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MAY 1962

TAC ATTACK

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WHEN THE CENTURIES TAKE OVER

TAC ATTACK



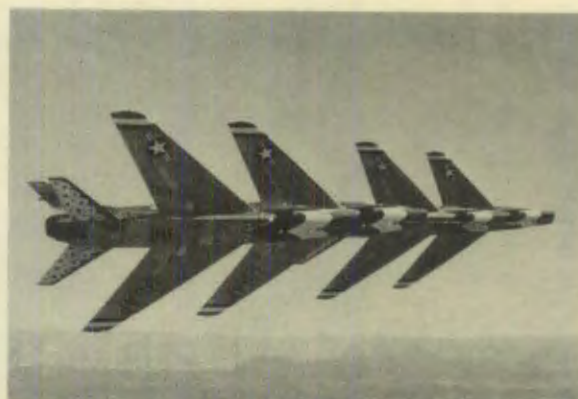
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COVER PHOTO

The Thunderbirds and their F-100 Super Sabres

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*Few things are impossible to
diligence and skill.*
—Samuel Johnson

angle of attack

The mounting screws were the first thing I noticed after climbing into the cockpit. The cross heads had been badly stripped on two of them. The bright brass in the stripped area contrasted with the dull finish of the instrument panel making them stand out like two small beacons. Beacons that were the unmistakable trade mark of a slovenly worker.

Every mechanic will ruin an occasional screw head, but no true mechanic would think of leaving one in that condition. Pride wouldn't let him. He'd replace it even if it was in a place that didn't show. Similarly, no mechanic would strip out a screw head much less two of them on a single installation. Incidentally, these screws were not on the aircraft clock, and were not deliberately stripped to prevent their removal.

I couldn't help but wonder what other jobs had been done by this screw butcher. Wonder and shudder. Obviously he had little skill and even less pride. Yet, he was being permitted to work on machinery that is unbelievably expensive and in areas, ridiculously critical. Why?

Skilled maintenance men are in short supply and quite often maintenance officers are reluctant to cut down their work force by weeding out the incompetent. But, a sloppy workman very often creates more work than he accomplishes . . . ask anyone who has had to replace a broken or stripped fitting, remove a twisted off stud, or pick up the pieces of a wrecked aircraft.

Colonel James K. Johnson
Chief
Office of Safety

OUT OF THE UNKNOWN



IN AN ACCIDENT like this it's very difficult to pinpoint the cause, what I mean, the airplane was scattered in small pieces and the pilot's dead. However, with a lot of effort, a good board can learn quite a bit from wreckage and from witnesses . . . and we had a good board investigating this one. Let me show you what they found . . .

The aircraft crashed on a dry lake near a pretty good emergency landing strip. In fact, it hit about 500 feet from one end of this strip, about 87 feet from the center.

By measuring scars on the ground and comparing them with

the dimensions of the aircraft they found that it struck the ground in a near vertical left bank, 35 degree nose low attitude. It hit hard at very high speed. Nearly 500 knots. They determined the speed from the Mach transducer . . . sending it back to the people who built it, who converted the position of the carriage on the jack screw to true Mach. It figured out at .76, plus or minus .02 Mach.

They also found the attitude indicator and it verified the attitude established from the impact scars.

They picked up a good portion of the control system and found the lines still had fluid in them and that filters were clean. There were no chips or anything that would indicate a pump failure. The stabilator piston indicated that the stabilator was in a nose-up position . . . almost excessively so. Because of this it appears that the pilot had the stick well back on impact.

The engine was operating at near full military, and the pilot had not tried to eject.

Gear, flaps and speed brakes were all up . . .

As I said, it was a good board and they went thru the wreckage in minute detail. In addition to speed, attitude and configuration, they found two other items of interest. An open end wrench and a pair of electrician's pliers.

The pilot had a good reputation. He was considered to be a mature, stable individual with a high respect for directives and regulations.

In the morning, on the day of the accident, he watched the Thunderbirds put on their aerial demonstration. Immediately afterward he was briefed for a gunnery mission and launched. Due to range problems he was unable to complete his briefed mission and cleared off the range.

He left the range at 1220 and at 1225, called control to advise them that he had. Between 1226 and 1239 another pilot spotted dust and a column of smoke on the dry lake bed, he completed some airwork, then went over to investigate, circled the crash, then climbed to 10,000 feet and reported it to control. The time of his report was 1245.

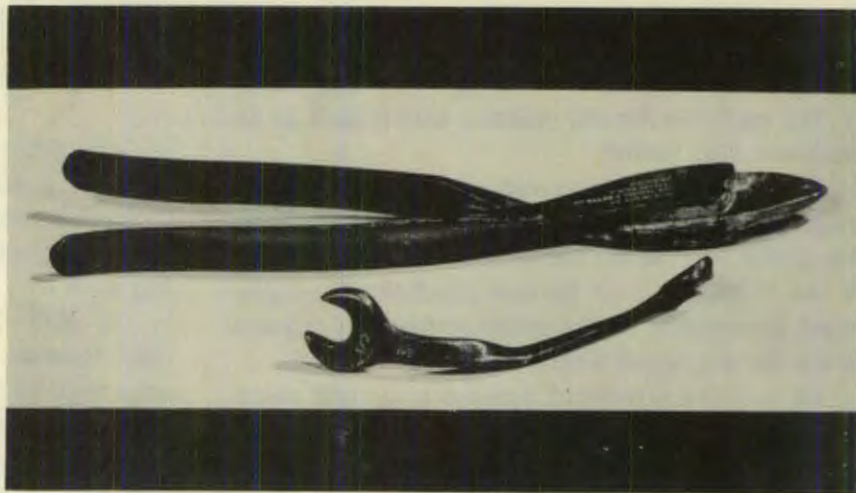
A farmer driving along the highway also noticed the column of smoke. He noticed it at about 1230, give or take five minutes.

Immediately afterward he saw a column of smoke. A short time later he saw another aircraft circle the smoke.

The board checked the timing and ended up with some head scratching. Even making allowances for errors in over-estimating time, witness statements seem to indicate that another aircraft was involved... an aircraft that circled the crash before the pilot who reported the crash to control could have arrived in the area.

The deceased pilot had to climb to 12,000 feet to make his call to control, then travel about 50 miles and descend to the deck. From this it appears that he crashed almost immediately after arriving at the dry lake.

What happened? Did this pilot try to close on another aircraft that was at low alti-



About four minutes later he saw another aircraft circle the smoke.

A ranch hand saw a jet descending in a right bank toward the dry lake. It disappeared behind a rise and almost

tude—was he trying some low altitude aerobatics, or did he just pass out? No one will ever know . . . but one thing is certain. The stray tools did not belong in the aircraft.



OLD TAT

MANY TIMES Old TAT has sounded off on the subject of inflight emergencies, saying that more often than not pilots get themselves into trouble because of haste . . .

We still hold this conviction. However, there are times when a pilot has to take prompt action or he'll be holding a handful of trouble . . . right now we're right happy to report on such an instance. Happy, because the pilot, Capt Robert L. Hanson of Myrtle Beach AFB was smart enough to see that the fuse was lit on a potential bomb and didn't waste any time doing something about it. We call this timely action, and it isn't to be confused with 'haste'.

Trouble was announced by Capt Hanson's wingman. He reported white vapor coming from the lower rear of the Captain's bird. Being close to the airpatch, Capt Hanson checked his gauges found everything in the green and headed toward initial for a precautionary landing.

On initial the forward fire warning light came on. He retarded throttle, declared an emergency and dirtied up the aircraft for a straight in approach from his position on initial.

The forward light went out right after he pulled the throttle back and his wingman reported no more smoke or other indications of fire . . . but he landed from the straight in anyway. Oil pressure dropped to zero on the roll-out so Capt Hanson stopcocked and turned the machine over to the investigators.

See what we mean? He had two indications of trouble. Smoke followed by the warning light. He acted without delay, and saved a bird.

The trouble was induced by the tail hook! Retracted, it was too close to the oil breather outlet, partially blocking it. This built up pressure in the tank and upset the pressure differential used to get some of the hot section seals to seal properly. One of the seals leaked and hot gases made their way into the oil tank and started a fire.

AN F100 PILOT was unable to coax his flamed out machine to a suitable landing area, so prepared himself for a seat ride by stowing loose gear, disconnecting leads and connecting the bailing wire . . . zero lanyard, that is.

At 9000 feet and 220 knots he punched out. The ejection was a success to the extent that the seat worked fine, the lap belt worked on schedule followed by immediate and normal chute deployment. However, the pilot apparently was knocked out during the ejection. Another pilot saw him dangling lifelessly beneath his chute all the way to the water. His body was never recovered, so exact causes of injury were never determined.

Just one week later, another pilot in the same command ejected from an F-105 at 8000 feet and 250 knots with his zero lanyard connected.

