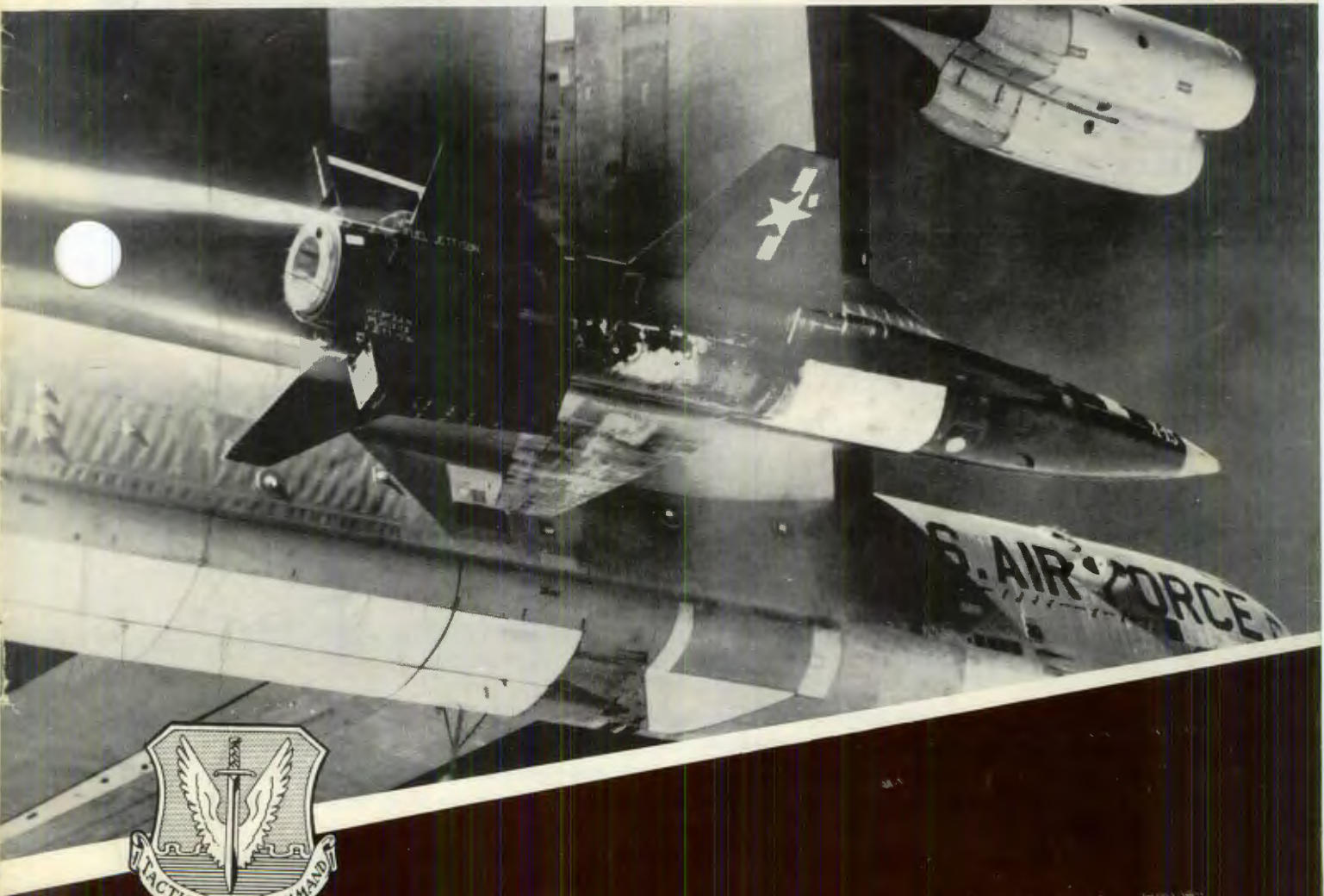


MARCH 1963

TAC ATTACK

TAC Attack March 1963 Major Bob White



MAJOR BOB WHITE

TAC ATTACK



GENERAL WALTER C. SWEENEY, JR., COMMANDER
LT GEN CHARLES B. WESTOVER, VICE COMMANDER
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COVER PHOTO

Major Bob White tests fuel jettison system of X-15
before release from B-52 carrier.

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*Fortune brings in some boats that are not
steer'd.*

— Cymbaline

angle of attack



Colonel James K. Johnson
Chief
Office of Safety

One Safety magazine publishes their command accident briefs under the heading, Seven, Eleven, *\$;*!! with dice showing snake eyes. The obvious inference is that lady luck has some say-so regarding accidents.

Perhaps she does, but I like to think that we have considerable control over just how much influence the fickle lady has. An example is this incident that crossed my desk the other day where the utility pressure in an F-100D went to zero as the pilot neared the traffic pattern. His wingman reported large quantities of fluid streaming from the forward left side, outside the nose wheel well. At touchdown, the number one flight control failure light came on followed briefly by the oil overheat light.

Maintenance investigators found a T-fitting in the utility system canted outboard which resulted in a poor seat at the tube bead and caused the line from the utility pump filter to break. A B-nut from the reservoir was also chafing the air frame. Number one flight control lines were crossed with the utility by-pass lines at the P.T.O. section — which drained the number one system of fluid. Engine oil was pouring out the gang drain and the engine was about nine quarts low.

Depending on one's outlook... a little good luck prevented an accident from these multiple discrepancies, or, a little bad luck would have caused an accident. Better control over the quality of maintenance given this aircraft would have eliminated any need to trust in luck.

The man who worked on this aircraft was not properly oriented. He had to force the fitting together, and didn't adequately check line clearance. After the T-fitting was repositioned, there was no strain on the line and it could be mated without force.

Crossing the flight control and utility by-pass lines at the P.T.O. section is basically a weakness in design, but it is a weakness that has been recognized for quite some time and precautions should have been in being. The unit now color codes the lines... except for a little luck, this could have been after-the-fact corrective action.

A professional doesn't trust to luck!



The Runway Behind...

ACCORDING TO STDN/EVAL records the captain was firmly rated as highly qualified in the one-o-wonder. His Form 5 backed this rating with almost 2,000 hours of jet time and 800 hours in the bird.

Therefore, when the captain observed a left fire warning light about 50 minutes after departing on a low level mission, it looked

like the start of a routine emergency that would culminate in an incident report.

It didn't. The captain followed handbook procedures, shut down the left engine and had the other pilot in the flight check his aircraft. There was no sign of fire and the warning light went out when the engine was shut down. The captain headed for the nearest

suitable airbase and advised the tower that he would be entering traffic for a precautionary landing in a little over ten minutes.

Enroute, he selected right AB to reduce his fuel load and was able to turn from a wide extended downwind onto an eight mile final with about 6,800 pounds.

About five miles out, with 240 knots and just beyond the local control zone, the captain had to dive under an L-19 crossing his flight path. This placed him on a rather flat final, but he elected to continue, holding off the flaps. He was about a mile out with about 200 knots airspeed. Although he selected flaps at this point, they did not extend until touchdown, about 2,500 feet down the 10,500 foot runway. This caused the machine to balloon slightly but did not affect the touchdown point.

Touchdown appears long, but actually was only 500 feet beyond the normal landing point because the first 1,000 feet of the runway is striped with yellow paint to indicate that it is sterilized. A note in the letdown book specifically prohibits landings on the sterilized portion despite it being structurally suitable for landing.

Immediately after touchdown, the captain deployed the drag chute. It blossomed briefly, then streamed with half its shroud lines broken. The captain held the nose off but the aircraft pulled to the right. Interpreting this as a blown

tire, the captain lowered the nose, actuated nose gear steering and engaged the anti-skid.

Airspeed at touchdown was between 180 and 190 knots and appears to have been around 170 knots when the nose was lowered. The aircraft was committed to visit the overrun at this time.

With 3,600 feet of runway to go, marks on the runway gave the first indication of braking. The right tire failed 1,400 feet further on followed by heavier braking. The captain was able to maintain good directional control until the aircraft hit the sod beyond the overrun where it swerved to the right and collapsed the nose gear.

The other pilot, who watched the landing and subsequent rollout from the air, summed up the accident situation very well when he testified before the board. He said, "How fast things happen... It sure doesn't take long to go from having the situation well in to really being in deep trouble. I think if he had known more about this sterilized runway, he would have aimed at the end of the runway instead of beyond the sterilized area. I also think he could have stabilized his approach speed earlier."

The pilot had this to say. "I could have had a better approach to the landing. It could possibly have been better, had I gone around and come back in with a higher approach. I would have had better control, more power and would have had more time to get flaps down where I wanted them, rather than right over the end of the runway.

"HAD I KNOWN THAT ALL THESE OTHER THINGS WOULD BE HAPPENING, I WOULD HAVE BEEN AHEAD OF THE GAME."

To avoid a similar mishap, all that would need to do then, is to

anticipate such things as tire and drag chute failures on each landing. This is an excellent practice, but an oversimplification to the problem.

Let's backtrack thru the chain of events and see what we can learn. First, there can be little quarrel with the captain's decision to land ASAP. This is the prescribed procedure and he chose the most suitable airfield in the area. (The fire warning light was actually induced by a warning system malfunction. However, this has no bearing on the captain's decision. The light was on steady and went out when the engine was shut down... which is exactly what could happen with a valid warning.)

The decision to enter a long straight-in final is also valid even tho this type approach is the most difficult to judge accurately. The F-101 is not at its best on one engine. It requires quite a bit of speed to get it around the turn onto final. If speed is kept low, power on the good engine will have to be high. At low speed and high power, the J-57 likes to shatter the calm with a series of compressor stalls that belch fire from both ends. If speed is kept high enough to prevent this, the final has to be long enough to permit speed to be bled off - hence, a long straight-in.

The decision to continue after ducking under the L-19 would have been justified provided the captain had leveled or climbed back to a proper approach angle. This is a minor point, but is one of the things that helped add to the next small error... the decision to delay flaps till less than one mile. By delaying flaps, the pilot was forced to keep his approach speed just that much faster in order to stay sufficiently above stall. Flaps reduce the approach speed about

15 knots. The extra speed undoubtedly helped fail a marginal drag chute.

