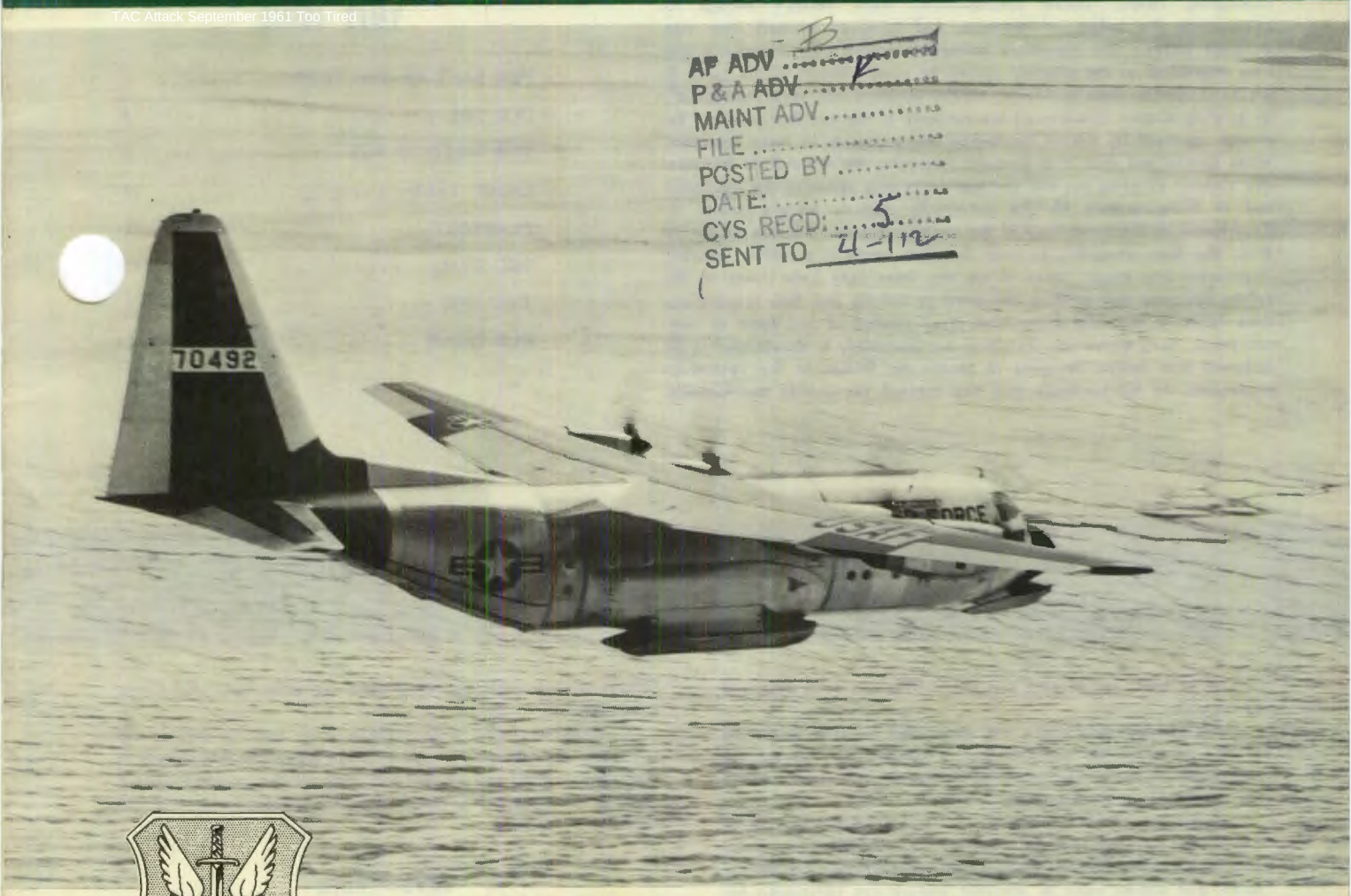
SEPTEMBER 1961

TAC ATTACK



TACTICAL AIR COMMAND

TOO TIRED

TACTICAL AIR COMMAND

ATTACK

GENERAL F. F. EVEREST COMMANDER TACTICAL AIR COMMAND

LT GEN G. P. DISOSWAY VICE COMMANDER

EDITORIAL

An overhaul facility reported similar discrepancies on several aircraft undergoing IRAN. These discrepancies were serious enough to compromise the safety of aircrews and involved aircraft from two different bases. The immediate corrective action was to make a one time inspection of the affected system in every aircraft of the type. A series of operator error accidents, similar in nature, all were "corrected" by briefing aircrew members on the contents of the accident reports. An airman harassed by severe headaches, buys aspirin in large economy-sized bottles and eats it at frequent intervals. We're quick to criticize the airman. Pointing out that the aspirin is only relieving the headache and is doing nothing for the potentially serious trouble behind it. Experience, or the experience of the experts, the doctors, has taught us this. Why then, shouldn't we treat the other cases in a similar manner? Experience has taught those of us who have long been close to the safety business that briefing personnel or making one time inspections does little to cure the basic underlying causes of accidents or near accidents. Such action has its place, but invariably it should always be followed with action designed to locate the failure in the system or inadequacy in the hardware that has created the unsafe environment.

THIS ISSUE

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COVER PHOTO

One of TAC's C-130's flys over the icecap to remind us that winter will soon be here.

USAF Recurring Publication 62-12

FOR WANT OF THE WORD

IN THE MAINTENANCE SECTION at command headquarters, a major was studying a thick package of papers attached to a brown folder. As he read, he jotted an occasional word or sentence onto a yellow tablet. Finally he closed the folder, tore off his notes and picking up a freshly sharpened pencil wrote: "As a result of a recent major accident, it has been determined that a foreign object was introduced into the fuel inlet line during engine maintenance . . . " He described the foreign object, outlined how it got into the fuel line and reviewed the damage it did. He then wrote, "It is recommended that local procedures be established to require an inspection of the fuel pump filter after initial run up following JEFM or maintenance."

Two days later, a master sergeant in the numbered Force headquarters showed the message to a captain and said, "Sir, I'm retransmitting this to all F-100 units." The captain read the message, rubbed his chin, then said, "Better send it to all units; this could happen on any aircraft following maintenance. They are supposed to cap lines any time they take them apart . . . still, this will be just one more safeguard."

The wing director of maintenance looked up as the senior master sergeant placed some papers on his desk, then asked, "What's this?" "Message from headquarters wanting an inspection of the fuel filter after maintenance is performed. I'm sending two copies to CAMS and am sending a note to standardization asking them to work up the procedures. I figured you'd want to publish a maintenance directive on it, sir."

The wing director of maintenance looked thru the paper work and nodded his head in agreement. He reached for his pen and said, "Looks good to me."

Two days later the directive was published and distributed to CAMS, each maintenance staff section, and the tactical squadrons. When this directive arrived at the base maintenance section it was read ing roll call.

About a week after this directive was read, a

staff sergeant boarded an aircraft headed back to the United States. He had been TDY for quite sometime and was now going home to his family and his regular job as a shift NCOIC in the engine shop.