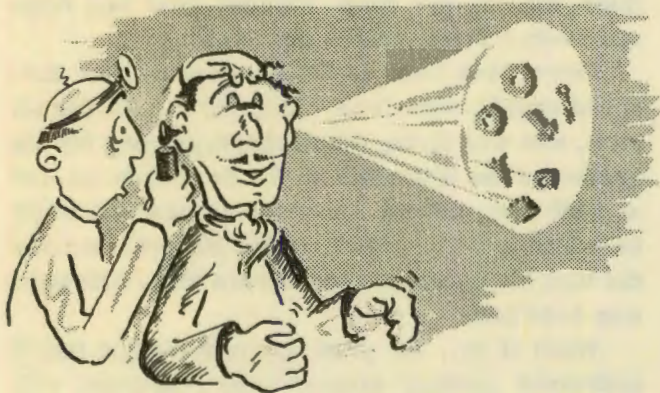
Opening shock ripped off his helmet (despite

correct visor position and attached chin strap) and left some ugly bruises on the back of his neck, shoulders, chest and, cough, other areas.

The zero lanyard does more harm than good above 2000 feet—don't go out of your way to attach it for a controlled ejection above that altitude.

Don't get us wrong—we are not telling you to remove the lanyard anytime you go above 2000 feet . . . we're telling you not to put it on when you know that you'll have to eject and are planning on punching out before getting any closer than 2000 feet from the cold, cold ground—smart planning, incidentally.

Use the lanyard just like the handbook tells you to use it . . . quite a bit of effort and experience went into the handbook procedures, and any extra embellishments can be risky indeed.



MAN IS A peculiar animal, and TAT has the proof. Let us quote an OHR that was submitted over a year ago by an F-100 pilot . . .

"Just after liftoff, 20 feet above the ground, the aircraft began a slow pull to the right. With both hands on the stick and full left rudder it still rolled to the right. At 1000 feet with the aircraft in a bank and not gaining altitude, I reached for the ejection handle with my right hand, let up on the left rudder and then kicked it full left. The controls made a klunking sound and returned to normal operation. I flew for an hour and landed without further incident."

On the bottom of the OHR was penciled this notation, "Aircraft made three more flights before Safety heard of this incident and grounded it. Loose nuts and bolts were found in the control

stick boot well."

Seems to this tired tiger that the nuts in the bottom of the stick boot well weren't the only ones loose!

We don't have the complete story and it happened too far back to get it, but . . . either this lad had a short memory and forgot to write-up an aircraft he came within one short movement of leaving, or he did write it up and no one bothered to put it on the red cross it so richly deserved!

It is chance-taking-corner-cutting bits like this that have helped keep the salvage yard full.

Stop and analyze this one. A serious control malfunction for a completely unknown reason that suddenly corrected itself. It could have been a piece of dirt floating around in an aileron actuator . . . if so, the next malfunction could have been more violent. Proper action would have been an immediate return for an emergency landing complete with jettisoned stores (if carried) and a long straight-in final, monitored by GCA, using controls as little as possible. This followed by grounding and shakedown.

THE NEW INCIDENT reporting system is an excellent accident prevention tool. For instance, we were reading an accident that started when a C-119 crew made their first power reduction after liftoff at about 100 feet. Number two RPM continue on down, down, down. They tried to toggle it back up with the prop in manual but an electrical lead was broken, and it refused to cooperate.

They feathered and brought the big dollar nineteen on around and landed. No sweat—a successfully handled emergency, but max altitude on the trip was 100 feet. Speed was 130 knots. It's rather hard to argue with success and your Old TAT has never driven a C-119 . . . he has read a few reports about some C-119 flights that were somewhat less than successful. Without fail, these unsuccessful flights involved loss of an engine shortly after takeoff and an immediate hurried trip back, loss of altitude, unscheduled contact with terra firma and varying degrees of destruction and mayhem.

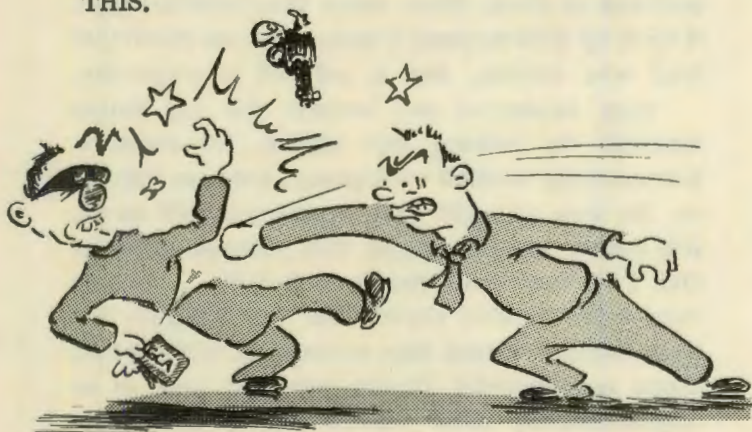
In each case the board sadly shook their heads and said the aircrew should never have

tried to turn before climbing to a safe altitude. Sure 'nuff . . . right there in the handbook on the red bordered pages is a warning note that says to go straight ahead until a safe altitude is reached... that this might take seven minutes . . .

As we pointed out once before in this column, **SOMEONE HAS BEEN OVER THIS ROAD BEFORE!** If you lose an engine right after takeoff, don't get in too big a hurry and go turning before you have some sky between you and the trees. We don't think 100 feet is enough sky---do you?

FROM ANOTHER COMMAND comes the story of a T-bird crew who had trouble getting into the GCA pattern despite identification turns, mode changes and many, many radio transmissions. They and GCA just couldn't seem to get together and both were confused until they found out that another throttle bender was practicing GCA by following GCA's instructions above pattern attitude!

TAT couldn't help but wonder if something like this didn't induce most of the GCA or GCI wrong aircraft accidents that have occurred over the years. It hardly seems likely that many stray aircraft would make turns at the right time to induce that many controllers into thinking they had the proper target under control **UNLESS SOME PILOTS WERE PULLING DEALS LIKE THIS.**



Freeloading at the bar is one thing, but free-loading GCA or GCI instructions is a mule of a different hue . . . and just as polite as loading a gun before pointing it at your buddies' head and pulling the trigger.



. . . Speaking of T-bird mishaps. Here's a classic. Returning from a night cross-country with the aft pilot under the hood, this crew groped their way to low cone, lowered gear and flaps and made a slight turn to get on track.

Power was held at 70 per cent and the air-speed rapidly went from 175 knots to 135. The aft pilot, who was flying the machine, noticed the big needle on the altimeter at '9'. He thought he was at 3900 feet and let the machine descend while he added a little power. Some 30 seconds later the bird hit the ground and slid to a stop. Elevation was 2640 feet.

When it hit, the pilot up front thought they'd clobbered another aircraft and responded with the reflex actions he'd reserved for mid air collisions . . . He ejected!

How do we know all this? Well, believe it or not, both survived. The front seat pilot received major injuries from the ground level ejection while his confused partner escaped without injury. If nothing else, this episode should remind safety pilots to keep awake.

WHILE CRUISING at flight level 290, on an overwater haul, a B-66 crew found that they couldn't transfer fuel from either internal or external wing tanks. They tried every known system and procedure, but couldn't get at it.

Since the airpatch they'd just left had dropped below minimums, they did some calculating and decided to try for an enroute base. They figured they'd arrive with 2500 pounds. Then the head-

wind they were fighting freshened. They eventually shutdown with 300 sweaty pounds.

Seems the aft main high level float valve was frozen in the full position and wouldn't allow the aft inlet control valve to open. Fuel couldn't be transferred manually since the auto-CG control system was inoperative.

A new valve was installed and the system worked O.K. for the rest of the trip out. On the way back they did right well until departing the same airpatch from which they had leaped into the original trouble. Once again, the valve stuck and fuel wouldn't transfer. This time the base was above minimums and they returned to it.

The system was thawed out and they again leaped . . . but had to transfer fuel manually in order to maintain a proper CG.

Back at the home drome maintenance troops went over the complete system, put in new capacitors and tank units and tightened a cannon plug . . . However, the maintenance officer stated that excess water at the unlucky airpatch probably caused all the trouble. If this is so, TAT can't help but wonder why for all the capacitors and tank units were changed. Shucks, when our TV set



goes on the fritz, we don't go buying and installing a complete set of tubes . . . we try to find out which one's sick and then replace it.

By the way, although we get righteously red under the collar 'bout any base which is as careless at handling fuel as this one appears to have been . . . we'd bet a brand new homemade Indian-head penny that a little aircraft sump

draining would have prevented both occurrences. Like with most Air Force systems . . . there are safeguards on top of safeguards and it takes more than one slip-up to create trouble.



A FEW SEASONS back TAT did some heavy reading about a warning system for aircraft which was expected to either replace or supplement the current lights.

An attempt, if you will, to get away from the pinball concept. The system was to use a female voice speaking over the pilot's headset to describe the exact nature of a malfunction and then tell him what to do to correct it.

