an anti-skid system, you should have no problem. Cycling will indicate a working system.

TAC TIPS

MATCH POINT

The 12th Tactical Fighter Wing from MacDill wracked up 12,340 points to knock down first place in TAC's Match Point Competition at Hurlburt last November. Not bad for weary F-84Fs.

Match Point is TAC's new close air support competition and it effectively demonstrates how well a fighter flight could perform in a combat situation.

The competition last November was different from the usual weapons meet. Each wing nominated two teams from each squadron. These teams consisted of five pilots, a forward air controller, an intelligence officer, and an intelligence airman. Final team for each wing consisted of four pilots, the FAC and an officer and airman from intelligence. Final teams were selected by a drawing at TAC which took place just before the meet and the teams were unable to specifically train for the meet.

In the competition, targets simulated actual combat type targets, were dispersed and made as realistic as possible. Pilots didn't know which targets to strike until briefed by their controller and they had 35 minutes after first contact to be air briefed, form an attack plan and attack any or all they could identify. There were more targets than each team could destroy, so no team could get a perfect score. Points were given for destroying targets, judgment of the controller and flight leader at identifying targets, planning the attack, the intelligence briefing and debriefing.

AIRCRAFT ICING

Suppose as sometimes happens, you find yourself with no choice--you have to land with braking action nil. You concentrate on the clocks and about 600 to 700 feet you recognize, with partial relief, that peculiar darkness that always appears just before breakout: the reflection of the ground against the clouds. A few more seconds, the murk falls away and there you

have it--a beautiful, unobstructed view of the underside of a quarter-inch thick coating of ice spread evenly over the windscreen, quarter-panels and forward canopy. Then you notice the defroster lever pointing straight out at your nose like an accusing finger, but you can't turn it on. You're too busy getting the throttle forward, speed brakes up, gear up, flaps up, radio call. Oh well, if you've got a good heater-defroster and the temperature isn't too cold, maybe a little section of the windscreen will clear during the second approach.

This horror tale is a true story. It is offered in the spirit of the old Air Force pilot's axiom, "Cooperate and live to retire." I'm sure you can find a few charming anecdotes of your own. We've all wonderful stories about attempted takeoffs with frost on the wings, hard landings with ice on the wings, approaches made through truly blinding snow storms, etc. If we pass them on to the younger troops, a few of them who might not otherwise make it through the hard winter will be around to repeat these same stories next year.

—ATC APPROACH TO SAFETY

The ATTACK staff intercepted a letter from McDonald test pilot Don Stuck to LCDR Joe Mills of the Navy Crossfeed that tells how to save an F-4 afflicted with a hard-over rudder malfunction. Here's the meat of that letter. "The rudder approaches hinge moment limiting just above 200 knots; therefore, flight above the 200 knot region is no problem. You need less than half aileron to offset a hard-over rudder irrespective of ARI or damper.

"The worst configuration to control is with gear down, flaps up, since the bird runs out of aileron at about 175 knots. However, with the same configuration you only need quarter aileron to maintain control at 250 knots.

"Clean or P/A, the bird can be slowed to final approach speed without running out of aileron. With flaps and flaps down, 30 percent aileron is needed to offset full rudder at 175 knots and full aileron is needed at 130 knots.

"Therefore, if you encounter one of these stubborn full rudder panics, slowly decrease speed to 200 knots and lower the flaps. Then, still holding about 200 knots, lower the gear and make your final at around 150 knots."