A month passed, then another and still another. Then, late one Wednesday, a crew chief was giving his F-100 a post flight inspection when he noticed oil leaking from the breather valve. He called the discrepancy into maintenance control. A work order was made out and the machine was turned over to the engine shop. An airman first was given the job of correcting the discrepancy. First, he pulled the filter screens, cleaned and replaced them, and rigged a test pressure gauge on the filter so it could be checked on run up. He then proceeded to change the breather pressure and vent valve. He got a replacement valve from his NCOIC's desk . . . and put it in without backing out the engine.

This wasn't easy. Things are in the way and as one airman put it, "Nothing would make it easier except to pull the engine. You just can't see what you're doing if this job is done with the engine in place. In fact, the whole aircraft is like that." Usually the main fuel line is disconnected to get at the valve.

After he finished his work, the airman wrote up what he had accomplished in the night log. The next

morning the engine was run up and a leak inspection made. Everything appeared normal, so the paper work was completed and the aircraft returned to the line.

The aircraft was flown steadily for the next four weeks and performed normally until a young lieutenant entered the GCA pattern on return from a routine bombing mission. He made contact with GCA during his penetration turn and was descended

to an altitude of about 1000 feet above the terrain. He lowered the gear after rolling out on final and switched to channel 18 to pick up the final controller.

The controller came in loud and clear. Flaps were lowered and the lieutenant slowed the big machine to 170 knots and was soon descending on the glide slope. In just two minutes he would touchdown for a normal landing . . . or would he? Overriding the voice of the final controller, he radioed to the pilot flying chase, "Hey Jack, I'm flamed out!"

Jack, who was a well-experienced flight lead, radioed back, "Air Start and Emergency Fuel!" He thought, "He might save the bird . . . if not he'll just have time to eject."

The lieutenant actuated the switches without result, then called, "I'm getting out" and raised the handgrip jettisoning the canopy.

Jack watched the canopy go. He waited for the seat – it didn't come and he could see that altitude was fast becoming critical, he shouted into the mike, "Get out! Get out!" At about 200 feet the stricken aircraft nosed over abruptly . . .

During investigation of the wreckage, the safety experts found metal particles in the filters to both the main fuel control and the P & D valve. The fuel pump was torn down, and a self-locking nut was found in the inlet screen. The nut and other ferrous material had passed through the boost pump impeller and had become trapped in the fuel pump inlet screen. Holes were worn through the screen and undoubtedly bits of metal and parts of the boost pump had passed through. The investigators found that enough damage had been done to result in flameout.

While trying to find out where the nut came from, investigators looked at the breather pressure ve

valve. A photograph of this valve shows what the inspectors found. One nut was of different dimensions and was bushed up with three washers; another was not completely torqued. One nut was without a washer at all. The nut that was found in the fuel screen matched the nuts normally used on this valve.

Since procedures were supposedly in effect which would safeguard against this sort of accident, the investigators started checking to see why they failed. They asked the crew chief if he was aware of the maintenance directive requiring the main fuel pump inlet screen to be pulled after PE run-up.

He replied, "No sir. I probably heard about it . . . but . . . we have thousands of these things."

They asked a dock chief and he said, "At the time I had not the vaguest idea that the screens were supposed to come out."

To the same question, the shift NCOIC of the engine shop replied, "At the time this maintenance was done, we weren't complying with the directive. They said it was brought up in roll call. I was TDY at the time and was not briefed on it until after the crash."

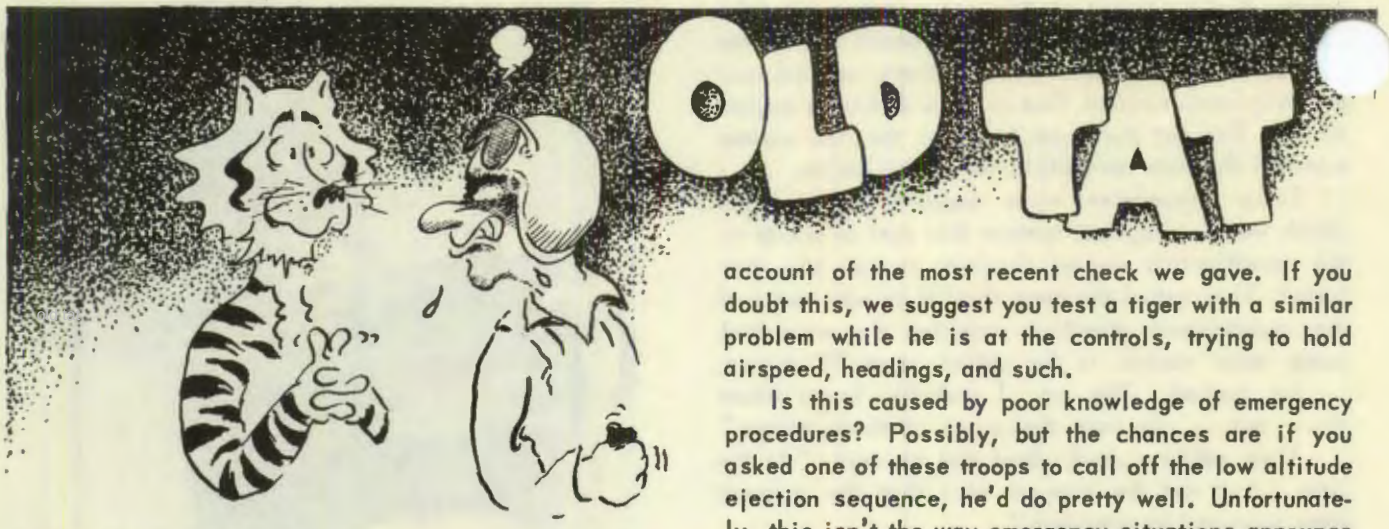
It is apparent that this was just one more aircraft and pilot sacrificed because someone failed to get the word. The breakdown followed a familiar pattern – a pattern which can be found at almost every base in the Air Force. The key to this pattern is in the

replies of the involved airmen. – "I probably heard about it but we have thousands of these things." This sounds like the unit was making everyone digest every instruction being issued, regardless of content and regardless of whether or not the item applied to the type of work the individual was doing. This method of passing the word *insures confusion*. Someone who is qualified should screen all incoming material and make certain that hydraulic men get

data peculiar to hydraulics and that electricians are given information for electricians. In short, keep the poop going to each individual to a reasonable level . . . and then institute a workable back-up system to get pertinent information to those people who are TDY or on leave.

Failure to get the word wasn't the only cause factor. Obviously the maintenance performed on this valve was of poor quality. So was the inspection, which apparently was little more than a check for leaks. Both appear to have been a direct result of corner cutting. Corner cutting is caused by many things, but generally it can be traced to an excessive workload. Mechanics cut corners to save time... usually they want to save this time in order to reduce the amount of overtime they are having to put in. Once again, the faint line of cause factors can be traced back to supervision at one level or another.