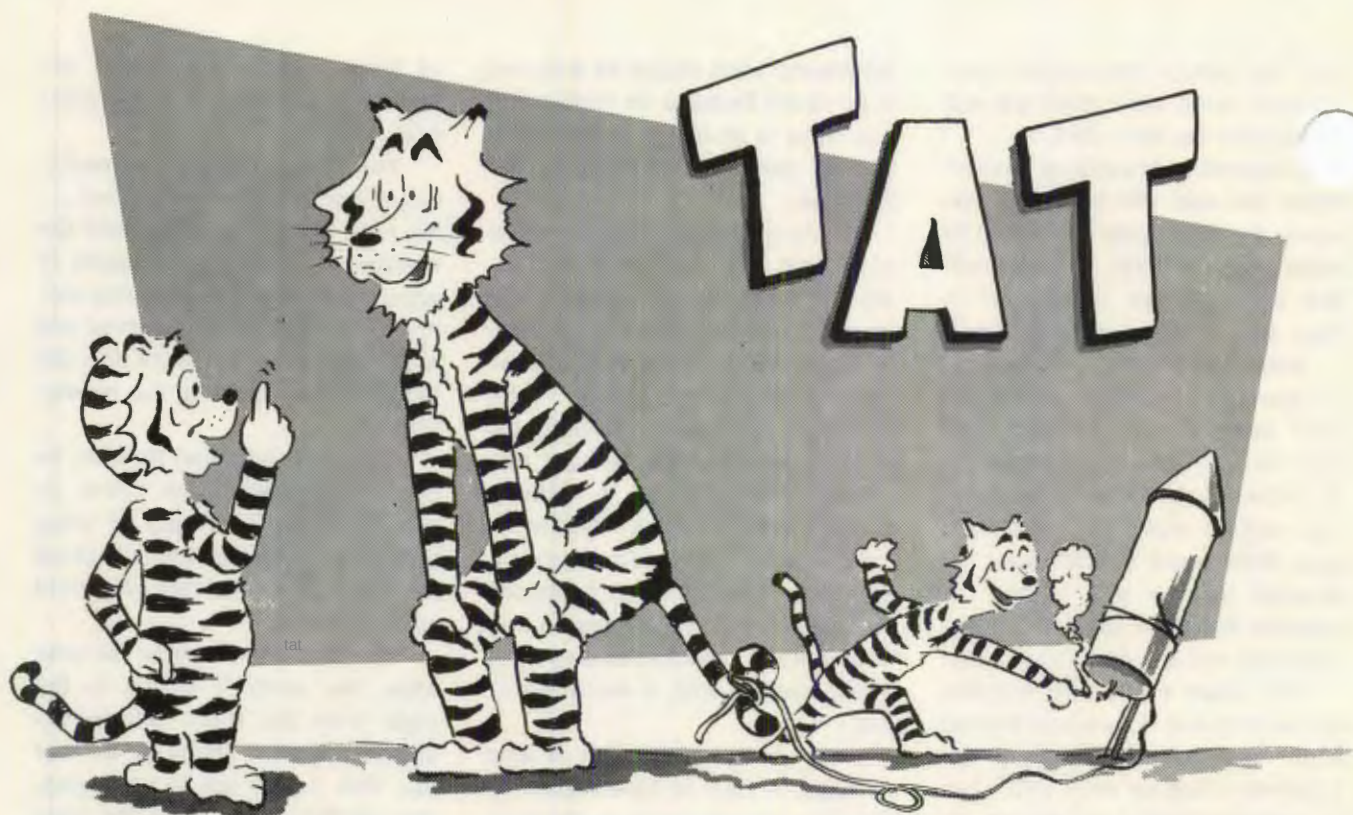
The long touchdown is easily criticized in retrospect... but... the pilot did not know whether the sterilized area was stressed to accept the weight of a landing aircraft. To him it was overrun and TAC policy is to shoot for the thousand foot mark of the runway itself.

Had he anticipated trouble, he could have called the tower to ascertain the feasibility of using this area... but one can't help but wonder what sort of reply he would have received.

The decision to lower the nose when the aircraft pulled to the right was the final link in the accident chain. There is no way that this action can be evaluated. Had he failed to lower the nose and gone off the runway edge he would have been criticized for not taking the action he did.

Despite the pro's and con's, some basic lessons are clear. First, plan every approach as if the runway were wet and the drag chute might fail. Second, keep as many factors in your favor as possible by not permitting an approach to deviate too far from normal unless the nature of an emergency dictates it.

Third, question the tower about strange overrun configurations and plan emergency landings 500 feet beyond the threshold of the usable runway. This will insure that all usable runway is used without inducing undue risk. Lastly, the F-101 is exceedingly difficult to stop without a drag chute if the nose is lowered before speed has been reduced aerodynamically... lower it only if directional control is getting critical.



"DAD," OUR EIGHT-YEAR-OLD asked, "what does it take to fly an airplane?"

"Not much just to fly," we hedged while getting our thinking straight, "but if you want to fly to a ripe old age you'll need to be suspicious."

Someday he'll understand what we mean, and that we made that remark with studied seriousness. Indeed, suspicion is exactly what it takes. A pilot should never trust anything or anyone, including himself.

This starts with preflight planning where he double checks his own figures and reviews the input of everyone else with equal suspicion. Yeah, Stormy, this includes the weather data, too. Knowingly or not, many weather men have a tendency to add a few knots to headwinds and subtract a few from the tailwinds.

This doesn't upset us too much, since it gives a little gravy. What hurts is a bust. A jet stream that shifts into our flight route when we're headed west . . . or a ceiling that drops like a guillotine right in our unsuspecting face. Yes sir. No matter how smart the man behind the counter, we like to peek at the maps and sequences and come up with our own guess. We've been doing this for over 20 years and have no intention of quitting. Sure, we've guessed wrong on occasion but we've never been surprised or caught in a trap.

Naturally we carry our suspicion over to our preflight. The last time we trusted anyone on a preflight we landed minimum fuel. We were headed for Korea on a cross-country and found our old Korea chief working transient alert. Since we were flying a bird he knew from end to end, we asked him if it was ready, received an affirmative and took it at face value. The son of a blank left a fuel cap off. We're still wondering if it was deliberate or not.

We are even more skeptical in flight. Yessir, we have a plan in case an engine comes unglued or a radio fails. The plan may not be a real good one should the former occur over water, but we have it.

Radio failure is another matter. We consider it every time someone gives us a clearance. Usually the controller has considered it too. But not always. Ever have a controller vector you on a random let-down? Tell us. Before you started down the slide, did you know what to do if the radio quit during the outbound vector? It would be no sweat when the weather is like swiss cheese, but when clobbered from fifteen down, then what?

Oh yeah, we distrust instruments a bit too. Not instruments as a whole, just individually. In short, if the bank and turn says we're in right bank, then the slave gyro should back it up. In like manner high EGT or smoke or some other disturbance has

back up a fire warning light before this tiger will go a full scale sweat. How about you?

DID YOU HEAR about the pilot tooling along at flight level 320 who raised the nose of his F-84F about 20 degrees, put the throttle at idle, and very slowly fed in left rudder? He intended to spin the bird...and spin it did, right on down to the deck.

The pilot started the spin gear up, flaps up with two empty 450s on board. Between 30,000 and 15,000 he tried five recoveries. From 15 to 10 thousand he tried a recovery with the drag chute extended and tried another between 10 and eight with the canopy off. At eight he reached for the goodbye handles. Spin mode was extremely nose low.

TAT has some opinions on the subject, but someone who's a lot better qualified than we are has already summed them up...We quote Col Chuck Yeager's "A Look at Flying Safety" in the December AEROSPACE SAFETY. Col Yeager said, "...no point wasting training time getting a pilot proficient in a maneuver he will normally never have to perform. Spins are, I think, an example of this... I think a pilot should be taught to recognize the approach to a spin and the action to prevent a spin. If a pilot gets into an inadvertent spin he is a pretty dull tool for not recognizing the approach to one.

"Teaching a pilot about spinning different aircraft and letting him experience spinning a little bit will not only build confidence but also builds recklessness. He does not respect a spin because, he says, 'Well, I can get out of a spin so I might as well fly this airplane straight up.'

"There are many modes of a spin in modern aircraft...and it is almost impossible to come up with one recovery technique for all modes..."

To our way of thinkin' this F-84 has proved the Colonel's wisdom on all counts.

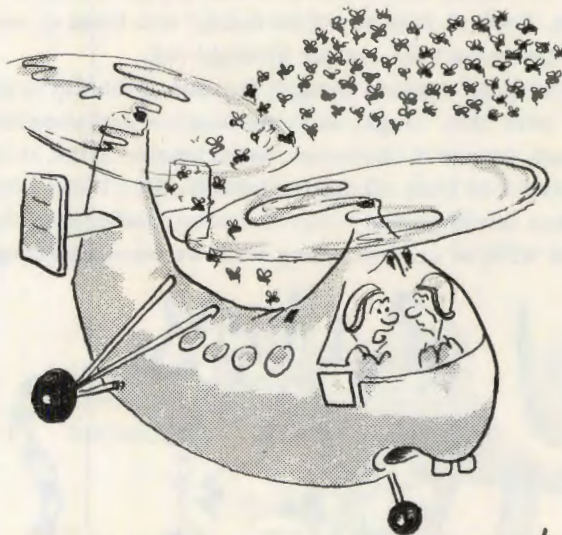
ON A GREY late-winterish day, a TAC Reserve Forces C-119 crew pointed their big fat bird down the active with everything in the green and running. Just as the instructor pilot in the left seat called for gear up, number one backfired enthusiastically and lost torque to about 85 inch pounds. This was accompanied by surging RPM and more backfiring. The pilot pulled the mixture from rich to normal but the engine continued to complain and falter.

"Feather the left engine and clean it up," the IP instructed while he concentrated on holding heading and airspeed.

The pilot complied, using the checklist. By now we were in weather and on the clocks. The pilot

contacted the tower, declared an emergency and asked for an immediate GCA. Everything went according to the book and all hands were soon safe and sound on the ground.

A maintenance technician left a cotter pin out of the magneto gear drive shaft. The nut backed off and let the drive gear rotate. This threw the engine way out of time and it backfired hard enough to damage heating, ventilation and de-icing system ducting. Indeed fortunate that the aircrew was far more professional than maintenance and inspection.



SOMEONE GAVE US THE BEE'S NEST!

A CHOPPER CREW got about 10 miles out on a test hop following an engine change, when fuel flow started fluctuating and the engine began to surge. It got so bad the crew shut down the mill and limped home on the remaining unit... they were flying a twin engine chopper.

Some bees had built their nest in the carburetor when it was in storage and no one spotted the mess, excuse us, nest when they installed it on the new engine during build-up. Build-up and storage procedures apparently were no better than the queen bee's nest locating system.

"HERE'S ONE for you, TAT." The easy going captain made room for his foot on one corner of our not-so-neat desk. "I was flying with a light colonel and really going by the numbers. I read off the checklist while he made the preflight and interior checks and we didn't miss an item."

We allowed that this sounded most professional then asked what broke.

"Not a thing. The cockpit just filled with smoke

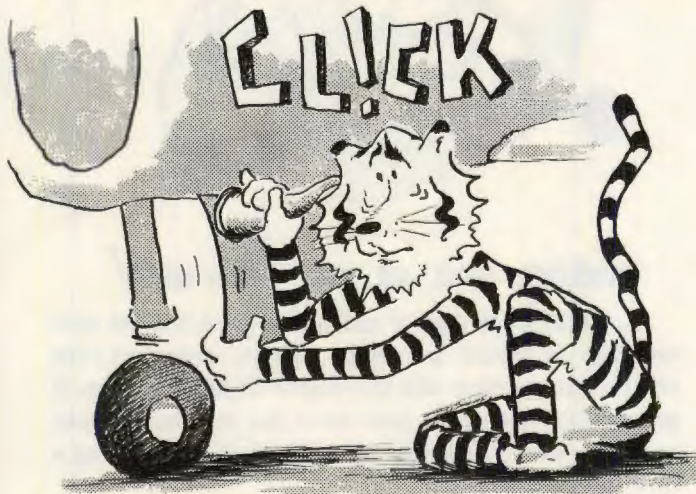
as soon as we got airborne, that's all. We found a power setting where the smoke seemed to quit and stayed near high key until we used enough fuel to land without danger of driving the gear up thru the wings."