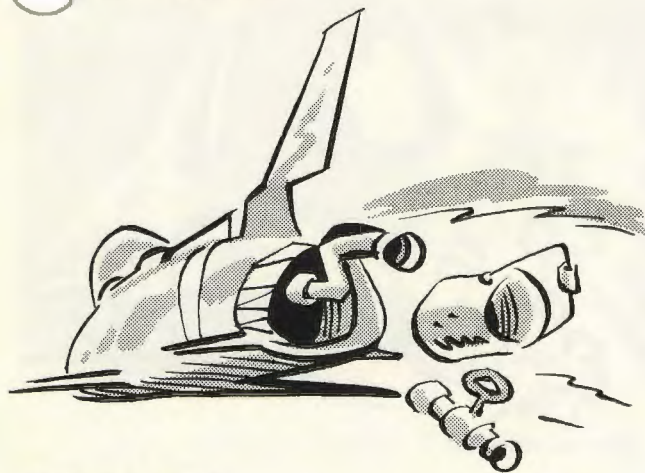
MODIFIED INVADER

Reliable rumor has it that a contract calling for 40 B-26Ks is in the hands of the working folk. The K will have P&W engines worth 2500 horses each. Additional fuel capacity will up the ferry range to 3250 NM, a beefed-up wing will support more than twice the former stores and it'll be landable with full external armament load.

Although about one-third of the new Invaders will arrive as recon versions, the nose can be converted to the bomber type in four man-hours.

They're even giving the crew a little consideration in the K version . . . it will have a modern, fully functional, two-place cockpit.

AWC troops should be receiving their first delivery about this time.



DOWN THE TUBE

The J-57 cut loose with a severe compressor stall as an overseas F-100 pilot selected AB. His wingman reported objects coming from the tailpipe, but by then he'd brought the throttle out of AB and was soon headed for home. He landed Okay,

Part of the AB flame holder was missing at the 6:30 position. The slope adjustment shaft on the AB control was broken, causing unmetered fuel to be fed to the AB.

ODDS ARE

Mr. Jerome Lederer, Director of Flight Safety Foundation, remarked that air safety has made tremendous progress since he first went to work as an aeronautical engineer for the US Mail Service back in 1927. According to Mr. Lederer, this progress is most evident in the fatality rate of those most exposed to the hazard of flying, the Airline Pilots. In the mail service between 1920 and 1926 one in every four pilots was killed each year. On the threshold of modern air transportation, about 1932, one in every 50 was killed each year. At present, one in 1600 is killed each year . . . putting airline pilots in an insurance bracket with piano tuners.

By comparison, during 1963 we lost one TAC fighter pilot out of approximately every 67.



SMOKE OFF

At regular intervals a T-bird crew somewhere in TAC will go thru an air abort because heavy smoke and fumes come boiling into the cockpit shortly after takeoff. Almost without exception, maintenance can correct the problem by reservicing the engine with oil and replacing the oil filler cap after fishing it out of the engine bay.

Someone didn't get the cap on properly. The pilot didn't know how to check it, failed to check it or inadvertently unlocked it while trying to check it.

Altogether now, let's go thru the proper way to check the oil dipstick on a T-33. First, look at the cap to make certain the outer index mark is lined up with the inner one. Next, grab hold of the cap and try to pull it straight off. If you succeed, get the crew chief to put it on right, then recheck it. If you fail, continue with your preflight.

WINTER TIPS

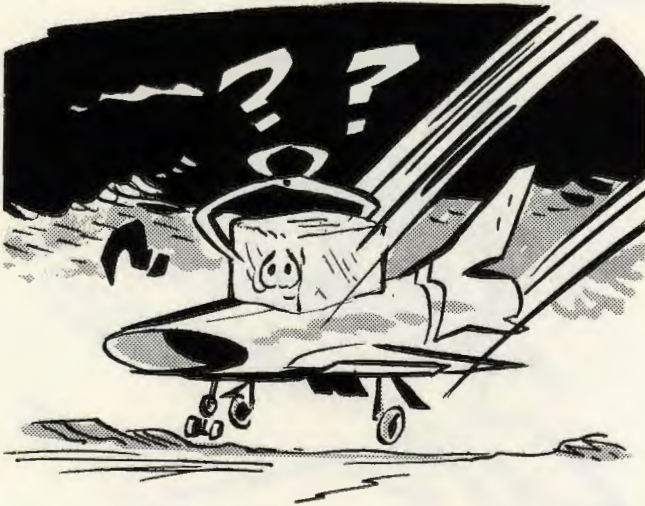
Here are some suggestions for keeping out of winter trouble now that the season is really upon us.