Support for this line of reasoning is readily available. For instance, the Monthly Maintenance Plan for most TAC units will show that many maintenance sections are programming an average of 20, 30, 40, or more hours of overtime per man. Since this is an *average*, obviously some people are going to be working far more than that...particularly considering time lost by others due to leaves, sickness, and such. Overcommitment? Possibly . . . but how about other sections within the same unit which are not committed to capacity, or which are over-manned? Very often, commanders can correct overcommitment and other such ills by giving the problem more attention. ●



WHILE GIVING 60-2 CHECKS, Old TAT likes to use the time spent climbing to altitude or in transit to the aerobatic area, making things uncomfortable for the guy in the front seat. We casually mention that we're going to outline a flight condition and ask for his response. A typical example goes like so. We'll say, "On a hot day at high altitude, you have a calculated takeoff roll of 5000 feet while taking off on an 8000-foot runway. The overrun is rough, being timber or cleared land covered with stumps. Your takeoff proceeds normally until just after crossing the far end of the runway at about 200 feet and 150 knots (T-33). At that point you get a definite feeling that the aircraft has started to decelerate. This is accompanied by a severe vibration, heavy smoke in the cockpit, RPM unwinding towards zero, and illumination of both fire warning lights. How will you react?"

Generally, the victim will say, "Ah...well, I guess I'm in trouble. Ah...do I have room to eject?"

"You were at 200 feet and 150 knots."

"Well, I might try a belly landing."

"Over timber and tree stumps?"

"No, I guess I should eject."

"Can you give me the sequence you would use?"

"Well, I guess I'd pull down my visor"...long pause...

"Yes?"

"Then I guess I'd actuate the bail out bottle... then..." more brightly, "Oh yeah! Get rid of loose equipment and blow the canopy--"

"We interrupt to ask,"How would you accomplish this?"

"Well, I'd pull up the arm rest . . . . "

First off, let's interrupt right here and state that this is a *typical* reaction and is an almost verbatim account of the most recent check we gave. If you doubt this, we suggest you test a tiger with a similar problem while he is at the controls, trying to hold airspeed, headings, and such.

Is this caused by poor knowledge of emergency procedures? Possibly, but the chances are if you asked one of these troops to call off the low altitude ejection sequence, he'd do pretty well. Unfortunately, this isn't the way emergency situations announce themselves. In the situation we outlined, as we explain during our critique to our victims, you don't have time to dawdle around trying to remember what to do. Altitude and airspeed are critical. The symptoms given are for a gross engine failure with little hope of doing anything else but ejecting. Therefore, the only hope for survival would be to haul back on the stick, grab for the seat handles, and pull 'em up. If the canopy jettisoned, fine. If it didn't, we'd go ahead and squeeze the trigger a blast through it. Then we'd go for the lap belt soon as we could, following this with a grab for the D ring or T-handle. To be successful we firmly believe that you must have pre-conditioned your reflexes . . . but not to the extent that you would react this way to *every* engine failure. This brings up another item on emergency procedure training which we think needs stressing.

A complete electrical failure shortly after takeoff requires certain action. The same failure at 35,000 feet, 500 miles from the nearest air base requires slightly different action, while a complete electrical failure in weather and some distance from a suitable base will require still different action. This is why we think that *all* emergency procedure training should be accomplished by setting up situations and asking for reactions. To do so requires quite a bit more effort from both instructor and instructed. But it can darn well be worth it . . . particularly if you can use a simulator.

Oh, by the way, when your outfit complied with TAC Regulation 50-29, which requires a semi-annual introduction to the ejection seat . . . did they just plunk you in the seat and let you pull up on the handles? Or did your flight commander set you dov fully equipped for flight, with the rest of the fligh.

gathered 'round, to outline an ejection type emergency ... let you react accordingly? If it was at low ...itude, did he make sure you followed through by releasing the seat belt and going for the 'D' ring? If it was at high altitude and the aircraft supposedly controllable, did he insist that you try to fly down to a more convenient altitude before making your leap? If he placed you in a get-out-early ejection at high altitude, did you discuss the pros and cons of pulling down the visor and actuating the bail out bottle before punch out? We say, 'pros and cons,' because if you've lost control and air speed is headed toward mach 1, you might be better off to punch out and then worry about less important items.

While on 50-20... when practicing the emergency escape from a simulated ground accident . . . did your flight check the time needed for these escapes to see whether you could get out faster with or without your chute and dinghy?

From all this, TAT has tried to illustrate that there is more than one way of complying with a directive. Your old neck might be saved or lost depending on how well you complied with this one.

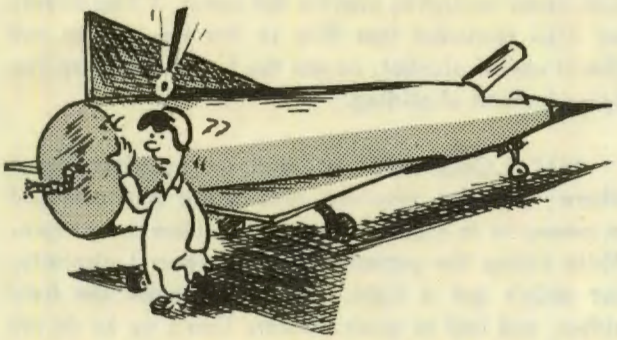
TRADITIONALLY, US BIRD WATCHERS very carefully climb on top of our trusty soapbox during the month of September to chirp loud and long about the hazards of winter. We choose September for this, since there is less chance of a nasty fall due to an iced box. By now all of you birdmen should be well-briefed on the subject . . . However, if you've just had a tour in Hawaii or are fresh out of the hatchery, we suggest you review the winter flight procedures for your particular bird. In addition, you should study ...e slick runway stopping procedures since you just ...ight find yourself landing on an iced runway. All this stuff is fairly basic, should be in your handbook and for the most part, well-committed to memory. We assume you already calculate landing rolls and have been smart enough to plan for the worst. T-bird drivers are also reminded that this is the ice season and liberal use of alcohol, as per the book, will keep you flying instead of gliding.

NOT LONG AGO we read an accident report where the pilot involved lost power and managed to maneuver to high key and into a flame out pattern. While flying the pattern, he tried several airstarts, but didn't get a light. He didn't make the field either, and had to eject. Moral: Don't try to do too much at once or you might goof it all up! We'll buy airstart tries right on down to high key . . . but from then on, we'd plan on placing full attention to the business of flying. In like manner, if we were flamed out and had no place to go, we'd plan to try our airstarts until we were down to 2000 feet above the rocks, then concentrate on making a real neat ejection.

Remember, we said that this is what we'd plan to do. Just exactly what we would do depends on the particular emergency--you can only plan so far before having to play by ear. We think it pays to do this pre-planning, since it tends to get the ear-work properly pre-tuned.

THERE ARE TIMES when this business of bird watching gets discouraging. For example, in the August issue we printed a short paragraph called "Safe or Salvo" which highlighted the hazard induced by the poorly shaped armament selector switch in the F-100. This article was based on an incident involving an inadvertently released fuel tank and a house. While this story was being printed, a message hit the fan telling of an almost identical mishap . . . except that this time one of the truant tanks clobbered a church, ruining some famous works of art along with an unhealthy portion of the Air Force's welcome in the particular area.

Our education machinery was too slow. But, before we can educate you, you must educate us. In this respect we find even greater delays. To illustrate, after we talked to a few century troops we learned that they had noticed that this switch was causing confusion a long time ago . . . but they did little more than grumble about it. A well-worded UR or Ops Hazard 'way back then may have gotten the switch changed. If not, a follow-up or two may have done the trick, or at least might have fallen into our hands and been publicized.