"Sounds like a loose oil filler cap."

"It was. In fact, it came completely out. The colonel checked it by trying to twist it and pulling on it. Apparently he unlocked it or nearly unlocked it."

The safest way to check the dip stick is to try and turn the thing clockwise. If it moves, turn it until it locks. Look at it to see if the marks are lined up and then try to pull the critter straight out.

The local experts thought the end of the dip stick may have been caught on something and that when the colonel turned it clockwise, he put tension in the stick causing it to back off during takeoff. If TAT had been the guy involved, they'd have accused us of making the check without understanding what we were checking!



Reminds us of shaking the nose gear door of an F-86 to check the gear micro switches. Being deaf as a door knob, this tiger could never hear the click . . . besides, just 'cause the fool thing clicked didn't prove it worked . . . never-the-less, we always religiously shook the door.

"COME OUT from under the hood and relax whilst I demonstrate how sharp I am...." These near immortal words - or an unreasonable facsimile thereof - were spoken by an IP in the front seat of a T-33 (from another command) just before he made one of the more exciting approaches of his career.

He was demonstrating a simulated flameout after a short field takeoff and had 260 knots about 800 feet above the boondocks. A right snappy chandelle put

him at 1500 on downwind where he made a descending turn onto final. Unfortunately, he let the airspeed bleed off to about 140 knots which brought a shuddered protest from the terrible T.

Why the shudder? Well, flaps were up, the bird had 245 gallons on board, and the turn was brisk.... enough to make even an untired tiger shudder, much less a T-bird or this old tiger. He was 15 knots below minimum speed for the weight and configuration.

The IP rolled out on final about one mile from the runway at 120 knots and 300 feet, then dropped the rollers and brought power up to 85%. (The troop in the rear seat said 55%) and the aircraft continued to decelerate. Still trying to prove he could make it, the IP let the airspeed drop to 105 knots while the bird was some 20 feet above the ground and over a quarter of a mile from the runway. That's when he put the go handle full forward. Too late. The bird stalled and hit the dirt, rolled 65 feet, bounced, dropped in again, and staggered aloft with an attitude reminiscent of the F-100 in that old safety movie.

One of the tip tank fins knocked off an approach light and the bird abruptly settled onto the runway, then decided to fly.

After making an orbit to recover some wits and such, the ex-IP brought the not-so-tame T in for a much less eventful landing. Some abrasions on aft section skin, a bent tail pipe, a dinged tip tank fin and assorted bruises to wheels, tires, fairing doors and ego completed the damaged estimate.

Before you shake your curly head and tisk, tisk, tisk, try remembering some of your own less professional exhibitions....then resolve not to leave the door open to a repeat by showin' off or being too proud to accelerate out of a messed up situation. Let's face it. We all gum one up every once in a while....the mark of the professional is how quickly you recognize and correct a goof.

DID YOU HEAR about the B-66 operator who turned out of traffic and then found his machine didn't want to roll out? The rudder pedals were stuck at neutral and it took full power on the right engine with the left at idle and full left aileron to get things nearly level . . . with, surprise, the ball centered.

The pilot asked for a chase aircraft and advised the command post. The chase pilot reported the rudder deflected about one-third travel to the right. Trim worked, but had no noticeable effect.

Meanwhile the command post had contacted the factory and experts from the prime AMA. They

had people looking thru maintenance records trying to find what might be wrong. There were no clues. On inspection, the experts advised the pilot to bank the aircraft ten degrees right and add power to the left engine, trim everything to neutral and pull the emergency boost release. This procedure was successful and the pilot made a straight-in approach to a successful landing.

Good work. Investigators found a bolt and nut completely missing from the rudder linkage. At this writing they are trying to find out if the bolt broke or if the nut wasn't safetied. 'Nuff said.



ONE EVENING some years ago this tiger installed some vinyl flooring in the wife's kitchen. During the process we smeared some of the stick 'em goo on the baseboard, the flooring, our front paws and elsewhere. No strain... we had plenty of stuff around the house to clean it off with.

First we tried all purpose paint thinner. The goo just smeared. Next came turpentine; more smearing. Getting reckless, we tried a dab of lacquer thinner, followed by wood alcohol, then white gasoline... all with an equal lack of success. We broke out the steel wool and were just getting ready to start on a long hard night of work when the wife walked in to find out what was going on.

"Did I hear you cursing?"

"No ma'am, I was sorta discussin' the ancestry of that no-count-good-fer-nuthin-low-down muddle head who invented this... this..."

"Well why did you have to smear it over everything?"

"That's what I was discussin'. The stuff just

practically flang itself all over and nuthin' cleans it up."

That's when she sounded like the T.V. commercial. She said, "Well, have you tried water?"

You guessed it. Water slicked it right off.

We learned several things from this episode and at least two of 'em apply equally to this business of flying and maintaining aircraft. First, there is usually one really easy solution to most problems and it pays to try the simple common, ordinary approach first... provided your problem is one that is not covered somewhere in writing. Two, you can usually find the correct solution by reading up on it. Had we done some careful reading before we smeared goo on the label, chances are we would have found out the goo was water soluble much earlier than we did. In the Air Force, the T O's are our labels. Altho a problem may be new to you, chances are someone has been over the road before and has included the easy solution in the dash one, dash two, dash six or a special T O on the subject.

AN F-100 PILOT lost his Mark 76 bombs along with his mission because armament people left the bomb release relay maintenance switch closed. When the pilot turned the armament selector from "Bomb Single" to "Rocket Fire" the bombs did the Walls-of-Jerico bit and came tumbling down.

From now on, the maintenance switches in this unit will be safety wired open and will be included in the pilot's armament checklist.

TAT raised a shaggy eyebrow on this one. As we see it, there are so many items maintenance people must take care of which can conceivably be added to the pilot's check that if we add 'em all the pilot ends up pulling a maintenance preflight. Many knowledgeable people have worked hard and long to reverse this trend. They are just starting to get results. Let's not undo all their good work.

Just recently this tiger looked over the latest F-105 checklist... yes sir, afterward you could hear us purr all the way down at STDN/EVAL. In our humble opinion the new look is safer and more professional. Safe because no pertinent points are hidden under a mess of frills and finery. Short snappy BOLD FACED PROCEDURES which can be retained when the chips are falling down. Professional, because they give the pilot credit for having enough good sense to see what is readily seen during a normal walk-around. To all who helped with this project, we tip our old hard hat!

—TAT—

no doubt

BY MAJOR JESSE L. TRENT 4505 CAMS

THE ARTICLE "Doubtful Diagnosis" published in the February '63 AEROSPACE ACCIDENT AND MAINTENANCE REVIEW contains tragic truth. However, I question whether the primary clue that was cited in this article is the real primary clue we maintenance technicians are looking for; even tho the clue in the article is too real for comfort.

We are really looking for the primary reason behind those "metal shavings and piece of broken wheel rim" referred to in the article. The cause of failure was probably present in that wheel when it was built up and installed on the aircraft! Many wheel failures are caused by corrosion, heat damage or internal invisible cracks. Present day Air Force inspection methods are not capable of locating these flaws before stresses imposed on wheels by high performance aircraft cause failure.

How can the average maintenance technician find these flaws before it is too late? As I've already indicated, we can't wait for them to become visible to an inspector . . . even an inspector looking for them thru a high powered magnifying glass. These flaws are internal and reach the critical stage before becoming visible on the surface. In fact, many wheels are even received from the depot with imperceptible cracks, corrosion and hidden heat damage.

Fortunately, space age technology has provided several ways to locate this damage that can be applied at wing level. I'm referring to radiography, ultrasonic, eddy current, and conductivity testers. Let me briefly discuss two of these; the ultrasonic and eddy current methods of inspection.

To give a wheel an ultrasonic examination we subject it to ultra high frequency sound waves using a search probe (transducer) which is connected to an instrument containing a cathode ray tube. The tube essentially gives us a picture of the examination. The basic fundamental behind this method of inspection is that ultra high frequency sound waves will travel thru the metal but will not penetrate or jump air gaps which are present with any discontinuities in the metal. Therefore, the smallest crack as well as the slightest amount of heat damage or corrosion will show up on the scope. Once a standard has been set, an inspector can tell precisely when a wheel has reached the end of its useful life span. The first diagram shows this simple method of examining metal.

The cost of an ultrasonic inspection instrument fitted with a contoured search probe is approximately \$3,500. Compare this with the cost of injury, death or property damage that can be prevented by locating flaws before they result in a failure.

Now let's look at the eddy

current instrument examination. This can also be used at wing level. The cost of this unit is \$2,000. Again, this is mighty cheap insurance.

The basic principle behind eddy current examination is the magnetic field. If we apply a magnetic field to a suspect area using a search probe, a discontinuity whether it be cracks, corrosion or heat damage, will disrupt the magnetic field. The disruption is displayed on a scope or meter. The second diagram shows how eddy current would be applied to the mounting bolt holes of an aircraft wheel to look for prohibitive corrosion.

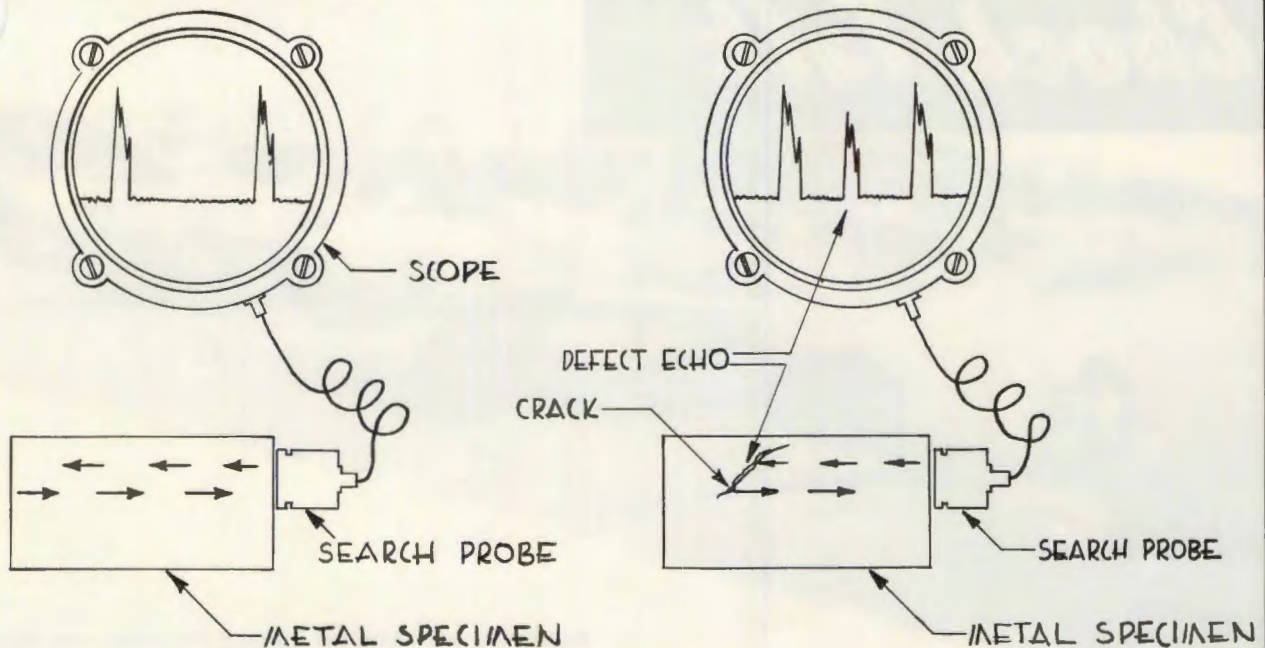
Both pieces of equipment are reasonably simple to use -- certainly no more complex than a TV set -- and are much faster than visual inspection methods. Either takes about 15 minutes to completely check a B-66 wheel, and the equipment can be used to inspect many, many things in addition to wheels.