To us, it sounded like a good idea—despite this business of getting females in the cockpit . . . there are times on long hauls, when the voice could induce some sudden panics of a different sort! We understand that this system will soon be installed in the B-58. From there, who knows!

A friend of ours was wondering why they don't use a similar gimmick for normal operations. Sort of a talking checklist. We agree. This would eliminate many of the objections to visual checklists and would be practical and safe for the pilot of a single place aircraft to use while airborne.

As we see it, this system needs to be little more than a light weight tape recorder with a cockpit control to let the pilot start it, stop it, reverse it and run it at above normal speed to skip thru items not applicable to the mission being flown. When do we get it?

—TAT—

no choice

A T.O. that failed to correct a known hazard resulted in a situation that left this B-66 pilot

NO CHOICE

INBOUND TO THE STATION, a B-66 pilot was cleared to descend from flight level 340 to the published penetration altitude. He arrived over the VOR at that altitude and was cleared for a standard jet penetration.

The pilot contacted GCA after starting penetration turn and GCA vectored the aircraft onto final. The pilot extended gear and flaps, advanced both engines to 92%, and advised GCA that he intended to make a low approach followed by a full stop landing.



After leveling for go-around, the pilot noticed a slight power surge. He attributed this to engine compressor bleed operation or exhaust nozzle operation and proceeded with the go-around.

As the aircraft approached the end of the runway at about 400 feet, both engines suddenly lost thrust, and started surging heavily. The surging was verified by fluctuating RPM and EGT.

The pilot selected the forward tank for the left engine, but this had no effect. He alerted his crew to prepare for ejection, stopped flap travel (they were on the way up) to maintain some degree of down flaps for lift, and attempted to gain altitude.

At this time the pilot realized that for all practical purposes both engines were flamed-out. He ordered the crew to abandon the machine.

The engineer and navigator ejected, the number four ECM operator called the aft compartment clear and also ejected. By this time the aircraft was in a buffet and the pilot attempted to eject. He was unable to actuate the right pre-ejection trigger and proceeded to regain control of the aircraft in time to make a crash landing in the only place available.

On impact, the pilot received the distinct impression that he was shoved backwards instead of forwards. After the machine slid to a halt, he looked up, saw that his hatch was off, and evacuated. He was joined by the number two ECM operator who had a seat malfunction and could

not eject. The malfunction probably saved him, since the navigator was the only one of the ejecting crew members to survive.

Shortly after the investigation was started it became evident that the accident was induced by maintenance factors. Altho negligible water existed in fuel samples taken from the right wing and forward fuel cells, considerable water was found in the low pressure fuel filters to both engines. Screens or strainers to both filters (part number 900200) were severely collapsed. This, coupled with the water, clearly indicated that the engine difficulties were induced by ice on these screens.

Back in 1956 a similar major accident resulted in the low pressure filter being modified to let the fuel by-pass should the screens become clogged. The modified filter was given part number 902300. This change was brought about by a T.O. The intent of the T.O. was to remove all unmodified filters from the supply system.

However, in the evolution of this change someone did not fully understand the seriousness of the problem and failed to include instructions for removing unmodified low pressure filters from stock. In addition, the T.O.'s relating to the filters were not properly revised to instruct personnel to use modified filters and to avoid using the unmodified ones. Basically, this accident occurred because technical orders were not correct. This breakdown in supervision must

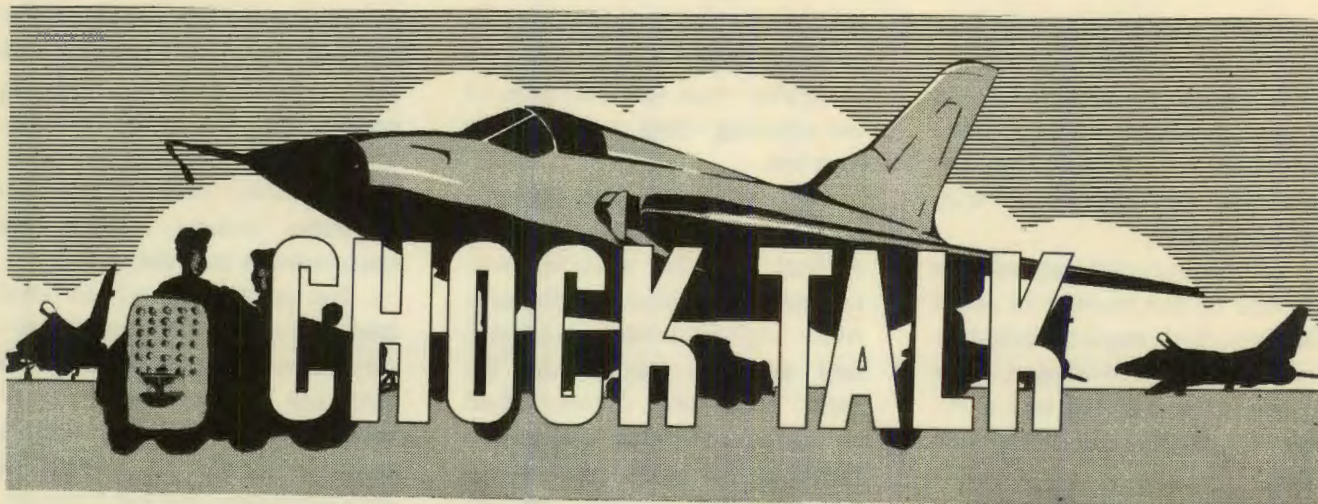
be shared by all users of the aircraft who had knowledge of the original accident and the reason for the filter change. They, more than anyone else, should have noticed that the technical orders making the change were not adequate.

The pilot's ejection seat malfunctioned because he applied simultaneous pressure to both the trigger and the pre-ejection lever. The M3A-1 initiator safety pin, which is extracted when the hatch leaves, prevented normal handle travel and blocked the sequences.

The aircraft floor deformed on impact and initiated the pre-ejection sequence. This is what thrust the pilot back during the slide out and is the reason he found his hatch already off when the aircraft came to rest.

The number two ECM operator's seat failed at the whiffle-tree assembly immediately after the left M3A-1 initiator fired, but before the catapult fired. Therefore, his hatch separated and the seat stayed. An emergency UR was submitted on the failure.

Deaths of the ejecting crew members were primarily caused by the low ejection altitude. The pilot made his original decision to abandon the aircraft because he was over irregular rolling hills in no position to make any portion of the airfield. The outcome of a crash landing was completely unpredictable and the ultimate success of this one was considered an act of God rather than of man.



TRIM TIPS

Although engine trimming is a precision operation, almost anyone can trim a J-57 IF . . . The 'if' is the difference between a well trimmed engine and a poorly trimmed one; the difference between a professional job and a hap-hazard one.

Before we look into the 'if,' let's dig into the reason we trim the J-57. Due to manufacturing tolerances each engine produces its rated thrust at a slightly different compressor RPM. Because of the twin spool arrangement, the RPM of the high pressure spool of the J-57 depends on the amount of fuel being burned. The RPM of this spool is adjusted by varying the fuel metered thru the fuel control.

The engine is trimmed in order to operate the high compressor at rated thrust and to align this thrust output with the power control setting. Once adjusted, the trim will stay the same provided temperature and barometric pressure are constant and the engine has no malfunctions or mechanical deterioration.

To properly trim the J-57, you must follow the T.O. —Everyone knows this . . . but, still, many engines are not being properly trimmed.

A careful check of procedures unveils several reasons for this. They are:

- * Failure to properly position the aircraft with respect to the prevailing wind.
- * Use of incorrect weather data.

- * Failure to compute the proper trim value.
- * Trimming gauge out of tolerance.
- * Aircraft instruments inaccurate.
- * Engine bleed valves sticking open.
- * Leaving anti-ice air ON during the trimming operation.

- * Incorrect exhaust nozzle or AB area.
- * Engine bleed air being extracted or leaking.
- * Power lever improperly rigged.
- * Engine compressors dirty.

Any of these can throw off the trim and result in RPM or EGT being above normal. This has a lot to do with turbine blade life. Turbine blades increase in length the longer they are run. This is caused by centrifugal force and temperature. In other words RPM and temperature. The higher the RPM and temperature, the faster they stretch, or creep. At 80% of allowable temperature and 95% of takeoff RPM the average blade will creep one millionth of an inch each hour of operation or one unit per hour (uph). Raise the temperature to 90% and the RPM to 97% and the creep goes up to 5 uph. At 100% allowable temperature and 100% RPM the creep is 50 uph. At 105% temp and 101% RPM creep jumps to 2500 uph stretching 50 times faster than blades in an on-limits engine. In effect, they don't creep, they run!

Some final words on trim.

- * Don't try to cover up engine defects by up-

trimming.

- * Follow trim instructions in the T.O.