THE DRIVER of one of T.[illegible]C's manned missiles found himself being thrown from one side of the cockpit to the other by a shimmying nose wheel as his aircraft accelerated to 110 knots on takeoff. This was somewhat on the excessive side, so he pulled back on the go handle, disengaged nose gear steering, and started braking. The aircraft had it in its mind to go right, probably induced by a right crosswind of about nine knots, but left brake was effective for most of the roll out. At about 50 knots, the aircraft started to go to the right in spite of maximum left brake, and the pilot tried to re-engage nose gear steering. It wouldn't engage. The pilot stopcocked the engine and managed to keep the bird on the concrete until most of the speed was gone. Still, the nose gear folded shortly after it hit the dirt. Full external tanks were not jettisoned, since the pilot had figured he could stop O.K. without dumping them.

The pilot's decision to retain tanks and not use the drag chute came under fire from some people in one of the higher echelons. The numbered air force came to his defense with some well thought out comments, pointing out the fact that he had initiated the abort at a fairly low speed with ample runway remaining. That using a drag chute may have helped, but could also have caused him to lose control and run off the runway at a much higher speed. Had this occurred someone would surely have criticized him for this course of action. They summed up their stand with a couple of statements we'll quote, since they sum up our own beliefs on emergency procedures in general. "The point remains that the pilot analyzed the situation and acted in a manner which he believed to be the best course of action. The T.O. is not specific in how many steps must be accomplished in the abort procedures and rightly so. Each abort presents a different problem. The pilot must consider the circumstances and act accordingly."

To which, your old TAT adds, "and that is a big difference between the pure missile and manned aircraft."

JUST FOR KICKS your old TAT dipped his grubby paw into a pile of incident reports and hauled one out for review. Here it is . . . the pilot didn't get a bomb release on his LABS runs, but was able to make two successful dive bomb runs. He didn't try to do any more bombing, so returned to his home pasture lugging two MK-76 bombs. One dropped off while he was flying a hung bomb pattern. All switches were in the proper position prior to leaving the range and were verified as being in the proper position after the inadvertent release.

Not much to learn from this since it sounds like any one of a score of inadvertent bomb release reports – or is there? Most of these releases follow the same pattern . . . pilot goes to the range, tries a bomb run, fails to get a release, *takes the bombs back home*, and somewhere along the way one or more fall off. Some units have had very good success chopping their inadvertent release rate by requiring that ordinance be expended whenever possible. When someone fails to get a LABS drop, they skip bo[illegible] or dive bomb until all bombs are gone. If they [illegible] able to jettison them this way, there ain't nuthi[illegible] left to fall on someone during the trip home. The stuff *is* expendable, and they think it's better to use

it up or jettison it than to risk bombing some farmer's out-buildings . . . . and as we've pointed out, we have plenty of incident reports to prove the soundness of such a policy.

By the way, while you're busy rewriting your SOP's on this tender subject, how about checking to see that your Hot Gun – Hung Bomb route follows the area of least population . . . . the way some housing areas have been sprouting up, this is a continuing requirement.

A MAINTENANCE CREW had to drain and purge the fuel tanks of an aircraft in order to work on it. They got the tanks drained no sweat, then proceeded to fill the wing tanks with purging fluid before filling the forward fuselage tank. After a polite interval, this crew found that Sir Isaac's law is still very much in effect . . . and that the wing tanks are aft of the main landing gear. You are right! The CG shifted further and further aft until the bird lifted its nose in the general direction of the moon and promptly sat down on its aft end right there in front of everybody. The aircraft wasn't hurt as bad as some people's pride . . . and it's a good bet that this crew will take the precaution to install a tail jack-- as is required by the T.O., -- and use a bit of common sense next time they run through this operation.

YOU TOO can have an Operational Hazard Report program . . . but only if you work at it. Old TAT is talking to all of you. Fly safe types, throttle benders, mechanics, everyone.

"And what," you groan, "is such a good deal about having an OHR program?" A good question. We're glad you asked it. The OHR program is one of the better ways to find and fix things that cause accidents before anything gets bent or anyone gets hurt.

Most of us pilots have gotten out of tight spots that had all the makings of an accident. We lucked out. By sounding off when we have a scare, we give others a chance to review the chain of events and decisions which caused us to sweat. That way they can avoid the trouble or extract themselves from a similar situation. This is just one way we can use the OHR. We can also use it to get design errors corrected. You know, fix those violations of Murphy's good law. An excellent example was the OHR that warned about snagging the shoulder harness on the oxygen T-block. We published data from this OHR in the ATTACK which gave it command-wide publicity. More better, the OHR helped to stimulate an engineering change which should correct the difficulty once and for all. OHR's can be used to point out airfield deficiencies, call attention to poor procedures, or to gripe about inconvenient mess facilities.... They should be used to highlight anything which interferes with an efficient safe operation. Your perception is the limit.

To be effective, everyone has to get behind the program. You can't wait for someone else to do it for you. For instance, we know of one TAC outfit that set up a slick way for getting hazard reports. Anyone could phone in a hazard, anytime, day or night....but the telephone gathered dust. The system wasn't advertised enough. The people who dreamed up the system, just put it into effect and then more or less sat back and waited. All it needed was a little shove from a few key supervisors and it would have started to roll.

Some units have a good program and are getting plenty of OHR's . . . but they stop there. Only the sanitary ones go forward. These outfits firmly believe in keeping their dirty laundry well hidden. Frankly we all have dirty laundry. As long as we're doing everything possible to clean it up, no one should get too excited about it. So best let others hear about these problems before someone spills blood on theirs.

We are quite serious on this . . . we think you'll save yourself a lot of work by backing the OHR program. Finding and correcting deficiencies always saves work, just as cleaning ramps, counting tools, and taking other precautions is cheaper and easier than fixing engines and changing tires that have been damaged from foreign objects...and this brings up another statement...U-2, and we aren't talking about an aircraft, can have an FOD program! O.K. O.K. We'll scat, TAT. ●

TOO TIRED TO FLY

IT HAD BEEN a long day. The Captain had crawled out of the pad at 0545 and had worked until shortly after 1700 hours before getting away from his regular duties.

His immediate supervisor had known that he was going on a flight, but had apparently gone out of his way to keep him from getting away early. After he did get away, he had hurried down to Base Operations where he had found the Lieutenant waiting with most of the flight planning done and a Form 175 ready. Thanks to the Lieutenant, they hadn't been delayed too much. That is, not until their first refueling stop. There, the alert crew had found that the tail pipe on their T-bird was cracked. He and the Lieutenant had taken time out for hamburgers while the tail pipe was being repaired.

At their second stop, which was the Lieutenant's home town, they had made a weather penetration thru a fairly thin overcast with bases at five or six hundred feet. The Lieutenant off loaded his gear. While waiting for his family to come pick him up, the Lieutenant had helped the Captain plan the next leg and had even helped preflight the bird. As usual, the need for an IFR climb was causing a delay. So the Captain was sitting in the cockpit waiting for his clearance to come thru.

When ground control finally called, he copied the clearance and read it back, referring to the apparent gibberish which passed as his own private shorthand for such occasions.

The tower operator's voice came in loud, clear and competent, "Roger, four nine two, read [illegible] correct. Call when ready to taxi."

The Captain glanced at his watch and thought, "One thirty! Not so bad getting a clearance correct on the first try at this hour in the morning."

Signaling to the airman from transient alert, he pressed the starter and watched the RPM rise. At 9% he pressed the guard down on the ignition switch and then reached for the sequence switch and turned it on. The engine rumbled into reluctant life while the Captain monitored its progress.