Although most anyone can operate the equipment, it does take a trained operator to establish testing procedures. Training is readily available thru the Air Training Command. The degree of skill required is comparable to radar technicians or electronics specialists.

Perhaps an ultrasonic or eddy current examination of the C-130 wheel in "Doubtful Diagnosis" would not have prevented the tragic accident, but these devices certainly do have the capability to prevent such failures.

The saying, "Leave no stone unturned" applies to all aircraft maintenance activities. Are ultrasonic or eddy current examinations our stone? If so, when are we going to turn the stone?

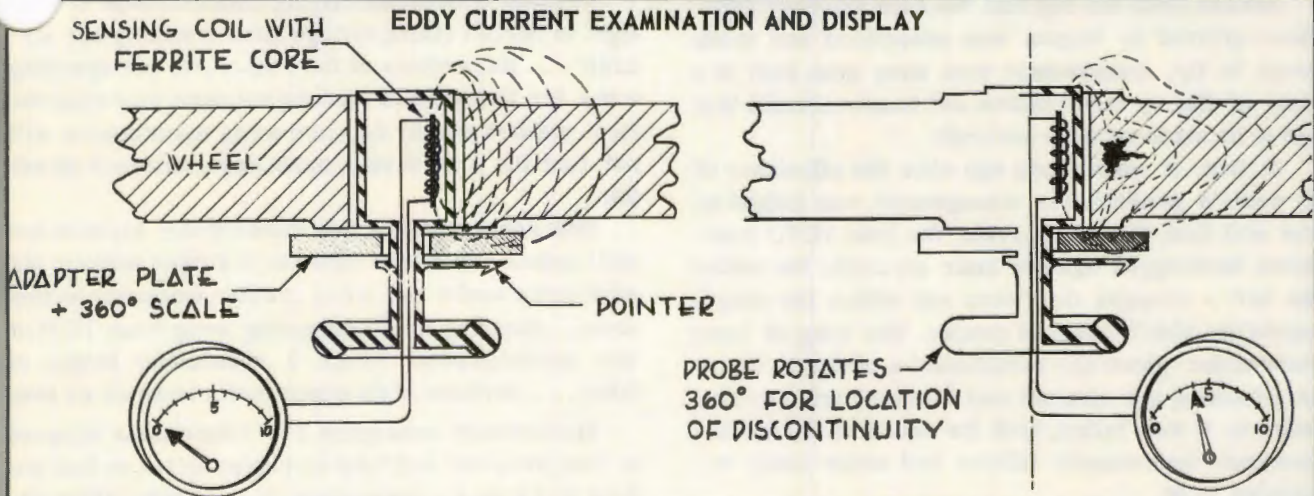
BASIC PRINCIPLE OF ULTRASONIC EXAMINATION



IN GOOD SPECIMEN, SOUND WAVES FROM THE SEARCH PROBE ARE NOT INTERRUPTED.

SCOPE DISPLAY WHEN THERE IS DISCONTINUITY IN THE METAL SPECIMEN.

EDDY CURRENT EXAMINATION AND DISPLAY



NO CHANGE DETECTED IN WHEEL METAL COMPOSITION.

MAGNETIC FIELD DISRUPTED INDICATING A CHANGE IN WHEEL METAL COMPOSITION CAUSED BY CORROSION OR HEAT DAMAGE.

Major Trent is Maintenance Supervisor with the 4505th CAMS here at Langley. He first became seriously interested in eddy current, ultrasonic and other forms of nondestructive testing when stationed in Great Britain. While there, the maintenance section he was with used this equipment to locate several serious problem areas before they resulted in failures. These problems included wheels, gear struts, bomb bay tank lugs, engine mounts and turbine blades. Major Trent is an active member of the Society for Nondestructive Testing and is secretary of the Hampton Roads Section of the Society.

Chock Talk

chock talk



TIME TO COMPLY

Almost from the day that the first military airplane arrived by wagon, was assembled and made ready to fly, maintenance men have been kept in a state of flux by modification and improvements that had to be made on their aircraft.

In fact, it wasn't long ago when the efficiency of an outfit's maintenance management was judged on how well they did in this area. The less TCTO man-hours backlogged against their aircraft, the better the unit - changes that were not within the wing's capability didn't count of course. The wing or base commander generally established a realistic figure as a backlog per aircraft and everyone tried to stay below it. If they failed, both the squadron CO and the squadron maintenance officer had some fancy explaining to do.

As a result, when a change came thru which would improve aircraft performance or combat capability, a base level effort soon had the change in effect on all birds in the outfit. Yes, even before 66-1, this required advanced maintenance planning.

After the 66-1 system with all its planning, scheduling and controlling was placed in effect, accomplishing TCTOs at base level soon became the exception and not the rule. It would seem that

managers have started looking the other way, hoping that the wing/base TCTO backlog will grow large enough that either the depot will have to be called in, or the major air command will declare a stand-down to let them bring the configuration up to the desired standard.

Perhaps present day flying commitments are tight to permit taking enough time to modify our aircraft . . . Regardless of the reason, we are spending many Air Force dollars having someone else keep our fleet updated simply because we in maintenance will not find the time to do a most important part of our job.

How can we reduce this unnecessary expense and still update our fleet? There is no simple answer, but each commander can place greater emphasis on this area . . . insuring that outstanding wing/base TCTOs are accomplished within a reasonable length of time . . . perhaps at the expense of a mission or two.

Maintenance managers can renew their interest in this program and take stringent action to find the time it takes to accomplish these mods. After all, TCTO kits cost us hard, cold cash and they aren't going to improve the performance or capability of our aircraft one bit so long as they gather dust in base supply.

Let's start right now to stand on our own two feet and promptly do the work required and expected of us by the TOs. Concerted effort will whittle down the backlog and once it reaches a reasonable size, it will be relatively simple to keep it that way.

TOO CLOSE

Mechanics at an overseas airbase made a ground up of the number three engine on a C-130 check for an oil leak. It checked O K, so they left the engine in ground reverse and moved the stand over to number four to leak-check a fuel pressure transmitter installation, placing the stand just behind the prop. They put the jack pads down to secure the stand on the clear, dry ramp. The ramp sloped slightly toward the engine but the stand seemed firm. Number four was started, placed in ground reverse and an airman climbed up to check for leaks. Very shortly he noticed the stand was moving toward the prop. He tried to stop it, but was unsuccessful. He bailed out just before the prop made contact. A crew chief also saw the stand starting to move and called for an emergency shutdown. The operator was just starting the shutdown when the prop made contact.

Flying debris punched holes in the leading edge of the wing, the number three engine panel and the fuselage. The number four gear box split and the prop dropped to the ramp. Fortunately no one was hurt.

SAFE SAFETY

Since most pilots aren't descendents of Hercules or Atlas and since even fewer carry pliers when they fly, give them a break and use proper safety wire on cockpit switches. One TAC base found that the switches in many of their aircraft were being safetied with wire that was too heavy. T O 1-1A-14 says that cockpit switches should be safetied with .020 copper wire.

DAEDALIAN MAINTENANCE TROPHY

After carefully screening numbered Air Force nominations for the 1962 Daedalian Maintenance Trophy, a TAC board selected the 4505th Air Refueling Wing, Langley Air Force Base, Virginia, to be the Command nominee. The recipient of this coveted maintenance award will be selected from all command nominees by a board at Headquarters USAF. The 4505th Air Refueling Wing surpassed the TAC runner-up in several areas among which were operationally ready rates, unscheduled maintenance rates, TCTO status rates and NORS rates.

4505 Air Refueling Wing personnel have done an excellent job and we wish them well in the USAF competition.

TAC ATTACK

T O IMPROVEMENT

The Quality Control Officer at Nellis made this very appropriate comment: "Thought you'd all be interested to know that we consider it our duty to know and follow the T O procedures for operating our aircraft, and to request changes by AF Form 847s and AFTO Form 22s when we think they are appropriate. During the month of September, we submitted 15 change requests on the F-105 and T-39. We encourage all pilots to exercise this prerogative when they see something that they think can be improved. Maybe we'd have better T O s to work with if they did!"

OVERTIME

Keep the workload as even as possible for flight and maintenance crews . . . preferably below maximum capacity. Sporadic schedules that periodically call for workloads above optimum introduces unsafe practices and reduces efficiency.



THANKS TO TANKS

After the J-75 chugged during what started out to be a routine flight, an F-105 pilot jettisoned external tanks and returned to the field. The difficulty was soon traced to the fuel control. Foreign material caused it to malfunction. Investigators found something that looked like crushed rocks or slate in the low pressure and fuel control filters. Near as they could tell, this got into the fuel system via the external tanks. Dirt can easily get into tanks during storage if tank standpipes are not properly covered. TAC Safety Survey team members have noticed that drop tank storage frequently is not up to par. If you are not certain about storage procedures at your base, best review 'em. Your first warning of trouble could well be an accident.

F-100 ROCKET SEAT

The rocket seat is now being installed in F-100 aircraft. Technically known as a Ballistic - Rocket Ejection Seat Catapult, the system was designed to provide for safe zero or low altitude ejections at speeds as low as 120 knots, and to insure that the pilot clears the stabilizer when ejecting at high air speed.

The pilot in the aft seat of an F-100F can eject independently; however, if the front seat pilot elects to eject, the aft seat pilot has no choice--he goes automatically 1/2 second ahead of the front seat pilot.

Only a few of these seats have been installed, but kits are available and plans have been made to expedite installation in TAC's F-100s.

A TAC pilot had a chance to try one in December during a controlled ejection. He reported a smooth ride and estimated that his trajectory carried him approximately 200 feet above the aircraft. "Safe Way Out" in the February 1963 issue of TAC ATTACK is an account of this pilot's experience.

SHOCKING

While removing a light in the passenger compartment of an aircraft, a mechanic burned his right index and middle fingers, the middle finger badly enough to expose the joint and bone from the distal joint out.

He didn't de-energize the circuit prior to removing the light because someone wanted to use the cabin lights. A rubber boot slipped off a contact. His wrench touched it and current flowed through his hand.

Modern aircraft use 3 phase, 400 cycle AC and voltage from any one terminal to ground is 115. Voltage across any two of the three terminals on motors, actuators and control mechanisms is about 208. Somewhat of a hazard! To reduce shock potential, use grounding straps on test equipment to insure that power is off before you start to work.