- * If you want your engine to live a long healthy life, trim it on the low side . . . keep it to the lowest value of turbine discharge pressure (PT7) that will produce the rated thrust specified by the trim chart. Do this, and you'll provide your pilot with a safer engine and will cut down on your own workload because your engine will require less maintenance.

DOWN THE HATCH

A navy fighter was being run at full military power during a check for fuel and oil leaks when a mechanic walked too close and was sucked into the intake. Safety screens were not used and his jacket, glasses, and sound attenuating equipment were ingested before the engine could be shut-down. The man was fortunate enough to escape with his life . . . however, the mishap substantially damaged the aircraft, and the engine required an overhaul. The birds are still hungry. Don't feed 'em. Use screens during all such operations.

PARTIAL PANEL

During the takeoff roll the copilot of a multi-engine aircraft noticed that his airspeed indicator was reading too slow. During climbout he found that it was completely unreliable along with his altimeter and rate of climb indicator. The mission was aborted successfully.

Someone had replaced a faulty instrument just prior to the flight and failed to re-connect the pitot static line to the copilot's instruments. Proving once again that nothing wastes as much time as haste.

KB-50 SPECIAL INSPECTION

OCAMA has arranged for Hayes International Corporation to inspect and rehabilitate various systems in 40 of TAC's KB-50's. Six aircraft will be delivered to Hayes each week for a six day rework period. All work should be completed by the end of April.

TAC ATTACK

PERFORMANCE DATA

The maze of fuel, lube, and electrical lines used to connect jet engines in test cells can present many unusual problems to maintenance personnel.

In one such installation, engine specific fuel consumption was consistently high. Performance calculations indicated that fuel flow was approximately 300 pph higher than it should have been. It was found that an error in plumbing caused the fuel which cooled the temperature amplifier to be re-circulated and measured as a part of the main engine fuel. The error was corrected and engines are now passing performance test requirements.

Anytime you suspect test results check instrumentation and plumbing for possible installation errors.



WHEEL WOE

Aircraft wheels are expensive, precision pieces of equipment that live a short difficult life at best. The overhaul people tell us that almost half the wheels they scrap during overhaul were ruined by improper handling. Forty percent are ruined by excess corrosion while just about ten percent are written off to old age.

Improper handling and corrosion can both be corrected by exerting just a little extra effort during tire changes and routine maintenance . . . save money by making your wheels last longer. At the same time you will have a safer operation by cutting down on the number of failures.

—

Bringing in the Birds



IN TACTICAL FIGHTER units, the power-off pattern died some years back. We didn't realize it at the time, but we attended the Wake. It was held in a pilots' meeting.

We were in a group which changed over from the F-86F to the F-84F. The group commander, an exceptionally able pilot, called the rest of us pilots together shortly after he checked out in the new machine.

He started the meeting by saying, "I am holding this meeting because I almost killed myself. I was trying to make an F-86 pattern with an F-84. It didn't work. Don't try it. The first indication of a stall in this machine is not a burble or a shudder. Instead, it starts to fall. Fortunately I noticed that it was sinking fairly early and applied full power. I recovered just off the tree tops. I'm not

telling you this to scare you. The machine is safe enough provided you keep your pattern wide and carry power. However, if you try to honk it around we'll probably bury you. That's all I have."

All this is history. The F-100 had the same characteristics, only more pronounced, so did the F-101. With the F-104, the F-105 and the F-110 we have reached another turning point, one that marks the passing of the power-off touchdown. On the F-104 and F-110 it is necessary to carry power until after touchdown in order to keep from losing boundary layer control air and considerable lift. In the F-105, final approach is flown behind the power required curve and a decrease in power is accompanied by an immediate loss of altitude. Different reason, same effect. The aircraft drops when power is chopped. It can't

drop if it is on the runway.

These aircraft readily adapt themselves to the latest technique for flying precision approaches. A technique that works equally well using either instrument or visual reference during the approach. Basically, proper airspeed is established with elevator control. The aircraft is trimmed to hold the angle of attack which gives the proper approach speed for the configuration and weight. Rate of descent is established with the throttle.

Aircraft response is immediate to each. Change the attitude and the angle of attack will change immediately. The airspeed will follow shortly afterwards. Change the power setting, rate of descent will change almost immediately. Speed will not change at all, provided the angle of attack is kept constant. However, attitude must be changed slightly to

keep the angle of attack (air-speed) constant. This technique works quite well with other aircraft. It can be used very successfully with the F-100, the F-84F and even with the T-33. Some adjustment in final approach speed may have to be made to fully capitalize on the technique. For example, the T-33 responds best when flown at the approach speed recommended for short field landings . . . in other words 110 to 115 knots with 200 gallons on board.

An angle of attack indicator makes this technique work even better. It has less lag than the airspeed indicator at pattern speeds and permits more precise speed control. In addition, it automatically compensates for changes in aircraft weight.

To fly it, the pilot adjusts elevator to center the indicator. If the indicator tells him he is

the stick with a positive linkage!

To further improve a system, which is unanimously considered to be the ultimate by those who have flown it,



one only needs to add a source of glide path information. The horizontal bar of the ID-249 does right well during weather, but being in the cockpit, it isn't too convenient during VFR conditions.

Using conventional approach techniques, the visual glide slope will prove very disappointing. Touchdown will be an uncomfortable distance down

the runway and staying on the slope will try a pilot's patience.

However, by establishing a proper angle of attack (air-speed) using elevator and by correcting to the glide path using throttle everything will click into place and final approaches will suddenly become constant and precise. Further, the more this technique is practiced on a visual glide slope, the easier it is to adapt to instrument approaches using ILS or GCA information. Contrary to popular opinion, pilots who have practiced landings using these aids will have no difficulty making precision approaches to airfields that do not have glide slope information. Instead, they will automatically revert to using other references, with greater appreciation of how a correct approach should appear.



slightly slow he needs only ease, or trim, the stick slightly forward until the indicator indicates properly. It's almost as if the indicator were attached to

The answer is a visual glide slope presentation. We'll be working with such a system at all Air Force bases as soon as they are installed.

When the Centuries TAKE OVER



AS WE APPROACHED, the range officer advised us to use the left range with right traffic. All three of us acknowledged. We came over in a route echelon at 400 knots. The break looked normal and we rolled out on downwind with what

seemed to be good spacing." The Lt bit his lower lip and frowned, then carefully choosing his words, continued. "Lead called in white and dry for his first run. Two followed, and then I made my run. Recovering from the pass, I

picked up two in his turn to downwind.

"I shallowed my bank to keep from rolling out too far inside him and checked my airspeed. It was right at 300 knots.

"Lead called in for his next strafing pass as I approached



the point where I normally turn base. Two was ninety degrees to me flying straight and level. I started my turn and glanced into the cockpit to check airspeed and power setting. When I looked back I saw two in an extremely nose down attitude in a right bank.

"I was still in my turn as I watched. His aircraft appeared to be falling in an uncontrolled manner which looked to me like a full stall.

"I started rolling out of my bank, maintaining altitude and heard the range officer call twice telling him to get out. Almost simultaneously the canopy came off followed by another object, then the aircraft hit in a burst of flame. We orbited several times, but saw no chute. We then joined up and came on back. I guess that's all sir."

The major nodded, then turned to a red-headed captain and said, "You were range

officer, Red, what did you see?"

"Just the tail end of it" Red replied, "I was watching the lead as he pulled off target when Airman Jackson yelled, 'Look at that!' Immediately I looked toward final and saw an F-100 rolling to the right in a fifty or sixty degree dive. By then, he was down to about a thousand feet. I transmitted on the radio, 'Get Out,' and repeated it until the aircraft crashed. As the aircraft rolled something came off as it was inverted followed by something else as it came right side up. The aircraft crashed and a tremendous explosion followed."

He took a long drag on his cigarette. "The second object followed the flight path of the aircraft and landed in the explosion. I never saw a chute. That's it. Arch, here, saw it from the start."

A tall lanky Lt nodded. "Yes sir, I was watching him make his turn from base. Everything looked normal until all at once the aircraft flipped . . . I'm not sure which direction . . . but he was headed straight down in a slow spiral. After making one or two turns the canopy came off followed by what I assumed was the seat and pilot. It had fallen about half the altitude when the canopy went.

"The aircraft went into the ground in a very nose low attitude and exploded."

The major shrugged his shoulders and said more to himself then to the group, "...It looks like he just flat stalled and spun out . . . what kind of a pilot was he anyway?"

"Average to above average." a short wiry captain volunteered. "He was reasonably aggressive, but not too rough on the controls. It looks like he might have slapped the stick to it and came on back. Then, when he started to rollout he jammed in aileron instead of the rudder. Adverse yaw would cause the aircraft to roll . . . it would roll under or over and he wouldn't have a chance to release it."

"That sounds about right Bill," the major said "Apparently we need to indoctrinate some of these newer troops on adverse yaw." He turned to the tall Lt and asked, "Did they give you a briefing or a flight demonstration on adverse yaw? I mean when you were in transition?"