*If the weather is marginal, ask yourself: "Is this trip really necessary?" If there is reasonable doubt - delay the flight until conditions improve.

*Make a thorough check of all enroute weather conditions. Knowing the weather at both ends of your flight is small consolation if an emergency forces you to hunt for a home somewhere enroute.

*Have an alternate plan of action in case everything turns to worms.

*Review the letdown plate for your alternate and your destination while you have both feet on the ground and plenty of time. Study the missed approach, minimum altitude, and layout of the surrounding terrain.



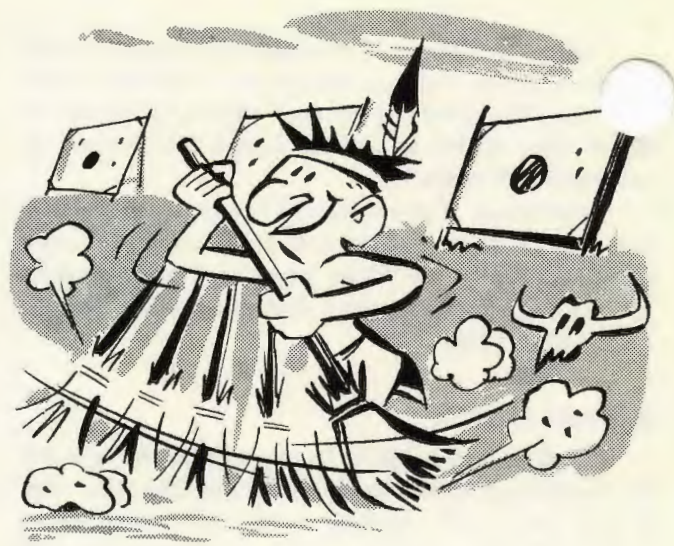
*Avoid flying thru freezing rain . . . it can make thunderstorms seem agreeable by comparison.

*If the runway isn't in sight when you reach minimums, proceed to your alternate . . . don't cheat on the system, you pay with your neck if you get caught!

SHORT FIRE

From another command's incident summary comes word of an unusual fire in a T-Bird. Believe it or not, the floor paint in the front cockpit caught fire. Hot pilot? Well, yes and no . . . He was probably a little warm after he extinguished the fire. The cause of the moment of horror was the steel ring on the seat safety pin. It contacted the seat actuator switch terminals and electrical arcing set the paint on fire.

These terminals are supposed to be protected. Just in case, keep seat pins in your flight suit pocket or stow them in the map case.



RANGE RUMBLE

An overseas F-105 gobbled up a ricochet during a firing pass. The shell clipped the leading edge of the airscoop and dented the VA plug duct before it went into the engine. Despite a damaged engine, the pilot was able to return for an uneventful landing.

The only cure for this type accident is a clean range.



IDLE CAUTION

Flight Safety Foundation warns that jet engines build up a certain amount of carbon at idle RPM. The carbon flakes off when power is advanced sending a trail of sparks out behind. These sparks can start a fire, so make sure there is no combustible material behind your blow torch when you make an engine runup on the ground.

BOMB TRAILER MODIFICATION



Sgt. Fernandez of the 31st Armament Section removes a MARK III practice bomb from storage bin. Note neat racks for storing BDU-23 bombs.



Converted M-5 trailers ready for transport.



Trailer with side curtains rolled up ready for use. Side curtains should also be left up in hot weather to keep contents from being damaged by excess heat. Note neat arrangement in second trailer for carrying ammo and containers for loose links and rounds.