T-33 GENERATOR FAILURE

A T-33A generator failed while the pilot was making an early morning weather flight. He landed at a nearby base, but maintenance personnel were unable to find any discrepancies, and signed the aircraft off as O K. The pilot took off for his home base and immediately the bird had another generator failure. He returned to the transient base and landed. Further investigation revealed that the reverse current relay had failed. It was replaced and the pilot had no further problems.

HOT HOOD

The January Aerospace and Maintenance Review told about a T-bird instrument flying hood catch fire because sunlight was focused on it thru canopy. Sound remote? Well, a TAC base doesn't think so. They had one catch fire the very day the January Review arrived on base. Cure is quite simple. Use Type I Nylon Cloth, Class 3, coated with chloroprene fire retardant or Type II, Class 4 Nylon, coated with vinyl chloride polymer containing a fire retardant. Now - how about checking your T-birds or Fs. One of these fires really spoils canopy and hood.

TILL THE END OF TIME

Don't hesitate to follow-up if you don't get an answer to your AFTO Form 22 within a reasonable time. One of our TAC bases reported that they'd submitted a Form 22 in April. They didn't get an answer, so along about October they sent a tracer followed by another one two weeks later. Near the end of November, 225 days after they had mailed the Form 22, they got an answer . . . the Form 22 had been "inadvertently lost during the coordination cycle." The depot did concur with the base and said they would change the T O. The depot may have found the "coordination copy" sooner if follow-up had been made earlier. On the other hand it may never have been found without a follow-up. 'Nuff said?

POWER TO PASS

We still hear about A & E troops curing many repeat discrepancies with "Ground checked OK." We suggest that if the specialist or mechanic can't duplicate a pilot's discrepancy with external power that he crank up the bird and see if he can duplicate it with aircraft power. Many times the pilot's malfunction will show up this way. Remember, pilot's don't fly around with C-22s attached to their birds!

BUBBLES

When inspecting high pressure hose assemblies, give special attention to the condition of the rubber covering near the end fittings. Swelling or softening indicates that hydraulic fluid is seeping thru the inner lining and causing the outer cover to deteriorate. The hose should be replaced before it fails.

IN THE RED

Are the instruments in your aircraft marked correctly? Section V, Operating Limitations, of the appropriate aircraft dash one shows you how the instruments should be marked. How do yours compare? T O 5-1-2 says that you can put the markings on the front edge of the case just outside the cover glass on the small one and two-inch instruments. A good idea, especially for the small button type instruments such as the hydraulic gages in the F-105 and T-39B. In any case, the markings should not hide the indicating needle. A small, white index mark should be painted on the glass and case so you'll know at a glance whether the range markings are in the proper place. A pilot could fly around with some pretty screwy operating limitations if the glass slipped and there was no way of knowing that it had.

T-33 HYDRAULIC FAILURE

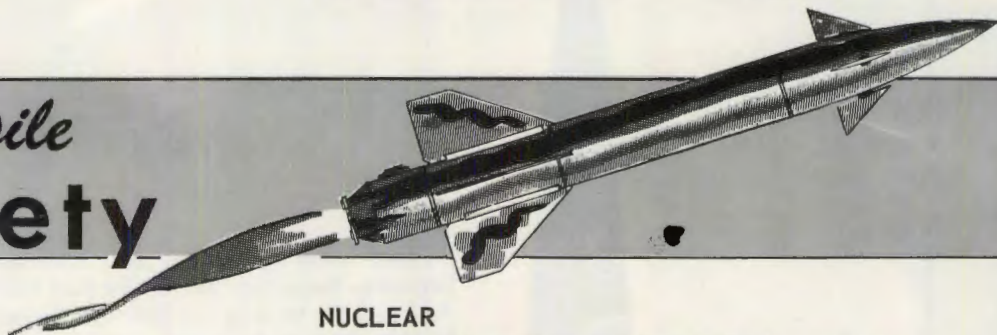
The hydraulic system of a T-33 failed shortly after takeoff so the pilot extended the landing gear with the emergency system, turned off the aileron boost, and made a straight-in landing. A loose B-nut on a hydraulic line in the speed brake area caused the failure.

QUESTION OF THE MONTH

Torque wrench "factor" is of primary importance when using:

- (a) Padded torque handles
- (c) Self-locking nuts
- (b) Wrench adapter
- (d) Dial torque wrench

Nuclear/Missile safety



MISSILE

Just a few reminders this month as a back-up to our Safety Alert Letters. For example, SAL 62-5 covers damage to GAR-8 G&C unit glass domes. Too many of these domes are being damaged. Remember, they are extremely fragile and you must handle them with care. Closely following the checklist will help.

SAL 62-12 concerns damage to GAR-8 umbilical cables. To avoid damage during loading and down-loading, keep track of the umbilical cable and watch for any tendency of the missile to roll.

SAL 63-2 is about the GAR-8 umbilical shorting plug. Remember the plug must be installed for all captive flights.

Last but not least, SAL 63-3 discusses safety procedures for the GAM-83 liquid engine. This engine is relatively safe as a sealed unit but don't be caught short...watch for leaks. If you discover an engine seeping at the seams, evacuate and call EOD. By the way, have you EOD men seen the T O s on this and your protective clothing fit?

NUCLEAR

Personnel errors continue to be the main cause of nuclear mishaps. The majority are directly attributed to poor handling techniques, improper maintenance, failing to follow established procedures, inadequate supervision, or poor judgment.

Knowing that a personnel error can cause a specific mishap isn't, in itself, going to prevent a mishap. For example, one of the more common personnel errors is the failure to follow established procedures. A loading crew member repeats the same tasks day after day until he begins to believe he no longer needs a checklist. Hoo boy! He reverses steps 12 and 13 and we have a nuclear incident!

This is why the Air Force requires its people to use a checklist during all loadings. The system is too complex for anyone to achieve 100% accuracy, all of the time, without a checklist.

Supervisors established the overall trend here. If they insist that everyone uses a checklist, make frequent spot inspections of actual loadings and are rough on those who don't play ball, they will soon make this type of personnel error mishap a thing of the past.

TAC ATTACK

Maj 'Bob' White on Safety



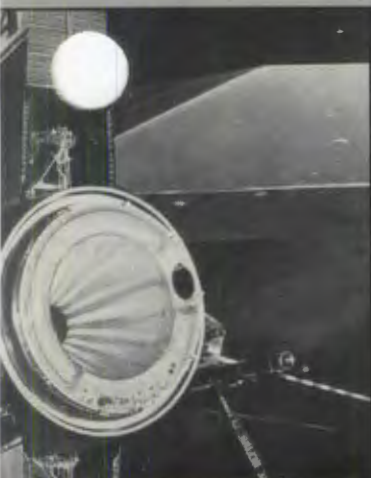
This month we have a treat from one of the sharpest pilots in the business, Major Bob White, who took time out from his fine work with the X-15 program to write his views on Flying Safety. Altho Bob has no magic formula, he does have some good thoughts about the basic principles that form the foundation for safe and successful flights. I'm certain that you will enjoy his article as much as I did.

— Col. James K. Johnson

THERE ARE MANY times when a discussion of flying safety will give a pilot the lethargic view that it's all the same old stuff he's heard over and over again. And it would be completely true except that each and every one of us has had one or more actual experiences where we just barely squeezed by to a safe flight. The story behind some of these flights usually falls under one of the many categories that make up this thing called Flying Safety.

Thinking back over my own experiences, I was tempted to tell a few of these stories on myself, but such true confessions are best

told at the Officers' Club when your buddies can usually top the best tale you have. Regardless, my experiences have impressed me with two factors that have most often made the big difference; flight planning, and knowledge of the equipment. These subjects may seem mundane. We've beaten them around since flying school days, so I suspect that you'd rather read about things like skill and judgment from someone who has done experimental test flying. These certainly are excellent qualities and well debated, when fighter pilots get together, but I've found that they vary as the sum total of a pilot's experience



that in the long run it's the fundamentals that add up to safe flight operation.

We've all read too many times about someone crashing short of destination because they ran out of fuel. Many of these flights involved the old T-bird. Usually the



pilot started from scratch with a flight plan inadequate for the situation. It's tough to be caught in a corner but it's mighty grim if you don't give yourself an even chance. Just recently I got caught in a fuel sweat during one of those maximum range flights. I'm sure some of you can recall a tight one of your own. After I "just made it" I had a chat with the weatherman. He explained that a trough had developed and caused wind shifts that threw me a curve. The curve made me feel like a .200 hitter facing Christy Mathewson in a World Series. Although I may be criticized for pushing out to maximum range, I was grateful that my

As much as I've been impressed that a comparatively simple flight from point A to point B requires application of professional knowledge, so too does any flight that satisfies a part of the Air Force mission. Despite the mission difference, the fundamental ideas of flight planning and equipment knowledge apply equally to a fighter pilot with ordnance to put on target, a transport pilot delivering troops to a drop zone, or in my case taking the X-15 on a research flight.

I suppose that the reason I am so impressed with flight planning and equipment knowledge is because I spend so much time in

airplane to see how it responds at Mach 4 or 5 or at 120,000 f. We use computers tied into a simulator and study profiles over and over again to determine what we can learn from a flight and what troubles we might expect. From this we can determine alternatives to use in the event of system failures. Each specialist on the aircraft discusses his system with me in detail until I hopefully know it completely. Finally, with a flight plan in hand, I spend hours in the simulator trying to cope with every emergency thrown my way. During this period I jump off in an F-104 to shoot flameout landing approaches since the X-15 does finish with a dead-stick landing. This may be put in the skill and judgment department, but I like to think that I'm merely putting a fine edge on these qualities so I can come as close as possible to the spot they've marked on the runway landing.

Each time I've climbed aboard the X-15 I've felt more adequately prepared than for any flight I've ever made, mainly because the flight plan and knowledge of the aircraft are all stored in my memory bin. We don't always have time to read checklists or emergency procedures when an aircraft is in trouble. Knowing what to do immediately has paid off big in the X-15. We've had a number of emergencies, failures, and problems in flight that have been quickly handled by the pilot, allowing him to safely recover the machine.

In closing I'd like to make an observation that should be particularly appropriate to TAC drivers. Although the X-15 is a research rocket aircraft, giving many technical answers to aircraft designers, those of us



flight planning was accurate, even though a bit tight. During preflight I noticed that fuel was low in one of my tanks. Despite the annoyance and extra time I called the refueling crew back and took on "only" 22 gallons. You guessed it; that 22 gallons made the difference.

these areas . . . usually two weeks of concentrated effort to accomplish one 11-minute flight. I help create the flight plans for each of my flights. Then, working with the engineers, decide how fast and how high to fly, what angles of attack to use, and where to upset the

fly it are trying to do the job by applying the same facets of flight that we all use today. In our work, we hope to prove that the

human pilot can still do the job best, even though it's at the higher speeds and higher altitudes. We believe the winged aircraft and its

pilot can play as big a part in tomorrow's Air Force as in today's.



Major Robert M. White is from New York City and first entered the Air Force in 1942. He graduated from the pilot training program in February 1944, and flew 52 combat missions

with the 355th Fighter Group in the ETO before being shot down by anti-aircraft fire between Munich and Nürnberg. He spent the rest of World War II in German prison camps.