The Lt looked puzzled. "I, ah, don't think so sir . . . I, ah . . ."

"Do you know what adverse yaw is?"

"Yes sir, I think so. It's when the aircraft rolls the wrong way when you are near a stall."

The major nodded. "That's close, how do you avoid it?"

"Well, you use rudder, I think. I've never done it, tho."

Bill interrupted. "What else could we expect? You can tell a pilot what will happen, and explain how to correct for the condition . . . but unless you show him how it's done he can get into trouble. Adverse yaw is like stalls and spins . . . you have to use unnatural control movements to keep out of trouble and that's why they

should be demonstrated."

The Lt looked puzzled, "What do you mean by unnatural control movement?" he asked.

"Well" Bill replied, "you have to keep the aileron neutral and roll it with rudder. In a hard turn you can get the bird thru the buffet area and have the stick almost full back and it'll fly right on around in a tighter turn than you'd think possible... try to roll in or out with stick alone and it'll go your way for a short while, then take over and either roll the opposite way or continue of its own volition. This is what makes it so hard to fight. It doesn't snap, it just takes over. If you continue to fight it, you're in a spin.

On the other hand, you can slap the rudder to it and pull it into as pretty a turn or into as neat a reverse as you could want."

"There are some other things about this adverse yaw business that are harder to describe than to show. For instance the yaw doesn't feel as definite as you might expect. The bird doesn't skid sideways... It may swing a little bit, but mostly, from the cockpit, the yaw appears to be a rolling tendency. This makes it harder to deal with. You normally correct rolling tendencies with aileron... If the bird skidded, you'd automatically kick in rudder..."

The tall Lt asked, "The aileron causes the yaw. I thought it always yawed opposite to the direction you've applied aileron?"

Bill shook his head and

started to say something but the major spoke first. "Not always. In fact, I reviewed another yaw accident about a month ago where the bird also went in the direction of applied aileron. As I recall, two pilots were making an SFO in an 'F'. The pilot in front was flying the SFO at 220 knots and boxed himself behind a cloud layer. He pulled up and added power to abort the pattern. The IP in back took over and did a hard descending turn to 'S' around the cloud. The pilot in front noticed that the aircraft tried to roll left just before the IP took over, but didn't check his airspeed.

"Anyway, they both felt a burble when the aircraft reached about 60 degrees bank... and it rolled under to the left. It slowed a bit as it came back right side up, yawed right, but continued rolling left. The IP ordered an ejection on the second roll and they both got out... apparently with little time to spare, since they both landed quite close to the crash."

The short captain nodded agreement. "That figures. The 'F' usually goes with the aileron and the C and D go opposite... but that's no hard and fast rule... This accident proves that. Incidentally if the IP in the 'F' had relaxed back pressure, neutralized aileron and gotten on the rudder he could've saved that bird."

"Probably," said the major. "Incidentally, another outfit lost a bird and pilot during an overwater gunnery mission just recently. They're pretty sure it

was adverse yaw, because his speed was slow, the bird was heavy, and the medics were able to prove that he went in with full right rudder and right aileron... they proved it from impact damage on his body. He hit reasonably slow, so I'm inclined to agree that it was adverse yaw." He reached for a cigarette, then continued, "I guess we're overdue some training on the subject... meanwhile we'd better get pilots busy reading the handbook and follow-up with some heavy briefing on the subject."

"By the way," the short captain remarked, "the write-up on accelerated stalls in Section VI gives some good information on how to keep out of trouble, while the discussion on spins gives an even better account of how the aircraft reacts during adverse yaw. Actually, I guess, adverse yaw is really the prelude to a spin."



"You're right, Bill." the major said, "and it can be a real killer at low altitude... but it doesn't have to be."



LIKE MOST Air Force people, the Old Sarge couldn't resist watching an aircraft land when he was outside and unoccupied. Actually, he was busy making a routine inspection of the ramp, but had paused to watch an F-100 land. It touched down in the usual cloud of blue smoke from briefly tortured tires, then the drag chute trickled out behind and blossomed. He was just starting to get back to his inspection when something about the aircraft caught his attention. He looked closer, walking rapidly around the nose of a parked bird to keep the aircraft in sight.

"Well I'll be darned," he said to no one in particular, "That left strut is walking something fierce, yet he doesn't seem to be using brake...I wonder."

He jotted the bird's number down on a badly frayed notebook.

Back at the office, he picked up the 'phone and dialed. "Morning, John. Say, is 698 one

of your birds?...you don't need to sound so bitter...what's the trouble..." He grinned, then said, "Have you any coffee perking?"

Some minutes later he was sipping coffee peering over a short sad-faced Master Sergeant's shoulder. The short one poked a blunt finger at the form he was reviewing and said, "Here, here's the first one. 'Nose gear shimmy.' You can see, we checked and found everything in tolerance. Right here, next flight, same blasted write-up. It goes on and on. We done everything but sell it to the foundry."

As he talked, he flipped through the forms. The Old Sarge reached over, and stopped him, turning back the pages slowly. "What about this one, where the aircraft veered to the left?"

"Oh that...we figgered it was due to nose gear steering trouble—we couldn't find nothing wrong with the brakes."

"You haven't checked the

main gear to see if the trunnions are O.K., have you?" The short sergeant shook his head, "Well, if I was you, I think I would, particularly the left one." He glanced at his watch. "Hey, I gotta run, let me know what you find, and thanks for the coffee."

The following morning the Old Sarge answered the phone, "You did?...It was? I thought so...no, just psychic—gotta be in this business...Oh, anytime, anytime."

Lt Green looked up from his work and asked, "Who you trying to snow?"

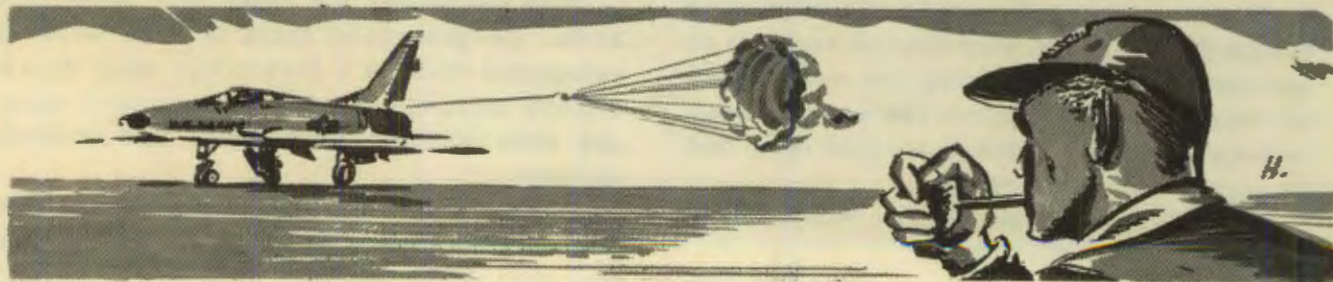
"How's that, sir?"

"That psychic song and dance."

"Oh, John over at the 13th had a bird with a long history of nose gear shimmy. I suggested he look at the main gear and he found the left main trunnion about 14 thousandths under-size and about 3/16 of an inch aft. This, plus a flat spot on the left tire and a slipped bearing caused the shimmy. He was wondering how I knew to check the left gear."

"How did you know?"

"Psychic, sir, psychic." He grinned. Lt Green couldn't stand a mystery and it looked like the start of an intriguing day.



TAC TIPS

SHEARED GEAR F-101B

A flight of four F-101B aircraft returned from a routine radar training mission and completed a GCA. Weather was 400 scattered, 800 broken, 1200 overcast, visibility three miles in rain and haze. The runway was wet and slippery and there was a 60-degree cross-wind. The first aircraft touched down in the center of the runway at approximately the 1500-foot point. The pilot deployed the drag chute and raised the nose for aerodynamic braking. The aircraft immediately started drifting to the right and skidded right when rudder was applied to correct the drift. The pilot lowered the nose and engaged nose-wheel steering, but the skid continued, so he jettisoned the drag chute. The aircraft continued skidding alternately left and right and finally left the runway in a right skid. The right main gear struck the concrete lip of the BAK-6 barrier cable retrieving well, causing the gear to shear. The right wing tip struck the ground and the aircraft veered further right, shearing the nose gear.

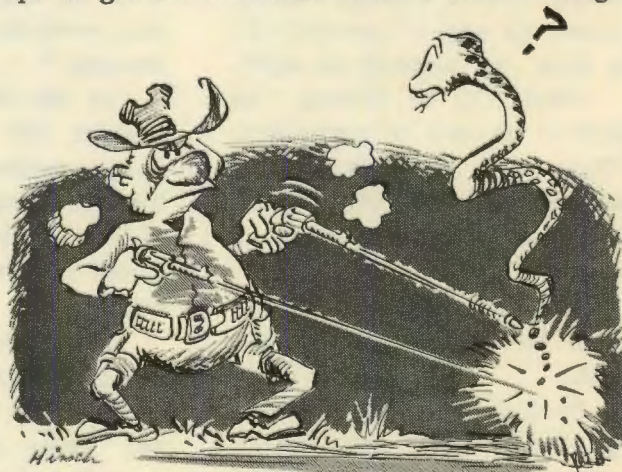
The second aircraft landed and was stopped without difficulty. The third aircraft went into an uncontrollable skid on landing, but was stopped just before it left the runway. The fourth aircraft landed successfully, although the pilot noted that the runway was very slippery.