ARMORERS in the 31st Tactical Fighter Wing at Homestead AFB, Florida, came up with a good cure for the MHU-12/M trailer shortage. As you can readily see from the photos, they've compartmentalized the M-5 to make it both neater and safer. We report there are a few other TAC units who can profit from the 31st Armorer's example . . . In fact, during a survey not too long ago, one of the TAC safety troops reported that armorers of one TAC unit were carrying loose 20 millimeter ammo in their caps because they didn't have proper containers. Not only have the 31st troops solved this problem with convenient containers for loose rounds and loose links, but they've also solved another long standing problem . . . that of having practice bombs explode while bumping around in a loose stack on an M-5.

Flight Safety Plaque



General Walter C. Sweeney, Jr., Commander TAC, displays the Flight Safety Plaque which was presented to the Command following Swift Strike III.

CITATION

The Tactical Air Command (TAC) distinguished itself by exceptionally meritorious achievement in flight safety while providing optimum effectiveness during exercise Swift Strike III.

During the period 21 July 1963 through 17 August 1963, Tactical Air Command aircraft and crews participating in this joint exercise executed over 10,000 sorties and expended approximately 15,000 flying hours to include:

- ✦ 6242 jet fighter simulated combat sorties
- ✦ 3148 air lift sorties
- ✦ 10,870 troops assault landed
- ✦ 11,217 troops air dropped
- ✦ 10,008 tons of cargo assault landed
- ✦ 4020 tons of cargo air dropped
- ✦ 322 tons of cargo ground proximity extracted
- ✦ 35 night assault landings on sod strips
- ✦ 1500 sorties and 3600 flying hours in support of unconventional warfare activities

The majority of flying in this large-scale exercise was conducted in a limited operational environment with serious air space restrictions and heavy congestion. In spite of the hazards of this environment, the loss of aircraft and personnel was kept to a minimum. This flying safety accomplishment could have resulted only from concerted and extraordinary attention to safety matters by all personnel involved in the exercise.

The professionalism and dedication to duty displayed by the personnel of the Tactical Air Command reflected great credit upon themselves and the United States Air Force.

Curtis E. LeMay

CURTIS E. LEMAY
Chief of Staff, USAF

Tactical Fighter Squadron

309TFS, 31TFW, HOMESTEAD AFB, FLA.

Tactical Reconnaissance Squadron

9TRS, 363TRW, SHAW AFB, SOUTH CAROLINA

Assault Airlift Squadron

50TCS, 314TCW, SEWART AFB, TENNESSEE

Tactical Fighter Aircrew

CAPT FLOYD H. DAMSCHEN

613TFS, 401TFW, ENGLAND AFB, LOUISIANA

Reconnaissance Aircrew,

9TRS, 363TRW, SHAW AFB, SOUTH CAROLINA

CAPT HOWARD H. CAMPBELL	Pilot	1ST LT JUAN H. BENJAMIN	EWO
CAPT RONALD E. WILSON	Navigator	1ST LT FRANK A. NOBLE	EWO
SSGT LOUIS R. ALEXANDER	Gunner	1ST LT NEAL E. JUSTICE	EWO
1ST LT DAVID E. SCHNELKER EWO			

Assault Airlift Aircrew

62TCS, 314TCW, SEWART AFB, TENNESSEE

CAPT HENRY B. VANGIESON	Aircraft Commander	1ST LT WILLIAM E. OWEN, JR.	Navigator
1ST LT H' L. ENTREKIN, JR.	Co-pilot	TSGT K. C. THREET	Flight Engineer
SSGT BILLY R. RICHARDSON Loadmaster			

Air Refueling Aircrew

431ARS DETACHMENT, HICKAM AFB, HAWAII

MAJ WALLACE L. RERICK	Aircraft Commander	SMSGT ROY F. MEEKS	Engineer
CAPT ELVIN J. FORSMAN	Co-Pilot	SSGT SIDNEY E. GENAUX	Reel Operator
MAJ RICHARD W. SPEERS	Navigator	SSGT HAROLD SUITER	Reel Operator

SAWC Aircrew

CAPT RALPH E. SAURS

1ST AIR COMMANDO WING, EGLIN AF AUX FIELD #9, FLA.