Major White was released from active duty in December 1945 and was recalled in May 1951. In January 1952 he was transferred to Johnson Air Base, Japan, where he remained until July 1953, flying with the 40th Fighter Interceptor Squadron.

He graduated from the USAF Experimental Flight Test Pilot School at Edwards Air Force Base in January 1955. At Edwards, he has been

active in such projects as Phase IV testing on the F-86K and F-89H; Phase VI on the F-102 and Phase II on the F-105B and the X-3. He is currently assigned as Assistant Chief of the Flight Test Operations Division, Directorate of Flight Test at the Flight Test Center.

In 1958 Major White was appointed the USAF project pilot for the X-15 research program. His initial flight in the X-15 was made April 15, 1960 and in August he took the research craft to 136,500 feet, the highest attained in the vehicle equipped with the interim XLR-11 engine.

ABOUT THE AUTHOR

TRUSTING TO LUCK



AS USUAL, I checked the internal fuel system on the way out and turned on the tips just before taking the active. The light went out during run-up and I gangloaded without making certain the tips were actually feeding fuel. Shortly after discontinuing gangloading, the fuselage low level light flickered and came on. I talked it over with Elwood in the aft seat and we tried the usual cures. You know, pulled the circuit breaker, pitched the aircraft up and down and even pulled out the dash one to see we'd forgotten anything.

All the while, we continued with our climbout from Montgomery. As we climbed I kept filling the fuselage tank from the main wing. It dawned on us both at about the same time...we'd flown ourselves into a hole! We'd gotten so engrossed trying to correct the trouble and waiting to see if our efforts had taken effect, that we'd reached a spot somewhere between Key Field at Meridian and Barksdale, where we weren't going to make a field without gliding for it! It was just as close to press-on as it was to turn back, so I continued my climb and planned to shut down, Korea style, and glide for the local pattern, then restart for the landing. At 32,000 the stubborn tanks suddenly started to feed, and we continued to Carswell. We lucked out, this time.

It's a small point and most pilots don't realize that it is covered in the checklist, but it certainly pays to insure that the tips are actually feeding as well as pressurizing. Also, in the future, I intend to avoid flying into a trap trying to cope with a problem like this. Without tip fuel, the T-bird has much shorter range than most troops realize.

TAC TIPS

SKINNED F-4Bs

As he decelerated from Mach 2 thru 1.71, the pilot of an F-4B noticed a bubble form on the left wing tip panel. At 1.68 the bubble burst and the panel came off. The pilot was able to make a safe landing . . . Another F-4 pilot lost the trailing edge of the right wing tip on a Mach 2 run. Apparently the honeycomb separated because high temperature destroyed the bond or because moisture got into the comb, froze and broke the bond.



FLYING BLIND

We heard about a unit just the other day that tries to send a chase plane on every test flight. They reason that the test pilot will have his head in the cockpit when he is recording facts and figures and another pair of eyes to look around for him is cheap insurance against a mid-air.

TRUE STORY - NAVY STYLE

A brand-new, red hot Navy pilot was taking off from an overseas base in an SNB. The technique of this particular smoldering boulder was to guess when he'd reach required flying speed and retract his landing gear --- which should make the airplane fly.

On this takeoff, undulations of the runway apparently caused a slight miscalculation . . . the airplane settled slightly as the pilot brought the gear up and the prop tips struck the runway. Much to the surprise of the copilot, the pilot held course and continued climb-out. The copilot, of course, figured that the pilot would make a quick swing around the

flight pattern and land the ship. To check his intentions, the copilot turned to him and asked, "Ensign Hardhead - Do you know we hit the runway with our props on takeoff?"



"Roger," replied Ensign Hardhead.

"Don't you think we should return and inspect the damage?" asked the copilot.

"To heck with them!" said Hardhead. "Let fix their own runway."



TAC ATTACK DISTRIBUTION

Paper work is in the mill to print more copies of TAC ATTACK each month. To insure that we are getting good reader coverage, we are putting out a survey sheet to ascertain your requirements. Please fill it out conscientiously and return it ASAP. Remember to include support personnel when making your computations.

RAIN, RAIN, GO AWAY

In addition to reducing visibility, rain on the windshield of an aircraft causes a refraction error that makes obstructions look lower than they actually are. The magnitude of the error is about 5 degrees or 1 in 12 . . . a mountain peak one half mile ahead of the aircraft would appear to be 200 feet lower than it is. The refraction error could also cause a pilot to level off high during an approach for landing.

Rain repellent will reduce the error and improve visibility.

F-100D DIVE BOMBERS

The Air Proving Ground Command cautions that T O BA1-4-1 does not consider altimeter position error or altimeter lag. That when the book was published they assumed position error would compensate for altimeter lag. During some recent flight tests using F-100D's, the worst altimeter lag was about 600 feet. This was from a 50-degree dive with an unplanned 546 knots calibrated airspeed. Average lag during the tests was .44 times the rate of descent in feet per second. Until better data is available, APGC recommends you use the .44 lag constant plus the altimeter position error chart to calculate individual altitude for dive bomb releases.



TOM-TOM

Ever wonder why some pilots slap panels when they preflight aircraft? Basically, it's a good way to detect loose rivets, screws, dzus' and cam-locs. But a test pilot out at Nellis found that slapping might turn up something else. After hearing a strange noise inside when he slapped a panel on an F-86, he removed it for a look-see and found a small open end wrench laying under the panel. Perhaps he should slap more than the panels!

AN ALTERNATE APPROACH

Do pilots and GCA personnel appreciate the limitations of Air Surveillance Radar Approaches (ASR)? Not many years ago we were losing aircraft and crews during range and beacon approaches when weather was near minimums. Now are we getting so used to making Precision Radar Approaches (PAR) in marginal weather, that we consider ASR minimums a breeze?

Recently a commercial airliner just missed crashing, and a Navy plane did crash while making ASR approaches. ASR minimums are higher than PAR minimums to give you adequate margin of safety . . . maybe you can get away with cheating on the minimums occasionally, but it only takes one crash to activate your insurance policy. Moral . . . always comply with established minimums for the approach used.



TWO SUITER

Guess F-105 pilots will have to travel light or stay close to home until someone comes up with a baggage rack. There just isn't a good place to carry baggage internally. Although the ATM compartment appears like a logical place, stowing personal gear in it creates too much of a fire hazard. One pilot thought he had the answer... the radome. However, one look at the plumbing inside after his flight proved him wrong.

HOW HIGH IS UP

Be sure to double check any altimeter setting you receive . . . a big discrepancy between the forecast setting and the one you receive when arriving at destination is good reason to suspect an error. And it do make a difference . . . each tenth of an inch variance from the actual setting means a 100-foot error in altitude.

The Educated Box



IN 1959 THIS WRITER was talking to a well experienced Marine fighter pilot about fighter operations. Eventually we got around to accidents and ways to stop 'em. That's when he asked why the Air Force was so slow to adopt the angle of attack indicator. He went on to explain that the wing he was in had been using it religiously for well over a year.... and had cut landing accidents to zero while flying Furies, Tiger Jets and Crusaders.

This was the first I'd heard about angle of attack indicators, and from what he said, they sounded too good to be true. Automatically compensating for different loads, changes in configuration, and giving immediate information without the usual lag.

"You have to fly it to believe it." He remarked.

"I'll get my brain bucket!" He nodded agreement, and be-

fore the week was over, I was in the aft seat of an F9F giving it a go. In all, I flew five approaches and landings. All were absolutely without difficulty, with nary an arrival in the bunch. The system was simplicity itself. A needle on a small gage gave angle of attack information and all I had to do was keep it horizontal. If it moved up, slight forward stick brought it right down... it seemed to move with the stick. In a matter of moments I had the bird trimmed to give the proper angle of attack, then made a few throttle adjustments to get a sink rate that would hit the intended touchdown point. From there on, the bird flew itself... or seemed to. After the flight was over I realized that I couldn't remember what airspeed I'd held on any of the approaches. I hadn't looked at it!

"Really," the Marine said, "airspeed on final isn't too im-

portant so long as you fly the correct angle of attack. This puts you at the proper speed, because the airspeed just follows along behind like the tail on a kite."

The F9F uses a small skid metal probe about 4 inches long and a little less than a half-inch in diameter to pick-off angle of attack information. This probe is on the fuselage just forward of the cockpit. It looks deceptively rugged and, according to my Marine friend, is too conveniently located. They have trouble with people hanging clothing on them or damaging them thru other abuses. However, the probe is easily checked on preflight and the complete system checked during flight.

Following this flight, I asked the people in Requirements at an overseas headquarters if anyone had considered equipping our birds with this instrument.

"Oh we've considered it, but it doesn't do much good."

"Oh? How so?"

"Well, it doesn't help du-

LABS runs at all and . . . ”

“Certainly not!” I snorted, no good in the high speed envelope. That’s where airspeed is king. But in the low speed envelope, it’s the best thing I’ve ever seen. It would be a perfect solution to our landing accident problem in the F-100 and would just about make the barrier unnecessary!”

“Well frankly, I think it’s just another gadget to clutter up the cockpit and we have too many of those already.”

“Have you flown it?”

“No, but . . . ”

The IOC I submitted died somewhere on someone’s desk - another guy who didn’t want anyone cluttering up the cockpit with another gadget, regardless of how valuable. Meanwhile, with transfers and other problems, I never followed up.

Very recently I had a chance to see an improved version of the angle of attack indicator. This one

heated electrically and is far less apt to ice up than present day static sources - making it a perfect back-up to the airspeed indicator. In addition, a small black box feeds acceleration data into the angle of attack data so that the instrument presentation is thoroughly accurate when decelerating or accelerating. A pilot can now use it for a max performance lift-off and climbout as well as for precise approaches.

I got to fly the improved unit in a twin engine Beechcraft set up for demonstrating it. The Beech has three presentations. Two are needles that deflect to the left when the angle of attack is low (speed too high) and right when the angle of attack is higher than optimum. The unit is compensated electronically to correct for changes in flap settings and with a two-position switch the pilot can select normal or max performance readout. The third indicator works off the same output, but instead of being a left-right needle it is an index, or bug, incorporated into the attitude indicator. The bug moves up and down. The pilot puts the little aircraft of the attitude indicator opposite the bug when he wants optimum angle of attack.

Three of us pilots gave it a try one afternoon and the bug was the only presentation any one of us used even tho the others were on and working. This left-right stuff takes too much interpreting.

The day was so gusty I expected trouble. Particularly when the demonstration pilot said we’d each make maximum performance take-offs and landings at 8 percent above stall. (With stall at 80 knots, this gave us a little over 6 knots padding.)

Someone else felt the same way and asked if the gusts would make this risky.

The demonstration pilot grinned, “That’s the beauty of SCAT, with its compensation for acceleration, it automatically takes care of rough air. You don’t have to calculate a gust factor or add on anything.”

“What’s SCAT stand for?”

“It means Speed Command Attitude Target.”