All but the number two aircraft were equipped with smooth snow grip tires.

—Interceptor

SNAKE HUNT

We know a Meridian, Miss., farmer who goes over his field the day before he starts plowing and kills all the rattlesnakes he can find. When we asked him if it wasn't a dangerous thing to do he replied, "I reckon so, Son, but if I don't kill off the critters today when I'm looking, they are apt to get me tomorrow when I ain't looking."



This old farmer has never been bitten by a snake. He gets rid of them. In other words he recognized them as a hazard and takes time to remove them, clearing the way to make it easier and safer to complete his job. This is smart business.

If we keep our eyes open for hazards and make it a point to remove them when we find 'em, then they can't get us tomorrow when we ain't looking.

DON'T WAIT

Personnel from TAC headquarters find many flight safety discrepancies during surveys, staff visits, inspections and by reading accident reports. In most cases, action should have been taken to correct these discrepancies long before they came to the attention of the headquarter's staff. Commanders should insure that their supervisory personnel are thoroughly familiar with their duties and that they take immediate action to correct discrepancies as soon as they are found, regardless of who finds them. This is just one of many ways we can help halt the upward trend in our accident rate.

WHAT- ME TAKE OFF?

A recently assigned Captain and a young Second Lieutenant approached the instructor pilot to be briefed on the next day's flight. After introductions and a lengthy detailed briefing of the mission, the IP asked the lieutenant how he liked the aircraft which happened to be one of Uncle Sam's more complex multi engine jets. "Fine, I guess—you see I've only had academics."

Further questioning revealed he had never made a takeoff in the aircraft, so the thoughtful IP announced that this would be his first. The young birdman's eyes brightened. Takeoff directional control, wheel pressures and associated takeoff procedures were briefed in detail. "Any questions?" There were none, so the group was dismissed.

At the aircraft next day, confirmation of who would be in which seats during takeoff was made. At this time the not entirely fearless captain asked, "Aren't you carrying this a bit too far?"

A short discussion revealed that the lieutenant was the crew assigned NAVIGATOR! This could have been a sporty takeoff.

This incident exemplifies how far some things can be carried before someone catches them. The young, inexperienced navigator said he thought that all new crew members received a familiarization takeoff, or that the instructor was just being big-hearted. In any case, we must admire his spirit and fortitude.

—Combat Crew

TAC ATTACK



PERSONAL PARACHUTE FASTENINGS

Several aircrews have been partially fastening their parachute leg straps, thinking they were secure. They placed the rings into the snaps, but had the snap guards still under the rings. Aircrews should be aware of this danger, and make certain that leg straps are completely latched. If the latches bind, the rings can be turned down to fit into the snaps correctly. (Page 28, Section 5, T.O. 14D-1-2-81.)

—Interceptor

WRONG FREQUENCY

Skipping one step in an ILS approach put a B-52 crew in a position which could well have been fatal. Fortunately it happened at a southern base where the average ground elevation is near zero, resulting in nothing more serious than a jolt to their complacency. As the copilot tuned in the ILS the pilot noted a full scale deflection of the course deviation indicator. He started a turn to intercept the course line and immediately started a descent to stay on the glide slope. After a few moments the radar operator advised that they were 15 miles from the base and at too low an altitude. An immediate pull-up was made and the discrepancy corrected. The ILS frequency selector was found to be just one point off. Oh yes, the step they omitted: failure to identify the ILS.

—Combat Crew

TAC TIPS

THE LINE'S BUSY

While reflecting on the sparse furnishings of his repository of aeronautical experience, a student pilot decided to enhance its decor with some practical air navigation. Having effected this decision he pursued its consummation with alacrity. Soon the prerequisites were satisfied and he was on his way. Events were transpiring pretty much as he had planned until the engine evidenced signs of premature cessation. This excited his flow of adrenalin and he scanned the topography with celerity in search of a landing area. His optical inquiry was quickly rewarded and he proceeded toward the site chosen. The approach was without incident until well down final. At this point the horizontal lines across the windshield began to appear less like scratches and more like telephone lines. Only brief speculation was afforded this optical oddity before all doubt as to their true identity was removed. They were telephone lines, and the aircraft's trajectory was such that it came into contact with them. This so reduced its forward velocity that the forces of lift could no longer sustain it aloft. It fluttered earthward like unto a wounded bird, and came to rest atop a bovine domicile--to wit, a cow shed.

While phone lines are not the hazard one usually associates with bovine housing, it is obvious they must be considered.

—*Combat Crew*

FOOD FOR THOUGHT

These days, most of the information we get on the subject of eating is negative. We are continually being cautioned to watch our weight and stay trim and slim. The coin has another side,

for altho overeating can definitely be a threat to your well being on a long term basis, under eating can be an immediate threat.

You, like your aircraft, usually run smoothly when your tank is fueled. You burn about 250 calories per hour under a moderate workload. If you fill your tank with a good meal it will last about 4-1/2 hours . . . then you'll have to switch to reserve . . . taking sugar from your liver. This will keep you rolling another three or four hours.

If you're operating on reserve and need a sudden burst of energy to cope with an emergency you might not get it . . . no reserves left.

Even under normal flying conditions, you can eventually deplete your reserves and your body will rebel against burning up good muscle tissue . . . your brain cells will be starved due to low blood sugar and you'll feel fatigued and irritable.



Your coordination will drop off, your attention span will be shorter and you will be more prone to error . . . and you know what that does to your flying.

The solution is obvious. Next time you're tempted to grab a snack when scheduled to fly, reconsider and eat a balanced meal.



Plan for Safety

plan for safety

By Capt W. D. Brown
FSO, 4411 CCTG

DURING THE PAST 5-1/2 years, the 4415th Combat Crew Training Squadron flew more than 25,000 hours without an aircraft accident to establish an enviable safety record.

The squadron was equipped with RB-66B aircraft early in 1956 and since that time experienced only one aircraft accident. This accident occurred in September 1956 when a pilot was forced to make a gear up landing after a landing gear door actuating rod failed and caused the gear of his B-66 to jam. The landing was expertly accomplished, no one was injured and the aircraft received minimum damage.

The squadron's original mission was to maintain operational readiness in night photo reconnaissance while acting as the USAF advanced Flying Training School for RB-66B reconnaissance pilots. Later the mission was changed to one of training only.

The secret ingredient that led to this significant flying safety record was basically this: Every member of the organization was guided by the concept that their reason for



B/Gen Horace D. Aynesworth, Commander of the 837th Air Division, congratulates the 4415 CCTS B-66 crew that completed the unit's 25,000th hour of accident free flying. Left to right. Gen Aynesworth, Capt Richard E. Damon, pilot; Capt Connie Costen, navigator; Col James L. Rose, Commander 4411 CCTG; Maj George F. O'Neal, 4415 Commander; CMSgt Zane Allen, 4415 line chief; and SSgt John P. Morgan, crew chief.

existence was to accomplish the mission and accomplish it safely. Because of this, the importance of doing each task and doing it right was utmost in everyone's mind.

In this concept, supervision is more than just the Commanding Officer watch-dogging a safe operation. Each individual must share responsibility and do his part. Obviously, with this attitude every man must act as a professional.

Knowledge and performance are additional traits of the professional . . . and in the 4415th, every effort is made to insure that each individual knows what to do and then does it. For example: Before a student pilot is allowed to fly the aircraft alone an IP gives him a demonstration ride and then accompanies him on two additional flights. Each student is required

to complete 39 hours of transition flying before he starts reconnaissance training. This is done to insure that he has become completely familiar with the aircraft.

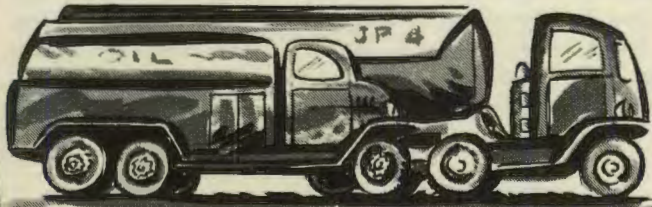
With the guidelines established by this concept of operation, the 4415th is proving that they can effectively and safely perform their mission by using the recognized tools of supervision, professional performance, mature judgment and *Expirit de Corps*.

In reality then, the secret ingredient of their aircraft accident prevention program is no secret. Safety and the true measure of success is not some magic formula, but instead, is the enthusiastic application of established safety principles by each person in an organization.