Operational Achievement awards

July - Sep 1963

**CREW CHIEF
OF THE MONTH**



Technical Sergeant Fred A. Masterson, of the 431st Air Refueling Squadron, Biggs Air Force Base, Texas, has been selected as the Tactical Air Command Crew Chief of the Month.

Sergeant Masterson demonstrated outstanding efficiency at scheduling and supervising maintenance on his aircraft. During a recent month Sergeant Masterson's aircraft flew nine sorties for a total of 48.9 hours. The small number of discrepancies discovered during the month verified Sergeant Masterson's concept that preventative maintenance practices pay off in flying hours and in-commission status.

While establishing a near record for sorties and flying hours for his type aircraft, Sergeant Masterson also performed the duties of flight chief in a very creditable manner. His interest in training younger, less experienced airmen has raised the efficiency and morale of the entire flight.

recognition Pilot of Distinction

BEST MAINTENANCE RECORDS

A1C CECIL V. CAZEL
4TFW, Seymour Johnson AFB, NC

SSGT OWEN MONROE
464TCW, Pope AFB, NC

A/1C VIRGIL E. RORAK
4500ABW, Langley AFB, Va.

*Pilot of
Distinction*



Captain George R. Johnson, of the 314th Troop Carrier Wing, Sewart Air Force Base,

**MAINTENANCE MAN
OF THE MONTH**



Technical Sergeant Gordon E. Midstokke of 4510 Combat Crew Training Wing, Luke Air Force Base, has been selected as Maintenance Man of the Month. Sgt Midstokke, who is assigned to the Weapons Section, has been a key man in organizing and operating an effective missile training program for aircrews and load crews. His detailed knowledge of the aircraft systems associated with AIM-9B, AGM-12B and ATM-12A missiles has materially improved reliability and safety of air launched missile operations. Sgt Midstokke is frequently called on to troubleshoot armament system malfunctions on the five different aircraft types possessed by his unit.

Recently, by taking advantage of his unusual systems knowledge, his unit was able to completely rewire the special weapons and emergency jettison system of a malfunctioning aircraft, a job that would normally require assistance.

Armament specialists of Sgt Midstokke's caliber are essential to the effective and safe accomplishment of the command's training and combat missions.

Tennessee, has been selected as the Tactical Air Command Pilot of Distinction.

After leveling his C-130 aircraft at 26,000 feet, Captain Johnson felt an explosion from the number one engine. Altho there were no cockpit indications of an engine fire, such as an illuminated fire warning light, Captain Johnson noticed a bright flash on number one engine and the loadmaster confirmed that it was on fire.

Captain Johnson immediately initiated proper engine shut down and fire extinguishing procedures. After these actions were completed and the normal and reserve extinguisher systems depleted, the fire still burned. He then turned toward the nearest airfield and attempted to blow the fire out by diving the aircraft. At 18,000 feet, 320 knots airspeed, the fire seemed to be out; however, as speed was decreased the flames reappeared. Another dive was initiated and indicated airspeed held at 340 knots until all traces of flame were gone. Captain Johnson then made a GCA approach to the selected emergency field and landed without further incident.