Completing the pre-taxi check, he fastened his oxygen mask, glanced briefly at the oxygen blinker and noted that it was working. Stifling a yawn, he called the tower, "Big Gun Tower, four nine two ready to taxi."

"Roger, four nine two, you are cleared to runway nine, wind east northeast at eleven knots, altimeter two nine, nine, nine; you are cleared to taxi, and sir, you can go channel one now if you want to."

"Roger, Tower, thanks," He smiled at the tower operator's relaxing normal formalities and thought, "This is one of the fringe benefits of the late, late operation. Must be a rather boring job this time of night." Making the necessary channel change he signaled for chock removal and soon was making way to the active. As he approached the runway,

tower called, "Four nine two, you are cleared for takeoff and cleared to switch to departure frequency, channel fifteen. Monitor guard for takeoff. Ah, have a good trip, sir."

"Roger, Tower, thanks, going fifteen." He switched channels, taxied onto the active, and carefully aligned the aircraft with the runway. Glancing briefly at the black sky, he stifled another yawn and thought: "Cloud deck is not too thick; I'll go straight out until I get on top, then turn on course... Letsee, eighty per cent, loadmeter point four, oil in the green, trim light on, looks good..." On channel 15 he called, "Departure control four nine two rolling."

The calm voice answered, "Roger, nine two, you off at three four."

In a late model sedan parked by the fire station, the Lieutenant was trying to talk to his pretty wife while his three children clamored for attention from the back seat. As they chatted, they watched the Captain's T-33 accelerate down the runway and lift into the night, lights flashing steadily until swallowed by the low lying clouds. The Lieutenant reached behind the front seat and fumbled thru his gear. He pulled out a paper sack and distributed some plastic toys to the three children. The chatter increased in tempo, then decreased while the children inspected the gifts.

Perhaps a minute passed before the Lieutenant stole a quick kiss from his wife and started the car. As he reached for the drive selector, a large fire-ball streaked across the ground, near where the T-33 had disappeared.

In the control tower, the senior controller also saw the fireball. Automatically he hit the crash alarm and reached for the mike.

"Jet, four nine two, Big Gun departure control, over."

No answer.

Switching to guard, the controller repeated his , but still received no answer.

For the next few days investigators sifted thru the wreckage looking for clues. Although they learned a lot, it was all negative. As near as they could tell, the bird was in good operating condition when it hit. Investigators considered this, the flight conditions, the fact that the airfield was in a sparsely populated area with few lights for reference, and the possibility of pilot fatigue, and decided that the most probable cause was either loss of control due to distraction in the cockpit or vertigo.

Ordinarily an experienced pilot would not fall prey to this unless he was operating below par.... But the Captain had been on duty for well over 19 hours, and fatigue would certainly have reduced his efficiency.

A recent article on disorientation in the U.S. Navy APPROACH stated that six navy and marine pilots were lost in a six months' period while making weather penetrations or climb-outs at night. All of the pilots were considered well-qualified.

According to this article, disorientation is a physical and mental condition in which the pilot loses his mental horizon and either he or his airplane are moving uncontrollably. To successfully cope with disorientation a pilot must have either an actual horizon or an artificial horizon plus his mental horizon. The mental horizon is dependent on his state of mind. Anxiety, lack of confidence and fatigue all tend to wreck a pilot's mental horizon. Training will give confidence and relieve anxiety, but will not put fuel in tanks, bring back the natural horizon or relieve fatigue.

The one thing that is missing under actual instrument conditions is the psychological advantage of a copilot, safety pilot or chase pilot and the knowledge that peeking out or popping the hood will recage the mental horizon. This is a highly important factor in vertigo susceptibility.

Although simulated vertigo training (such as prescribed by TACR 60-13) does not eliminate this factor, it does do the next best thing. It gives the pilot an opportunity to experience various stages of vertigo and develop a technique for combating them.

CHOCK TALK

C-123B CORRODED LINES. Of the 40,000 man-hours spent giving 100 C-123B's an IRAN during Fiscal Year 1961, most of the time was used to correct corrosion damage to fluid lines located in the fuselage. Twenty aircraft in the fleet did not go through this IRAN, but are scheduled for FY62. In addition, forty of the original 100 birds will go through IRAN in 62. The FY62 program calls for between 800 and 1200 man-hours per aircraft.

"THEY!" "THEY!" "THEY!" "Why don't they clamp these wires correctly and stop this chafing?" "When are they going to get us some decent ladders?" "Why don't they fix this test equipment?" These aren't questions, but alibis. "They" is the most overworked alibi in the language. Unless we want to be considered alibi artists, forever explaining and excusing our failures, advertising our shortcomings and shifting to others the blame for our lack of achievement, we had better drop the word from our vocabulary. When we ask why "they" haven't corrected a situation that disturbs us, we publicly announce that we haven't done anything about it either. The proverb, "The Lord helps them who help themselves," may have originated in the horse and buggy days, but it is still true. We can never expect either "they" or the Lord to help very much until we have exhausted our own capabilities. To get personal, take that installation you have found cumbersome, or hard to reach, or subject to frequent failure. What have YOU done about it? Have you figured out how it could be improved? Have you shown your supervisor what is needed? "They" may not even know the installation is giving trouble. Have you turned in the ladder that is unsafe so "they" can repair it? Have you stopped alibiing that the test rig is a job "they" will have to do and analyzed the trouble yourself? Have you even recorded just how it acts, so "their" job will be simplified? And about your pay check. Are you waiting until "they" promote you, or are you qualifying yourself for a higher skill level? The road to achievement is paved when you assume the responsibility for getting things done.

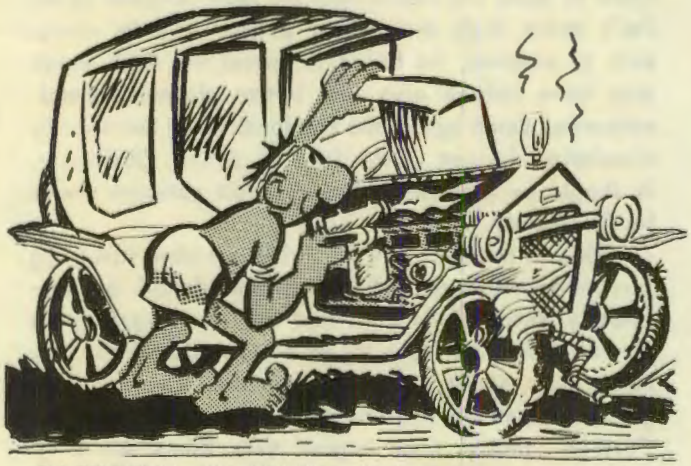
—FSF Aviation Mechanics Bulletin

MICROWAVE POWER TUBES. Recently a study was made to find out why magnetron tubes were giving so much trouble in airborne equipment. This study resulted in an engineering change to circuits incorporating magnetron tubes. This helped to improve reliability, but didn't completely solve the problem, since much of the trouble was found to be a personnel problem. What we mean is that maintenan personnel did not know and follow the proper handling procedures and lacked pertinent data on the subject. To correct this, supervisors should place greater emphasis on these handling procedures, using appropriate tube manufacturer's aids and T.O. 12-1-48, Magnetron Handling Instructions and Operations. In addition, an occasional showing of USAF Training Film TF-1-5331, titled, "Maintenance of Microwave Power Tubes" will help to keep this important subject fresh in everyone's mind.