Safety on the

Sgt C. T. Perkins, 3d MAW

safety on the line



line

Reprinted from THE HOT MIKE

ONCE I WAS blue-eyed and brown-haired but since becoming a maintenance chief, I'm a grey-haired, red-eyed old reprobate. A typical example of what caused this phenomena occurred just the other day. I was showing a brand spanking new second lieutenant through one of our aircraft in the hangar. He was seated in the cockpit and asked me to point out the location for seat and canopy safety pins. I'm here to tell you—and lucky to be at that—that I like near fell off the step when I found that not only were the pins left out, but the cartridges were installed!

The good lieutenant fairly flew out of the cockpit and I don't think his feet touched the deck until he was 50 feet from the bird. What a way to start him off in a new squadron—I wonder if he'll ever have any regard for the squadron maintenance.

The error was brought on by confusion when the particular aircraft was brought in the

hangar. Another aircraft was on the flight line with the cartridges removed, waiting to be brought in the barn. Someone didn't insure that these devices were removed before they brought our bird in, and there it sat, loaded, cocked, and primed for killing.

To prevent a recurrence I drew up a checklist for the maintenance crew to complete before they bring an aircraft into the hangar. This list includes removal of all explosive devices. One of my quality control NCOs now meets all incoming birds to insure that this checklist has been completed. True, this has increased the workload but at least I won't lose any of my people to an accident. Incidentally, we're using a reverse check when a bird leaves the hangar to insure that it is ready for flight.

Later the same week, while strolling around the hangar and line areas, I noticed quite a bit of foreign material, especially on the parking ramp. The hangar immediately got a good sweep-down but the ramp was another problem. Most of the trash was small pebbles.

I got together with the line chief and we found that this stuff was coming in on the refueling trucks. The trucks were being parked in a new parking area that was surfaced with crushed rock. Tires on the trucks picked up the rocks and carried them onto the line.

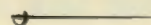
A sweep-down and bend-over campaign got rid of the trash and respotting the trucks on a blacktop area stopped the

stuff at its source. We now have a beautiful recreation area complete with crushed rock. I wonder when we'll get smart and keep all vehicles off the ramp when they are not shod with completely smooth tires!

The most ridiculous hair-brained stunt I've seen in many moons occurred only yesterday. Two of my men were headed back to the hangar on a tug. Evidently the passenger didn't want to go all the way, so jumped off while the tug was in motion. When he hit the ground he put on quite a tumbling act—and he's no tumbler. After some patching up at sick call he reported back on the job but isn't in the best of shape and will be eating off the mantle for a while.

I gathered from this that I hadn't impressed my people with the danger of such stupid stunts. To lend emphasis to my contentions I broke out a write-up on another man in another unit who did the same thing and fell under the wheels of the vehicle. He ended up in the morgue.

There are many other cases of minor safety infractions which are too numerous to mention here. I call them minor only because the perpetrators were lucky and were able to get away without getting hurt. Gathering material for this report opened my eyes to a lot of these and I'm taking positive steps to straighten them out. Other maintenance chiefs would benefit from a similar look into their own safety program.



Bugged Fuel



DO YOU REMEMBER the short on Bugged Fuel we published in the July Chock Talk? The Maintenance Review for August 1961 ran a longer article on the same subject. They titled their article, "Microbiological Fuel Contamination and Corrosion." Anyway, the problem is still with us.

Recently, we visited the petroleum engineering section here in the headquarters and found that they had collected many of the samples mentioned in the Maintenance and Review article and had them growing in test tubes.

It was a very impressive display. They had both algae and bacteria growing in most of the fluids used in modern

aircraft. They showed us color slides of growths taken from aircraft fuel tanks and several pictures of corroded structure. We were impressed, asked questions and discussed the situation with the engineers.

We wondered why the problem was just now coming to light. Why aviation wasn't plagued by it before. The engineers explained that the lead in aviation gasoline discouraged the growth of most bacteria and algae. More important, that water readily separates from gasoline and is much easier to drain off. We wondered out loud if water had much to do with the problem.

"It certainly does," we were told, "In fact this is why the algae gives so much trouble to

aircraft equipped with integral 'wet wing' fuel tanks. It is much harder to drain all the water from these tanks."

When we asked how long it took for the bugs to grow we were told that quite an accumulation could develop in a week, the amount depended on temperature and amount of moisture present.

With summer on the way, we can expect the problem to worsen, since hot weather accelerates growth.

"Couldn't they add some chemical to the fuel that would kill these growths?" we asked.

"This has been tried." we were told, "but there are over 90 separate strains of bacteria and algae. A chemical that is lethal to some strains always seems to accelerate the growth of others."

Our informant explained that these growths created two distinct problems. The problem of foreign material in the fuel which could clog strainers, and burner nozzles. Second, in the areas where they grow, the bugs give off mineral salts which form an electrolyte that causes metal to corrode. Rate of corrosion can progress very rapidly. Additionally, both the bacteria and algae feed off the fluid and change its chemical composition. This doesn't

matter too much with fuel, but can be critical when the growths are in hydraulic fluid or engine oil.

We asked if they could coat the integral tanks to keep them from corroding and were told that this was being done. However, water has a tendency to cut thru coatings designed to resist fuel while fuel cuts thru those designed to repel water. Additionally it is impractical to coat float mechanisms, fuel controls and other such components.

We asked how these growths got started in the first place.

"They come from contaminated fuel brought in by aircraft serviced in tropical areas. Some of these aircraft had to be defueled for maintenance and this spread the contamination." The engineer continued, "Many of the bugs are present in the air, and a sample will start to grow a culture even though distilled water is added to supposedly uncontaminated fuel."

"Water must be present then?" we asked.

"Yes; however, all jet fuel contains a certain amount of in-trained water. It is quite difficult to remove."

At this point, it looked to us as if the bugs had every advantage and that it would only be a matter of time before they contaminated all aircraft burning jet fuel. We said as much.

"Well" the engineer said, "at times it does look that way. But they can be kept under control."

"Careful handling, and

careful filtering will keep oil and hydraulic systems from becoming contaminated. Bugs in fuel have to be fought from two different angles . . . while handling and while in the aircraft.

"Water bottoms are risky business in jet storage tanks. We can no longer tolerate them. Filters on storage tanks and in tanker trucks must be kept clean and must be examined at regular intervals.

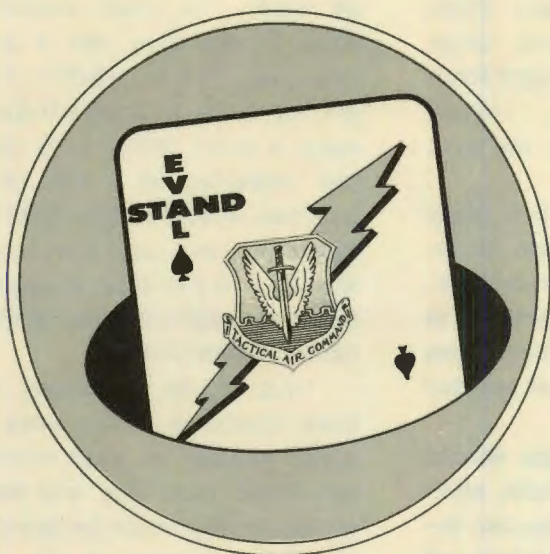
"The aircraft tanks should be drained on pre-flight, after servicing, and at regular intervals when the aircraft is not flown. Proper time intervals are established by existing tech orders. Reminds me, all points should be drained . . . including drop tanks and tip tanks on aircraft that carry them."

Taking another look at a particularly nasty looking accumulation in a test tube we asked, "Will draining the sumps really keep the bugs under control?"

The engineer smiled, "Yes" he said, "it most certainly will. I can give you a good example. Three C-130's were getting ready to leave a tropical base a short while back when one experienced a fuel malfunction. Pilots of the other two elected to hold until the trouble was corrected. Investigators found the aircraft fuel system badly contaminated.

"All three machines had been operating on this base for quite awhile, so they checked the other two. One was badly contaminated while the third had no contamination at all. The engineer of the uncontaminated bird had the answer. He had been draining his fuel sump every day, regardless of whether his aircraft flew or not. The other two crew chiefs had not. In fact, neither of them had even bothered to take a drain stick along on the deployment. Does that answer your question?"





"THE FORMAL CRITIQUE of the TAC Standardization/Evaluation visit from our big brothers in the orange suits didn't go too badly," mused the wing commander, "in fact, it went pretty good! The majority of our pilots are studying the handbook, and that's all it takes."

"Yes sir," agreed the FSO, "as a group, their gears work quite smoothly when they grease them a little with what's in the book. Sometimes they need a little push to do that . . ."

"True. They're smart, but basically

lazy.—That's not what worries me. It costs so much to get these birds airborne nowadays that there's no extra time to shoot several approaches before each landing or to shoot as many landings. We just can't give 'em unlimited flying time, so each flight must be crammed full of training and the landing phase becomes more important than ever. Frankly, I didn't care for some of the patterns I've watched lately. The Stand/Eval visit report bears this out. It shows us completely qualified in the touchdown phase, but conditionally qualified in the VFR landing pattern."