RECORDS

TAC TALLY

A COMPARISON OF TACTICAL AIR COMMAND ORGANIZATIONS

MAJOR ACCIDENT RATE 1 JAN - 30 NOV		
TYPE	1963	1962
ALL	10.4	12.7
F-4	0	
F-105	26.2	37.5
F-104	30.1	36.8
F-101	14.9	21.8
F-100	12.5	18.0
F-86	0	66.2
F-84	24.1	16.8
B-66	0	0
R-26	8.9	21.6
99	0	0
T-33	0	3.2
T-29	0	16.1
KB-50	4.4	8.4
C-130	1.1	1.5
C-123	4.8	12.7
C-47	0	4.9
U-10	12.0	60.6
T-28	28.2	0

NOV TALLY GUARD AND RESERVE		
UNIT	MAJOR	MINOR
108 TFW	1	1
117 TRW	1	
102 TFW	1	

ACCIDENT FREE (MAJOR & MINOR)		
JET		
ACTIVE	MONTHS	ANG
355 TFW	14 9	131 TFW
388 TFW	12 9	121 TFW
CONVENTIONAL		
ACTIVE		RESERVE
314 TCW	52 84	434 TCW
463 TCW	29 34	435 TCW

314 TROOP CARRIER WING HAS FLOWN OVER 127,000 ACCIDENT FREE HOURS

NOV TALLY ACTIVE UNITS		
UNIT	ACDNTS*	INCDS
4 TFW		8
12 TFW		4
15 TFW		3
27 TFW		12
31 TFW		12
354 TFW		13
355 TFW		7
388 TFW		6
401 TFW	1	8
474 TFW		5
479 TFW	1	5
TARC		3
4510 CCTW	1	31
4520 CCTW		10
516 TCW	1	3
4500 ABW		
4443 CCTS		
464 TCW		2
4411 CCTG		
4442 CCTS		1
SAWC		1
363 TRW		9
4500 ABW		1
831 AD		1
366 TFW	2	19
836 AD		7

*MAJOR AND MINOR

During November our downward accident rate trend temporarily reversed. The regulars accounted for five major accidents and a minor while the reserve forces recorded three majors and one minor.

One F-100C student pilot ejected successfully after losing the vertical fin in a mid-air collision. The other aircraft received only slight damage. An F-84F pilot, on a functional check flight, ejected after his aircraft fell off into a tight nose down spin from a stall series. This looks like materiel failure in the form of a stuck spoiler. Loss of nose wheel steering, and then directional control, cost a collapsed nose gear after an F-100 ran off the runway. An F-84F pilot crashed at night while being vectored to final approach. He was fatally injured. . . the investigation is incomplete. A C-130 lost a wing to a tree while taxiing at a foreign air base. Two F-86Hs encountered a low ceiling while on a low level navigation-al mission. The leader pulled up to get on top of the clouds and crashed into a mountain. Another F-86H crashed during recovery from a skip bomb run. An RF-84F received major wing damage after striking the guy wire of a TV tower.

The horizontal stabilizer on an F-86H received minor damage when the aircraft pitched up during a dive bomb recovery. The left gear door came open on an F-104C during pullup from a rocket pass. It damaged the fuselage a bit and tore off the leading edge flap. A safe landing was made at Edwards AFB, California. We've had far better months than this. . . and aside from the stuck spoiler, there were no new trends or cause factors.



STRING SAVERS ARE PEOPLE WHO SAVE NUTS, BOLTS, HOSE CLAMPS, FITTINGS, SEALS, "O" RINGS ... ANYTHING THAT MIGHT GIVE AN AIRCRAFT A BELLYACHE SHOULD ANOTHER STRING SAVER COME ALONG AND USE ONE OF THOSE LEFTOVERS TO INSTALL A PART!

THE MODERN MILITARY AIRCRAFT OF TODAY IS TOO EXPENSIVE TO BE LEFT TO THE WILES OF SHADE-TREE MECHANICS

TOO MANY TAC MAINTENANCE SHOPS REMOVE "O" RINGS FROM THEIR PACKAGES - THEY LOSE IDENTITY AND CURIE DATES, AND CAN NOT BE TRUSTED!

AND WHAT ARE YOU SAVING IN THAT GOODY POT, LITTLE BRAVE?

ME NO STRINGSAVER, PRINCESS!

.. ME SAVE 'UM FISHBONE ! HEAP GOOD MAKE 'UM FISH HOOKS OR COMB !