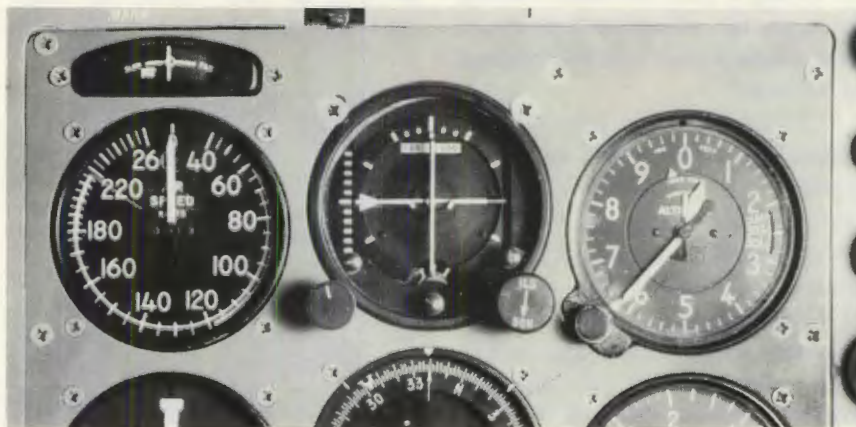
“Oh.”

We rode the rear seat during the first flight. The demonstration pilot showed how to check the system. If SCAT’s working properly the bug drops lower on the artificial horizon when brakes are applied and climbs briefly when



Probe from the Beech. Whole unit is heated to preclude icing.

uses a more durable pick-up located very unobtrusively on the leading edge of the wing. It is



The Beech panel. One angle of attack indicator is above the airspeed. The bug presentation is to the right. The bug is on the left side of the instrument, next to scale. The third indicator is not shown.

the little Beech is accelerated during a throttle burst.

Take-off was a thrill. The first was made in the "normal" mode, 12 percent above stall. At 80 knots the pilot rotated and tried to put the bar of the attitude indicator on the bug. The demonstration pilot had to keep encouraging him to pull the nose higher while I kept wishing the demonstration pilot would shut up! The climb attitude can be best described as unbelievable.

After a short workout at altitude, where the pilot followed the bug during simulated engine failure, accelerations and decelerations, all of us became more confident in the equipment. Approach and landing in the normal mode were a breeze. The landing was smooth. Next came the max performance climb in the mode that gives 8 percent above stall. It was steeper than the first, but by this time the troop at the wheel had enough courage and confidence to put the bar on the bug . . . ugh! Fantastic is the best description I have. We crossed the far end of the runway at about 2,500 feet and it's not a very long runway. The max performance landing was equally impressive. Like coming down in a chopper. The aircraft is flared by adding a little throttle. Pulling back on the wheel at that speed will cause a stall and fall instead of a flare.

At first glance this doesn't sound like it'd be worth much in a fighter. BUT, you don't have to come in this steep. Start the approach further back, adjust the aircraft attitude to give an angle of attack that gives an airspeed 8 percent above stall and adjust power to get about 500 feet per minute rate of descent. If your judgment is correct, and it usually is, this should aim the aircraft at a point about 500 feet down the

runway. If it doesn't, resist the temptation to correct with stick. Use throttle instead to either increase or decrease your rate of descent. If low, you should just accept the flatter descent. If high, overcorrect slightly to intercept the flatter approach somewhere short of the runway, then add a little power to give about 500-foot per minute. Maintain everything as is until touchdown.

On many types, ground effect will help to flare the aircraft and you can chop power right after touchdown. With present Air Force jet fighters, you'd simply set up a flatter approach (which is what pilots actually do right now). The bug would undoubtedly have to be adjusted to a different value above stall, depending on the type aircraft. The important thing is that this value is adjustable and can be set to whatever is optimum for the type aircraft. Once set, it will permit a pilot to consistently fly far more accurate approaches than with any other system.

Back to the Beech. The system in it is equipped with a stall warning beeper which comes on whenever speed drops to stall plus 6 percent (4.8 knots above stall). Altho the air was quite rough and each of us flew one or two take-offs and approaches at 6.4 knots



Angle of attack indicator on F-4C canopy bow.

above stall, the beeper only squawked one time, very briefly when one of us was slow going in a correction.

Flying this gadget was an anticlimax after watching the other pilots perform. Nothing to it. Incidentally, once again I forgot to check airspeed during approaches. To my amusement, so did the other pilots.

The demonstration pilot claims that he observed a pilot in a 707 make several three-engine go-arounds without losing more than ten feet. Without the indicator, pilots have difficulty keeping altitude losses to less than 500 feet!

Quite a few of TAC's aircraft have been rolling off the assembly line already equipped with angle of attack indicators. The F-101 and F-104 have angle of attack information fed into their pitch-up warning and stall warning systems. But, neither are instrumented to make full use of it.



Angle of attack indicator, F-4C panel.



Angle of attack probe, nose section of F-4C.

of attack data for truly precision approaches.

The F-105 has angle of attack info on the tape display. Unfortunately, the system has to be disconnected when the bird is set up for in-flight refueling. After being re-connected it has to be re-calibrated. For this reason, pilots have a good reason to suspect any readings it gives and I can't say that I blame them.

Mods are in the mill to put the vane in a different location and give it better anti-ice protection. When this is done this instrument may well become prime for all approaches and other slow speed work.

The F-4 has essentially the same set-up I flew in the F9F, except a second presentation is installed which makes the device even better on final approaches. Two indicators, one on each side of the canopy bow, become active when the aircraft is in landing configuration. If angle of attack is higher than approach optimum, two bars on each indicator light up. The bars seem to point down. If angle of attack is correct, a circle below the bars is lighted and the bars are not. If the angle of

attack is too low, two bars that appear to be pointing up toward the circle will be lighted. It also has a gage in the cockpit that gives the angle of attack in units. The gage can be rotated to place whatever unit is optimum for the desired flight condition to the three o'clock position. The needle will be horizontal when angle of attack is at this value. The pilot can trim the bird to this value, and adjust power to hold altitude or establish a desired rate of climb or descent and presto; he's on the money. Unlike other birds, the angle of attack on the F-4 is sensitive in the higher speed ranges as well as the low speed range.

The C-123 is also equipped with an angle of attack indicator. They call it a Speed Control Indi-

cator, but function is the same.

So, if you bump into this device in one of its many forms, take time to learn what it can and cannot do for you. For the most part, it can give you superbly accurate information in the low speed range and can take much of the guess work out of flying final approaches.

When this device is coupled with approach aids such as the Navy's meat ball (mirror landing system) or the new visual glide slope presentation the Air Force is starting to use, we can almost stop accidents caused by improper final approaches. This includes the dropped-in-short accidents and those chute-failure, into-the-barrier accidents.

two, too fast

Here's a typical report of an on-base vehicle accident.

An airman first was towing a generator trailer around a curve on the perimeter road when an airman third coming from the opposite direction tried to pass two cars. The airman first saw that the airman third would have trouble getting back into his lane and started braking. His machine skidded about 120 feet before the trailer jackknifed and turned over.

Meanwhile, the airman third slammed on his brakes and skidded off the left side of the road into the perimeter fence.

The airman first was driving too fast for the narrow road . . . the airman third was driving over the speed limit and trying to pass two cars on a blind curve. This was his second moving violation and he was held liable for damages.



SEG NEWS

4450th Standardization Evaluation Gp.

Colonel Hendry is a native of Atlanta, Georgia. While attending Oglethorpe University he enlisted as an Aviation Cadet and in April of 1942 graduated from flying school at Lubbock, Texas, as a second lieutenant in the Army Air Corps. Colonel Hendry's service career has been quite varied and includes a WWII combat tour in the China-Burma-India Theatre. He has flown transports, bombers and fighters in most areas of the world. His wide experience provides him with a first hand understanding of the problems involved in TAC's Stdn/Eval program. Colonel Hendry typifies SEG's open-door policy. He is always ready to help solve problems, not only for his own people in SEG, but for you people in the field as well.



COLONEL AUGUSTUS M. HENDRY, JR.
COMMANDER 4450TH STDN/EVAL GROUP

In this issue of the ATTACK, the 4450 SEG here at Langley, is starting this section as a regular feature. In an informal way, we intend to pass on current news, memos, reminders and info that might help you in your activities. But this is by no means a one way street. We welcome your comments on any pertinent subject and with your permission will include them in this section. The door is open. Send

us your ideas and suggestions. Remember, what seems like a minor idea to you, may be the key to a critical problem for someone else.

One of the greatest attributes of any successful program is the ability to communicate. I feel that this section will provide a significant means to that end.

AF FORM 8C

Some of you are still asking when the new AF Form 8C will be available. AF Publication Bulletin Nr 24, dated 19 Oct 62, stated that the form would be

available on or about 21 Dec. If you are still having trouble getting copies of the form, check with your local publications office.

STDN/EVAL INDOCTRINATION COURSE

The SEG School is still going full bore. Two classes were held at Langley in February, with two more being held at PACAF late in February and early this month. That's right, SEG now takes the school overseas rather than having USAFE and PACAF personnel come TDY to Langley. The school schedule for the rest of the fiscal year is: Class J63-C, at Langley, 18-21 Mar. Two Classes in USAFE 25 Mar to 14 Apr. Class C63-D, at Langley, 22-25 Apr. Class J63-E, Langley, 13-16 May, and Class C63-F, also at Langley, 20-23 May.

At present, SEG plans to have the annual flying symposiums during June and July. If these plans hold firm, the school will recess until August.

Quite a few people have queried the SEG School Division (SEG-P) regarding class spaces. Altho flattered by your interest, SEG-P has to transfer all such questions to the correct source. The regular crew chief is DPOP-S, under the Deputy of Personnel, Hq TAC. They control assignments to all schools. We give them a schedule of classes and tell them how many spaces are available for each class, DPOP-S then allocates these spaces to TAC units, CONAC, the National Guard and other services. After the quotas have been filled, DPOP-S gives SEG the names of the people who will attend each class. This system of quotas for all schools under one office and prevents a lot of confusion. Incidentally, DPOP-S has done a splendid job keeping this part of the program running smoothly.

SEG CHECK CHECKLIST

The SEF at the 474th TFW has been passing along these tips to help crews prepare for StdN/Eval checks. We think they cover the more common problem areas.

- * Use your briefing guide.
- * Make your maps IAW AFM 55-15.
- * Fill out both sides of the 21A.
- * Have a 21A for your examiner.
- * Don't rush your preflight. Get to the bird in plenty of time.
- * Know your check list and use it.
- * Remember your hand signals.
- * Be objective in your critique. The examiner knows if you goofed - He wants to know if YOU know it.

Work hard to prepare and plan your check. All work and no play may make Jack a dull boy, but all and no work will surely make Jock a dull grade.

AF FORM 847

Paragraphs 6-22 thru 6-25 of AFM 60-2 tell how to prepare and submit AF Form 847. The 847 replaces the old TAC Form 25.

Response to the old TAC Form 25 was tremendous; in the past year, SEG processed literally thousands of them recommending changes to flight handbooks and manuals. Most have been or will be incorporated in published revisions.

The 847 is the new way to get our ideas and suggestions to the policy makers and handbook writers. Why not dust off any ideas or complaints you have in mind, put them on an 847 and send it in. The word is "Don't delay - submit an 847 today."