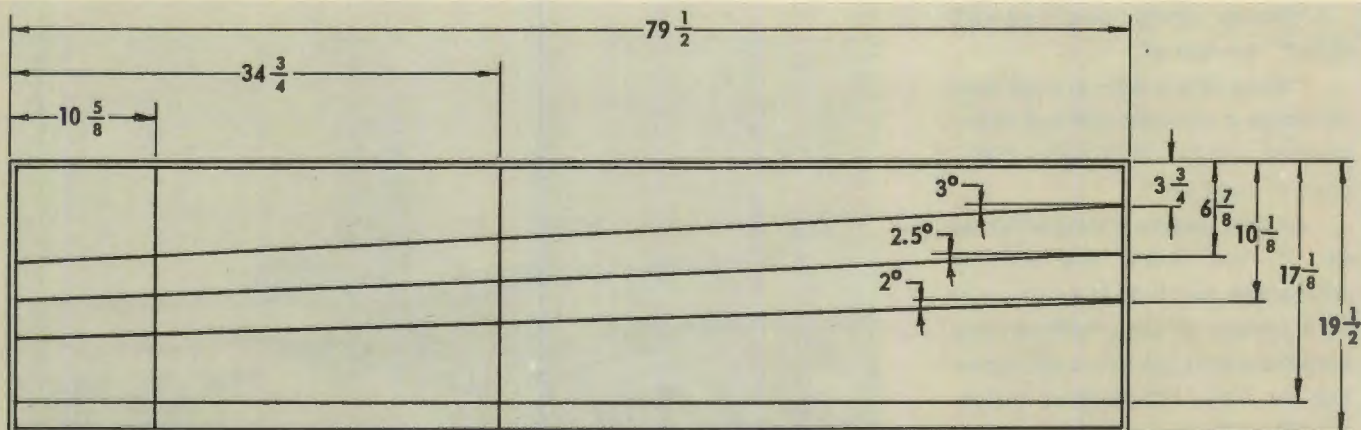
"Yes sir, on the Base to Final turn, mostly."

"Right! We've got to eliminate low turns to final along with final approaches that are too steep. I haven't had to make a house call with the chaplain for quite some time now and I surely don't want to make one!"

"I'll get to work on it, Sir. One of the TAC evaluators mentioned something about a Mobile Control Approach sight the other night at the bar, but we were interrupted before I figured out what he was talking about. I'll phone him."

"I don't care what method you use, I'll back you. I want these nonstandard approaches stopped before Monday tho."

On Monday morning, pilots in the fighter wing were, in some cases surprised and in some cases perturbed at phrases reminiscent of flying school, "Gooseliver 34. Take it around, you're too



Outer frame is 1/2 inch steel tubing. Wires are 1/16 inch control cables painted with fluorescent paint. An old fluorescent instrument panel light is used to make wires visible at night. The angle of the cross wires can be adjusted to align the sight for different types of aircraft. Note: All dimensions in inches.



low!"--- "Sackrat 23. Take it around, you're too high!"

"Who was that hard nose in mobile that was sending everybody around?" was grumbled throughout the wing. They found out that afternoon when a surprise Wing Flying Safety meeting was called.

The wing FSO began the meeting with, "This morning, I pulled the tour in our modified mobile control unit." (Eyebrows raised, feet shuffled) He continued, "The Wing Commander was with me." (The pilots made quick glances at each other.) "This meeting will explain our newly installed Mobile Control Sight. It will help standardize our final approaches, day or night."

The explanations of the use and reasons for such a Sight were not, as might be expected, universally accepted at first. However, within a week pilots seemed to enjoy the challenge of beating the sight, while those in Mobile Control were even working up some enthusiasm for the firm method they could now use to evaluate the performance of their friends.

The Schaal mobile Control Sight was developed after the pilots of a wing chalked up several sage brush landings, two close calls and a fatal accident.

The mobile control officer uses it as a reference for monitoring the base leg of the traffic pattern. With the sight he can rapidly

analyze each pilot's base leg to see if it is within safe limits and send him around in ample time to prevent trouble.

To use it, the mobile control vehicle must be set so the sight is perpendicular to the runway, 1000 feet from the threshold and 150 feet from the edge of the runway. The controller sits about 4 or 5 feet behind the sight on the side nearest the runway. He positions himself so the vertical lines appear to project above the center of the runway with the base line on the horizon.

He watches aircraft in the pattern, and as each turns base, he follows it thru the sight comparing its track with the three sloping lines.

If it appears to follow the center line the pilot is making a perfect base leg. If it stays within the area outlined by the top and bottom sloped lines, the pattern is within limits, and safe. If the track appears to go above or below these lines the base leg is unsafe and the pilot is so advised. If distance out is normal, the track parallels the lines. If closer than normal the aircraft goes downhill in relation to the sloping lines and uphill if out further than normal.

The vertical line is the decision point. If the aircraft is out of limits when the decision point is reached, the pilot is directed to go around.

The sight cannot be used to monitor final, or when mobile is on the outside of the pattern.

Recognition



CREW CHIEF OF THE MONTH.

For his capable, proficient and efficient service as a C-130 Crew Chief, Staff Sergeant James E. Terry of the 463rd Troop Carrier Wing, Sewart Air Force Base, Tennessee, has been selected as the Tactical Air Command Crew Chief of the Month. He has demonstrated excellent leadership qualities while performing his duties and is recognized for his outstanding ability to lead by example. Sgt Terry works extremely well with his supervisors and expertly instructs those assigned to him for OJT training. Sgt Terry is ambitious and enjoys hard work. His personal zeal, industry and ability to properly analyze aircraft deficiencies and initiate corrective action are unsurpassed.



MAINTENANCE MAN OF THE MONTH.

Staff Sergeant Donald H. Greetan, 64th Consolidated Aircraft Maintenance Squadron Hydraulic Specialist, is the Tactical Air Command Maintenance Man of the Month. Sgt Greetan was riding as a passenger on a ski equipped C-130D of the 64th Troop Carrier Wing enroute from Dyess AFB, Texas, to Sondrestrom AB, Greenland. Arriving at Sewart AFB, Tenn, for a scheduled refueling stop, the landing gear was lowered and the controls positioned to raise the skis for a wheel landing. The left main ski would not raise. The gear was cycled numerous times without success. The air turbine motor was turned on to retract the skis with the emergency hydraulic system but it immediately oversped and tripped off the line, making the emergency system useless. Lockheed technical representatives and ski qualified pilots gathered in the tower below. After much discussion, they agreed that the best course of action was to land skis down on a foamed runway. Staff Sergeant Greetan, requested permission to work on the system. He removed a hose from the nose strut nitrogen bottle and utilized numerous odd fittings to interconnect the utility hydraulic system with the emergency hydraulic system. This routed utility pressure through the emergency lines and the skis were raised permitting the pilot to make a normal landing.

Sergeant Greetan's extensive background in hydraulics and knowledge of the C-130 systems enabled him to devise and carry out a plan which averted certain damage to the aircraft and possible injury to the passengers and crew.

TAC TALLY

A COMPARISON OF TACTICAL AIR COMMAND ORGANIZATIONS

MAJOR ACCIDENT RATE*		
1 JAN. - 31 MAR.		
TYPE	1962	1961
ALL	14.9	12.1
F-105	17.6	0
F-104	23.6	36.9
F-101	57.6	0
F-100	15.4	19.5
F-86	123.2	0
F-84	16.2	30.5
B-66	0	45.0
T-33	0	0
KB-50	41.8	20.7
C-123	11.1	13.6
C-124	0	0
C-130	0	0

*PROJECTED

MARCH TALLY GUARD AND RESERVE		
UNIT	MAJOR	MINOR
302 TCW	1	
446 TCW	1	
459 TCW		1

MARCH TALLY ACTIVE UNITS		
UNIT	ACDNTS*	INCDTS
831 AD		13
832 AD		18
4 TFW	1	7
108 TFW		6
113 TFW	2	12
117 TRW		
121 TFW	1	1
122 TFW		4
131 TFW		2
401 TFW		2
354 TFW		3
4510 CCTW	2	2
4520 CCTW	1	25
837 AD		10
839 AD		
64 TCW		
435 TCW		2
442 TCW		
464 TCW		1
4505 ARW		3
4400 CCTS		2

*MAJOR AND MINOR

ACCIDENT FREE (MAJOR & MINOR)			
JET			
ACTIVE	MONTHS		ANG
474 TFW	12	40	123 TRW
CONVENTIONAL			
ACTIVE			RESERVE
4430 ATG	40	64	434 TCW
314 TCW	32	53	94 TCW



Princess

ANN

SAYS:



AVOID EMBARRASSMENT



... KNOW YOUR
EMERGENCY PROCEDURES!