CHRISTMAS SO SOON? Apparently the publicati of Technical Orders 1F-101-869, Modification

Rudder Assembly, RF-101, and 1F-101-889, In-spection and Replacement of Rudder Assembly, RF-101, were interpreted by RF-101 maintenance personnel as gifts from Santa Claus. In accordance with these T.O.'s the solution to future cracked skin and pulled rivet problems seemed to be very simple: simply requisition beefed-up rudders and ship reparables back to the depot. Ergo no more cracked rudders, and no more rudder repairs. Unfortunately, the T.O.'s left too much room for interpretation and made Santa Claus an Injun Giver. The net result of leaving old Santa's bag of goodies open and unattended is that depot spares have been used up, and OOAMA is now having trouble obtaining sufficient reparables to support their modification line. Also, sufficient spares are not available to provide base stockage of either modified or unmodified rudder assemblies. To help themselves and to help old Santa Claus out of his dilemma, using activities are strongly urged to continue repairing damaged rudders in accordance with T.O. 1F-101-3 to the maximum extent possible.

PERK-UP PACKETTE OPERATION: Packette engines, manufactured by Continental for non-aircraft use, have a tendency to build up carbon and ash deposits in the combustion chambers when they are operated constantly under light load and idling conditions. This results in a loss of power and could cause other operating deficiencies. If an engine is normally run under light load at idle, it should be connected to a suitable load bank and operated at full power for at least five minutes each day.



PACKETTE WARMUPS: Maintenance men using equipment that has the Continental packet engine installed in it should warm up this engine for three minutes at 1000 RPM. The engine should be cooled in the same way when it is shut down. If you fail to do this, the piston rings will soon break and you'll end up having to repair the damage. The T.O. on the equipment gives the proper start and stop procedure. Read and heed it, and save work.

TURBINE ENGINE MOTORING. Here is a quick picture of what happened when a mechanic ASSUMED that the engine start levers were correctly positioned prior to motoring an engine in the dock. The engine was motored with the fuel lever in the idle (fuel on) position. Anyone who has seen an engine wet-motored can imagine how it looked in the hangar. And everyone can appreciate the fire hazard that existed with large volumes of atomized fuel billowing out into a closed hangar. The man in the cockpit was a bit misled, because he had allowed himself to assume something. While accomplishing the pre-motoring check he glanced at the fuel start levers to verify their being in the cutoff position. He noted that the four handles were in perfect alignment. He assumed this alignment was in the cutoff position, since this is where the levers are most frequently found. In this case, though, this perfect alignment was in the idle (fuel on) position. If it were safe to assume anything in this business, we would assume that there will be no more assumptions in that dock.

—FSF Avn Mech Bulletin

CRACKED RIBS. The entire TAC C-123 fleet is being inspected for cracked ribs. Results of this inspection to date indicate that all aircraft are affected. This is not a flight safety item or a serious structural deficiency; however, repair is necessary and will require approximately 200 man-hours per aircraft. Negotiations are in progress with MAAMA to repair those aircraft scheduled for FY62 IRAN and to initiate a special program for depot repair of the remaining TAC aircraft. ●

A FUEL SYSTEM THAT DEMANDS CLOSE ATTENTION.
A FAILED WARNING LIGHT AND . . .

FLAMEOUT !

AT 1341 LOCAL, a well-qualified captain lifted his F-105B off the runway and climbed smoothly toward an orbit area where he was to hold until cleared on target for a high speed pass. Thirty-one minutes later he started his run, dropping the nose and kicking in AB. As the airspeed increased, he glanced at the instruments and saw that everything was AOK with fuel quantity at 4600 pounds. He continued with the run. Starting a 3G pull-up, he again glanced into the cockpit . . . it was still clean. As the big machine knifed upward thru 5000 feet he noticed a loss in thrust accompanied by several lights on the panel. Specifically, he recalled seeing the AC generator fuel boost pump, and master caution lights.

Automatically he came out of AB and pulled the aircraft around toward the air base. At the same time he hit the airstart button and the engine relit at around 60 to 70 percent.

Continuing to climb in the direction of the field, he made two or three attempts to get the ATM and AC generator back on the line, but without success. While he was working with this, the engine flamed-out again. Altitude was between 10,000 and 12,000 feet. He hit the airstart switch a couple of times as the aircraft started down hill, descending fast. The engine did not respond. Observing that he was in fairly good position to land on an auxiliary field, he made an angling approach to it, putting the gear handle down. The gear stayed up, so he used the emergency extension system to get it down and locked.

By then he could tell that he had the field made, so he dropped the flaps, held 240 knots, and locked his shoulder harness. Only the aft flaps extended.

Up until this point, control response had been good, particularly the ailerons. When he tried to rotate, the stick seemed very sluggish and unresponsive. Consequently the aircraft slammed into the runway in an almost three point attitude, bounced about 1200 feet down the runway and hit again. The captain fought the controls during the bounce, somehow managing to keep the aircraft aligned with the runway. On the second impact he could see that it was shedding pieces and was going to slide off the runway. As it went off, he jettisoned the canopy and started turning off switches . . . It had already started to burn, so when it came to a stop, he wasted no time getting clear.

After the excitement was over, the captain stated that he couldn't remember selecting the bomb bay tank at any time during the flight. Fire damage indicated that the bomb bay tank had been full on impact and had furnished most of the fuel for the post crash fire.

A review of the F-105 pilots' handbook disclosed no firm policy for fuel management. The unit involved had no set policy either, leaving fuel management to the individual pilots. Some turned the bomb bay tank on shortly after take-off, returning to the main system when it indicated nearly empty. Others didn't use fuel from it until the main system was depleted to 6000 pounds, since there had been cases of venting fuel overboard using the other technique.

The pilot stated that he did not receive a low level warning light at any time prior to either flame-out. This is the second known failure of the warn light. In the other instance, the pilot had sufficien. time and altitude to check the fuel quantity gauge to the main tank and turn on the bomb bay tank before trying his relight.

As we noted, the pilot flew his approach at 240. This is 10 knots under the recommended speed. . . and there is some indication that the recommended speed isn't quite high enough to permit a safe round-out. In addition, he failed to select the RAT which may have helped give him better elevator control response. Once again, the handbook does not specify simulating the use of the RAT on SFOs. Obviously, it should be included if proper habit patterns are to be developed.

This is the second TAC F-105 accident involving fuel mismanagement. F-105 pilots should be continually aware of the fact that they no longer fly an aircraft which manages its own fuel. Therefore, they must pay strict attention to the use of fuel, particularly at low altitude and high power settings. Further, should their engine ever flame out, it is imperative that they check the main tank fuel quantity as part of the pre-start procedure. If it reads zero, then they should suspect fuel mismanagement and take appropriate action. ●

TAC EVAL

TAC EVAL SYMPOSIUMS. Continuing with the program to indoctrinate unit commanders and tactical evaluation personnel with TAC's tactical evaluation concept, the Tac Eval section recently held symposiums at Shaw and Luke Air Force Bases.

The two-day symposium at Shaw was attended by representatives from all reconnaissance units and all SA-16 units assigned to the command, including those from the Air National Guard. The new grading criteria and data collection worksheets were discussed in detail. These worksheets are designed to give commanders a look at the actual capability of each aircrew in his organization, and most participants agreed that the worksheets will prove to be one of the better management tools. No flying was scheduled during this symposium.