SEG SCHOOL REQUIREMENTS

Last September, SEG sent a letter to all organizations telling about the StdN/Eval Indoctrination course. This letter required all StdN/Eval aircrews to attend the course before 1 March 1963, or not later than 90 days after being assigned to StdN/Eval, and made those who failed to meet the requirement ineligible to conduct StdN/Eval checks. Right after this letter was sent, Cuba came to a boil and several classes had to be cancelled. On 7 January a TWX to 9th and 12th rescinded this requirement. At present, attendance requirements outlined in AFM 60-2 apply.

BIG SIX

SELF EVALUATION GUIDE

- * Am I sure that I can get maximum performance from my aircraft without exceeding its design envelope?
- * Do I keep myself current on operational regulations and ARTC procedures?
- * Am I intimately familiar with Dash One procedures and the reasoning behind them?
- * Is my instrument flying as sharp and exact as I can possibly make it?
- * Do I have a tendency to assume risks that are not commensurate with the mission requirements?
- * Is my state of readiness an asset to the Air Force?



THE WEATHER-BEATEN major frowned a formidable frown and glared angrily at the Old Sarge. "So the old man asked you to find out why this knuckle head pulled that stupid stunt?" His voice sounded just as angry as he looked.

The Old Sarge answered evenly, his face almost expressionless. "That's correct, sir. Which is what I've been doing. That stunt may have looked stupid on the surface but you forget two things. One, the man caught his own mistake and had the guts to swallow his pride and do something about it. And two . . ."

"Aw right, so he caught it," the major interrupted, "and we had to flush the blankedy dashed system and were nicked for delaying the mission. It was still a stupid stunt. Anyone who can't tell the difference between alcohol and naphtha . . ."

The back of the Old Sarge's neck turned just a little redder, but he continued as if the major had

never spoken, "Someone set the fuse for this mistake by permitting naphtha and alcohol to be stored side by side in the same poorly lighted corner in identical containers."

"Are you saying that I'm responsible?" The major's face turned even redder.

The Old Sarge would have sworn he'd already reached his limits. "Sir, those are your words, not mine. But if you're the one who set up that storage system, I guess I did."

The major sputtered, then reason started to filter past the curtain of anger.... "Ah, identical containers?"

"Yes sir."

"Poorly lighted?"

"Very. Just one small bulb. I might add that your man was in considerable rush trying to get the night mission off on time, was servicing the colonel's T-bird and that's when the alcohol unit went dry. He smelled the stuff right after he'd started servicing

again . . . right quick he reported the error to maintenance control. They were flushing out the system when the colonel walked up. You know him. Right off he knew that something had gone amiss and wanted to know the reasons.

"That's why I looked into your procedures and checked the facilities instead of hounding the fellow that made the mistake. In my book we don't have to worry about him . . . he's a dedicated man else he wouldn't have reported himself."

"Sarge, you're right and I'm beginning to see why the old man picked you to look into this. If you'll give me a copy of your recommendations, I'll action. By the way, you don't do very easy do you?"

The Old Sarge grinned, "No sir, not when I know I'm right."

*Answer to question of the month:
Wrench adapters.*





Well Done



Captain James A. Neher of the 401st Tactical Fighter Wing, England AFB, La., has been selected as Tactical Air Command's Outstanding Flight Safety Officer for the six-month period ending 31 January 1963.

Captain Neher is completely dedicated to his work and continually tries to develop new methods and programs that will reduce the aircraft accident rate. One of his latest projects was a streamlined and accurate method to get accident prevention information to squadrons and other base units. He firmly believes that accidents can be prevented if "100 percent of the troops get the word."

Another program recently instituted by Captain Neher is a telephonic recording device that permits anyone to report an operational hazard by telephone, 24 hours a day, without making out any paper work.

By working closely and harmoniously with base personnel he has created among them a genuine interest in aircraft accident prevention.

Captain Neher stays well informed with flying problems by actively participating as a unit pilot. He is combat ready and during the Cuban crisis flew as a flight leader, assigned to a primary target.

His outstanding ability as a flight safety officer and the effectiveness of his aircraft accident prevention program helped to reduce the aircraft accident rate from 13 in 1961 to 9 in 1962.

We know that mobile control officers are doing their bit every day to prevent accidents, especially at TAC's training bases. However, we seldom hear about their deeds. We were happy, then, when we received this account from Luke AFB.

Captain Bill Malloy was manning the mikes when the generators failed and the radios went dead. He transferred traffic control to the tower, but stood by on the hot line just in case someone needed assistance. Almost immediately a solo F-100 student, who had just taken off, declared an emergency with a hot cockpit. While the tower vectored the student to the downwind leg, Captain Malloy computed final approach airspeed and landing roll for the heavy aircraft (6400 pounds of fuel), and determined what emergency procedures the student should follow. He passed this information to the tower for relay to the student.

The student's turn to final approach was erratic and Captain Malloy instructed him, thru the tower, how to correct his approach. As the aircraft approached the runway it developed a high sink rate because of the heavy fuel load. The student tried to correct by pulling the nose of the aircraft up rather than by adding power. Captain Malloy saw that the aircraft was rapidly approaching a dangerous attitude and immediately instructed the student, again thru the tower, to add power. His rapid reaction to this emergency coupled by some fine relay work by tower personnel, undoubtedly prevented an accident and saved this pilot's life.

To Captain Malloy, for his excellent performance, we say "Well Done."

**CREW CHIEF
OF THE MONTH**



Technical Sergeant Robert E. Yager of the 4529th Organizational Maintenance Squadron, Nellis Air Force Base, Nevada, has been selected as the Tactical Air Command Crew Chief of the Month. Sergeant Yager's exceptional ability to manage equipment and personnel is reflected in the high state of readiness that he maintains his aircraft. In December, his F-105 received an effectiveness rating of 1000 for flying 18 scheduled sorties. Seven other sorties were scheduled but were cancelled because of weather; however, his aircraft in each case was in place and ready for flight. Pilots and Quality Control inspectors seldom report discrepancies after flights or inspections which is another testimonial to Sergeant Yager's outstanding ability. His devotion to duty and superior capabilities certainly make him a model crew chief and an asset to the command.

RECOGNITION

**PILOT
OF DISTINCTION**



Captain Karl W. Leuschner of the 464th Troop Carrier Wing, Pope Air Force Base, North Carolina, has been selected as the Tactical Air Command Pilot of Distinction. Captain Leuschner was checking the engine of his C-123 prior to takeoff when he saw a Vietnamese Army trooper running head-on toward the aircraft. He immediately idled the engines and motioned for the trooper to move to one side. The trooper indicated that he wanted to get on the aircraft and continued running toward the propeller on the right side, completely unaware of the danger. Captain Leuschner realized that he had to take immediate action to prevent a fatal accident so he actuated the fire emergency shutdown handle. This fast-feathered the propeller and the engine stopped just as the trooper passed thru the propeller danger zone. Captain Leuschner certainly demonstrated that he is a Pilot of Distinction when he reacted rapidly and effectively to prevent a serious accident.

**MAINTENANCE MAN
OF THE MONTH**



For his outstanding performance as NCOIC of the engine shop night shift, Technical Sergeant Edward W. Motil of the 4520th Combat Crew Training Wing, Nellis Air Force Base, Nevada, has been selected as the Tactical Air Command Maintenance Man of the Month. Sergeant Motil's ability to correctly diagnose engine malfunctions

has placed him as one of the more highly skilled and superior technicians. This, coupled with his supervisory ability and working knowledge of Air Force Manuals 66-1, 25-1 and 50-20 makes him an extremely valuable manager in the maintenance complex. Because of his exceptional ability, he is often called on to go to other bases to repair aircraft from Nellis AFB that have experienced difficulties. He acted as a liaison man during the last two William Tell Gunnery competitions and has worked many hours overtime to help overcome difficult workloads imposed by programs such as Project Look Alike. To improve his capabilities as an NCO, Sergeant Motil has completed several ECI courses and his unfiring painstaking energetic manner helps inspire everyone he works with.

MURPHY'S LAW

Last month, much to our embarrassment, we found that Murphy's Law applies to the magazine business as well as to maintenance. We pulled a king size Murph and mixed Staff Sergeant Arnold G. Thrash's photo with Staff Sergeant Herman T. Hartman's. Please accept our sincere apologies.

TAC TALLY

A COMPARISON OF TACTICAL AIR COMMAND ORGANIZATIONS

MAJOR ACCIDENT RATE 1 JAN - 31 JAN

TYPE	1962	1961
ALL	5.8	12.4
F-105	0	0
F-104	0	65.8
F-101	0	73.9
F-100	7.1	6.7
F-86	0	138.7
F-84	61.3	19.0
B-66	0	0
B-26	0	0
T-29	0	0
KB-50	0	0
C-130	0	0
C-123	0	0
C-47	0	0
U-10	0	

JAN TALLY GUARD AND RESERVE

UNIT	MAJOR	MINOR
445 TCW	1	
121 TFW	1	
131 TFW	1	

ACCIDENT FREE (MAJOR & MINOR)

JET			
ACTIVE	MONTHS		ANG
4411 CCTG	12	19	113 TFW
354 TFW	7	17	102 TFW
CONVENTIONAL			
ACTIVE			RESERVE
314 TCW	42	74	434 TCW
463 TCW	20	63	94 TCW

JAN TALLY ACTIVE UNITS

UNIT	ACDNTS*	INCDTS
4 TFW	1	9
12 TFW	1	4
15 TFW	1	3
27 TFW		9
31 TFW	1	15
354 TFW		8
355 TFW		1
388 TFW		5
401 TFW		7
474 TFW		10
479 TFW		19
363 TRW	1	3
4411 CCTG		2
4510 CCTW		39
4520 CCTW	1	25
64 TCW		1
314 TCW		1
463 TCW		1
464 TCW		5
4505 ARW		6
4442 SSQ		
1 ACG		1

Regular forces finished the first month of the new year with three major and three minor accidents while reserve forces units had three majors. It was a bad month for F-84F's; four were destroyed. One, flown by an Air Guard pilot, crashed at night during an air refueling mission. Cause is unknown at this writing. Another ANG pilot ejected successfully after his engine flamed out and refused to restart. Engine icing is the suspected cause.

A regular forces F-84 pilot was killed when he crashed short of the runway after declaring an emergency about four miles from the field. Engine failure apparently was induced by foreign object damage. The other F-84 pilot was also of the regular forces. He successfully ejected after experiencing an engine failure on go-around from an SFO.

A regular forces F-100 pilot was killed after losing control of his aircraft trying to join formation. His flight leader inadvertently put him in a difficult position by reversing his turn and the wing pilot apparently encountered adverse yaw and fought his aircraft down to an exceptionally low altitude before he attempted to eject.

The remaining major accident involved a parked reserve C-123 that was clobbered by a taxiing airliner. No one was on board the C-123.

A minor accident occurred when a B-66 nose gear strut lower piston assembly broke as the aircraft taxied off a runway. Another nose gear failure caused minor damage to an F-86, and an F-105 received minor damage to its opposite main gear when the pilot dug the tail during landing. It was his first ride in the machine. All in all it wasn't such a bad month except that we are still concerned about the number of fatal accidents. At least two of the January fatalities could have been prevented by earlier decisions to eject.