Colonel T. D. Robertson, TAC's Director of Tactical Evaluation, questions three lovely volunteers who assisted in the presentation at Shaw Air Force Base.

The four-day symposium at Luke permitted the flying of actual evaluation missions. All F-100 units assigned to TAC participated, including ANG units. In addition, Headquarters USAF and the Air University were represented.

Colonel B. T. Kleine, Commander of Luke AFB, officially started the symposium by welcoming the participants to Luke AFB. Next Maj General Tacon stressed the importance of the Tac Eval program and turned the meeting over to Colonel T. D. Robertson, Director of Tac Eval, Colonel Robertson gave the TAC presentation covering program design and TAC Manual 60-1. During the question and answer session which followed, Colonel Robertson was able to clarify many problems associated with interpretation of TAC directives. The following day, members of the Tac Eval Directorate, Hq TAC, demonstrated mission planning and a formal critique, and although the quality of the acting may have lacked professional polish, the script was technically correct. Colonel Robertson concluded the TAC presentation by covering the requirement of aircraft walk-around inspections.

The afternoon was spent briefing for forthcoming flight missions. The missions consisted of low level navigation flights with bomb deliveries on Gila Bend range. Bombing modes used were over the shoulder, lay down, dive bomb and retarded. Recoveries were made at Luke from a standard instrument penetration with a GCA pick up.

During the final two days, 40 sorties were scheduled and flown, permitting each attending pilot to fly two sorties either as evaluator or examinee. On each effective sortie, a tactical evaluation was completed, data was collected and grades were entered on grade sheets in accordance with grading criteria. Preliminary data reduction definitely indicated the effectiveness of the Tac Eval program. Despite the relatively small data input, weak and strong areas were readily apparent, emphasizing the ability of this system to detect trends.

The entire symposium at Luke AFB was filmed by a team from Lookout Mountain AF Station, California. The film should be ready for release in October 1961.

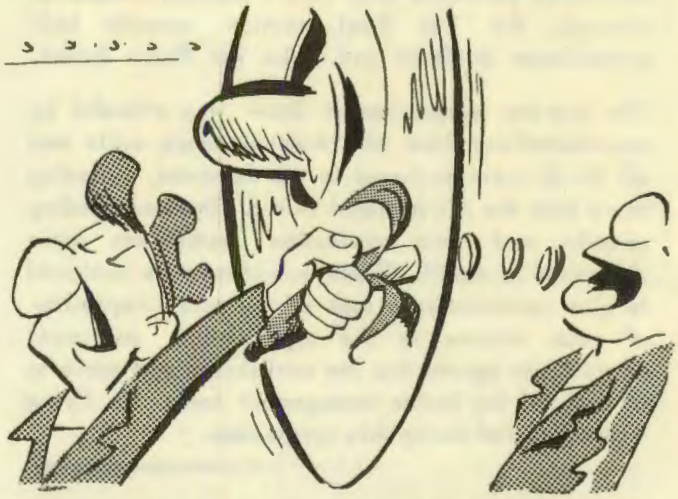
WRITE RIGHT. A program designed to make pilots aware of what they can do to assist the maintenance section will improve the quality of maintenance work. For example, a campaign to encourage pilots to make complete and detailed write-ups will give maintenance personnel more time to correct malfunctions by reducing the time needed for trouble shooting.

TAC TIPS

AWARDS INFORMATION. Many of the nominations being received for the USAF SAFETY AWARD plaque do not contain all of the information required by paragraphs 21 and 22 of AFR 62-9, and are not submitted in strict accordance with this regulation. While on this subject, a new AFR 62-9 was published 18 Jul 61. The most significant change was that the USAF Flying Safety Award plaque is now presented annually rather than semi-annually. Safety Officers, help your unit get an award by reading and heeding.

QUICK RETURN. About ten minutes after coaxing an F-100 off the pad, a maintenance test pilot noticed the oil pressure fluctuating between 25 and 45 psi. He reacted by heading for home. The engine oil overheat light came on, so he reduced power, entered an SFO pattern and successfully landed. On shut-down, the engine still had three quarts of oil left in it. A high volume leak caused the emergency, while quick positive action by the pilot prevented it from resulting in an accident.

DROPPED TANKS. While completing his before take-off check list, an F-105 pilot attempted to move the temperature control lever from the manual to automatic position. His hand slipped from the lever and brushed against the external tank jettison switch guard which actuated the jettison circuit and three heavy tanks plunked onto the runway. Investigators claimed that the pilot used improper technique in adjusting the temperature control lever. However, a big study has been initiated to determine the feasibility of reversing or repositioning the tank jettison switches.



PROP PROBLEMS. A T-29 pilot of this comman parked his aircraft on the pad in front of bc operations and sent the crew chief after flig lunches. The chief clambered down the steps just in front of the engine which was still running, and hurried off to complete his chore. He made it OK this time . . . but . . . wouldn't it have been better and safer to shut the engine down? It's easy to forget a turning prop when you are on the inside coming out, and apparently it is just as easy to forget it at other times too – judging from a couple of recent mishaps. In one, a crew chief stood in front of an aircraft while the engines were started and then walked toward the rear of the aircraft right through one propeller. That's right, he watched the engines being started, knew they were running, yet a few seconds later walked into a prop. In another incident a ground crewman met an aircraft with a follow me vehicle and directed it to a parking area. The pilot set the brakes and waited for the signal from the ground crewman that the chocks were in place. After several minutes of waiting the flight crew found his body under the #2 propeller. Most of these incidents are caused by distraction, confusion caused by noise, or just trying to expedite the job at hand. We can help reduce exposure during loading a unloading operations by shutting down the engi

nearest the steps, and we can constantly remind everyone to be especially alert while in the vicinity of aircraft on the flight line.

CINERAMA: The following Air Force films were released recently and should be available at your base film library. Installations not having a local film library should send requests on AF Form 253 to the Air Force Film Library Center, 8900 South Broadway, St Louis 25, Missouri.

- SFP 1030 Operation Quick Span. (Color, 13½ Min)
- SFP 1052 Mobile Yoke. (Color, 16 Min)
- TF 1-5256a Air Combat Maneuvering, Flight Maneuvers. (Color, 28 Min)
- TF 1-5256b Air Combat Maneuvering, Flight Tactics. (Color, 19½ Min)
- TF 15258 The Forward Air Controller (B & W, 20 Min)

A complete listing of all available films is contained in Air Force Pamphlet 95-2-1.

PROJECT SCAN: FAA has given a contract to the Flight Safety Foundation to conduct a survey and analysis of near-collisions. It is hoped that the survey will reveal areas and methods which will reduce the collision hazard. Project SCAN is the name assigned to the survey and forms should be available at your Base Operations. It is imperative that all pilots support this program to make it effective.

FOOD FOR THOUGHT. Are the corrective action folders at your base up-to-date? TAC Supplement 1 to AFR 62-14 requires that corrective action proposed as a result of aircraft accidents or incidents be logged in a folder, and that action be taken to correct deficiencies within 30 days after entry. The TAC Safety Survey Team checks this item closely – are you prepared?

SUDDEN STOP: Parachute opening shock is much greater at high altitudes than at lower altitudes. At 7,000 feet the opening deceleration is 8 to 9 G, while at 40,000 feet it averages 33 G. A good reason to disconnect the zero lanyard on the climb-out, Neh.

HELP FOR SHERLOCKS. Training Film TF 1-5343, The Aircraft Accident Investigation Board, has been produced to help commanders acquaint aircraft accident board appointees with their duties and responsibilities. This film also gives a resume of procedures and techniques used in investigations. Commanders should also insure that appointees are completely familiar with AFR 62-14 and AFM 62-5.

EXTREE! EXTREE! The base newspaper is an excellent media for publishing aircraft accident prevention information, particularly to support and dependent personnel. Accident prevention is everyone's responsibility and this is just one more way of getting the word to all hands. It may take a little effort, but it helps to keep safety first.

ICE CAPER: After finding the nose gear cocked 60 degrees on his T-33, a pilot managed to land without incident on a foam covered runway. A badly corroded shimmy damper and water in the hydraulic fluid, which had frozen at altitude, caused the cocked nose gear. ●

THE RATHER WELL-FED Chief Master Sergeant shoved the forms back in the file and bumped the drawer shut with his stomach. Turning toward the Old Sarge who was just about obscured by a huge cloud of acrid blue smoke he said, "Looks like that's it for this trip, so you can put out the fire in that corn cob smudge pot."

"You mean the inspection is over already?" replied the Old Sarge, as if surprised. Languidly he took the pipe out of his mouth, blew one last addition into the haze layer and rapped the pipe smartly against the edge of a cut down piston which served as an ash tray. He poked at the resulting pile of ash and unburned tobacco until just a wisp of smoke curled from it. He looked a question at his portly visitor.

"Oh, you'll stagger by," said the Chief Master as he eased his bulk into a chair, "But you realize I'll have to gig you on the quality of your coffee . . . and naturally I'll have to be rougher than usual since you tried to keep me from seeing anything except thru a smoke screen . . . "

"Have some more coffee,," interrupted the Old Sarge deftly skidding a cup through a gap in the shamble of papers on his desk. He used just enough force to bring it to a halt on the edge immediately in front of the Chief Master. "I just got through brewing a fresh batch, and naturally, I know you will want to try it before you finalize your report." He filled his and the Chief's cups.

The Chief Master remarked, "I'm glad to see you drinking too . . . that way there's less danger of my being poisoned. Oh, one thing I want to congratulate you on . . . "

The Old Sarge lifted an eyebrow and with ill-concealed suspicion said, "Yes?"

"...is your reluctance to use T.O. 1-1-300 as a cure-all."

"You having trouble with that?" asked the Old Sarge.

"Are we having trouble? You oughta get in this racket and see how the other half lives. Here, let me show you something." He rummaged through his brief case, extracting a well-worn stenographer's notebook. Flipping through it he paused, then said, "Here, listen to this, a pilot wrote, 'Flaps would not exceed 30 per cent down.' Maintenance cleared the write-up as, 'Operational check o.k. in accordance with T.O. 1-1-300.' I couldn't find any record of a flight check."

He flipped through a few more pages then nodded his head and continued. "Here's another. 'Num three prop brake slipping and hunting.' They clea it by a ground check in accordance with T.O. 1-1-300."

He ran his finger down the page and went on, "'Number one went into fixed pitch on descent.' It was cleared by a ground check in accordance with T.O. 1-1-300." He flipped the page, "Here's a good one. 'Number two and three throttles stuck going into reverse after landing, appears solenoid is stuck.' An airman second cleared it as checked in accordance with T.O. 1-1-300 and found to be o.k.... Oh, here's one that will amuse you... 'number four feathered due to high oil temp, low torque, low oil pressure and rapid oil consumption.' They replaced the engine in accordance with T.O. 1-1-300."

The Old Sarge made a strangling noise, coughed and wheezed until he was finally able to gasp. "Whew, wrong throat! Sounds like most of these characters are mis-using 1-1-300 the same way they mis-used the statement 'ground-checked o.k!'"

"Precisely," said his heavy set visitor, "That, and more. Take that engine write-up I just read. That fella really didn't mean what he wrote. What he intended to say was, 'Replaced engine and gave it a functional ground-check in accordance with T.O. 1-1-300.'"

"I agree," mused the Old Sarge, "It looks your lad confused the paragraph that gives engineering officer authority to release the bird without a test flight as authority for doing the work. How's it read now . . . . oh yeah, you can release a four-engine aircraft for flight without giving it a test hop provided replacement of a propeller or engines does not affect more than three engines."

"Correct. If not in wording, at least in content. I agree, that's probably what he did . . . and though a minor item, it sure looks funny on paper."

"Might be a minor item" said the Old Sarge, "but in another way it isn't. When a fella gets all messed up on his paper work like that, he's apt to let things slip through the system. For instance, that item the airman second cleared--the one where two throttles were sticking going through reverse. By my way of figgering that should have been listed as a red cross item and would need appropriate clearance. By having his paper work messed up, he sent a potentially sick airplane right back into the blue without any of the supervisors being informed . . . and that's the sort of thing that causes accidents . . . wassamatter, don't you like coffee??"

"Ordinarily I do . . . but not when you mi one-to-one!" ●

TAC TALLY

JULY MAJ. ACDTS.	4510 CCTW	433 TCW	464 TCW	31 TFW	479 TFW	140 TFW	27 TFW	474 TFW	4505 ARW	127 TRW	401 TFW	363 TRW	131 TFW	4520 CCTW	463 TCW	117 TRW	102 TFW	354 TFW	4411 CCTG	64 TCW	113 TFW	4440 ADG	4500 ABW	4 TFW	512 TCW	107 TFW	122 TFW	440 TCW	1 ATS
F-105																						1							
F-104																													
F-101																													
F-100														1				1				1							1
F-86																													
F-84																													
B-66																													
T-33																													
CONV.																				1									

MAJOR ACCIDENT RATE
1 JAN. - 31 JULY

TYPE	1961	1960
F-105	22.6	74.2
F-104	72.9	52.4
RF-101	11.1	10.7
F-100	17.3	23.8
F-84	54.0	35.4
T-33	4.4	6.0
B-66	29.2	0
KB-50	9.3	4.8
C-130	11.4	0
C-123	5.8	0
[illegible]L	14.5	13.3

Six major aircraft accidents were reported in July which was one less than in July 1960. This brought the 1961 cumulative rate down a little but still leaves us a long way to go if we are to finish the year under the 1960 rate. Four major accidents were logged during the first ten days of August. Nine were logged during August 1960 – an easy target to better – but only if we fight complacency and exert very possible effort to prevent accidents. No trends are indicated to date in August's accidents although personnel errors appear evident in some. Two F-104 pilots were engaged in a simulated combat mission. The leader crashed without reporting any difficulties although he did attempt ejection at too low an altitude for his chute to open. The pilot of an F-86F ejected following a loud boom and vibrations which began after an object struck the canopy of his aircraft during a strafing pass. An F-100D crashed in a steep bank attitude during turn from base leg to final approach after return from a bomb mission. The heat and vent duct of an F-100C failed after take-off and caused extensive heat damage to the fuselage before the aircraft was landed.

KEEP YOUR SHAPE

-1234-123

Don't let OBESITY be a handicap...

See your FLIGHT SURGEON!