NOVEMBER 1961

ATTACK

TACTICAL AIR COMMAND

THE HARD WAY

ATTACK

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TAC's Big Stick, The Thunderchief

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Attempt the end and never stand to doubt; nothing's so hard but search will find it out.

—Herrick

angle of attack

Were Sherlock Holmes living in the aerospace age he would undoubtedly find the art of aircraft accident investigation a suitable challenge to his ingenuity and ability to reason. He would soon observe that many aircraft accidents present a collection of facts and unrelated pieces of information similar to that found in some of his cases . . . and as with his cases this data would have to be analyzed and screened before a solution could be arrived at thru deductive reasoning.

Elemental, according to Holmes. In a way he was correct. The process is elemental—provided enough significant facts can be obtained. Therefore, an investigator collects as much information as possible and then separates useful facts from the extraneous material. He can then establish a logical history of the events leading up to the accident or failure. Experience can be used to fill in the voids and the cause of the accident usually can be determined.

But as with many other elemental processes, the execution of that process is seldom simple or easy. The most successful accident investigations are conducted by boards comprised of the most knowledgeable people available. These people should be experts in various phases of investigation and must pool their knowledge to determine as many pertinent factors as possible. Unfortunately, few organizations have personnel who are truly expert in all phases of an investigation. However, experts are readily available at the appropriate prime AMA, the Directorate of Flight Safety Research, or from various other research agencies and laboratories, such as NASA, The Cambridge Research Center, the Armed Forces Institute of Pathology, Bureau of Standards, and The School of Aviation Medicine. Although individually we can't all equal Sherlock Holmes, we can still get similar results by fully utilizing the skills of these experts.

Colonel James K. Johnson
Chief
Office of Safety

TAC *eval*

A Tac evaluator takes a look at flight planning

To discuss all phases of flight preparation and planning in detail would require considerable time and space. However, since the importance of this subject demands serious consideration from every aircrew member and supervisor associated with the movement of aircraft, I will attempt to outline some of the general requirements.

Webster's simple definition of a plan is a detailed method, formulated beforehand, for doing something. The word "detail" is the catch. The extent of detail must be determined at each level where planning is accomplished. Areas of responsibility must be covered thoroughly without infringing on the responsibilities of other echelons. An example of this can be found in preparing for mass movement of aircraft. Planning begins with the writing of an operations order by higher headquarters and ends with the completion of the mission.

Complete coordination between staff sections at each echelon is mandatory; otherwise, planning cannot be accomplished effectively. Command prerogative must apply at successive levels and delegation of authority and responsibility should be an established fact. To pre-empt this authority ignores and wastes the talents and knowledge of planners at the intermediate levels.

We have all observed the result of professional teamwork in preparation and planning; the smooth efficient movement of complete organizations over great distances where each problem and difficulty were met with anticipation and a ready solution. Such accomplishment can only result from complete and detailed planning.

This is not always true in the common or garden variety of flight planning . . . more often referred to as the "routine training flight." These flights run the gamut from extended cross-countries in adverse weather to local VFR navigation flights. In any given instance the extent of preflight planning may change but the importance of planning remains the same. To impress this fact upon each aircrewman is a real problem for every commander. The frequent recurrence of flights and the established routine of operation tend to create a complacency in pilots and supervisors that must be constantly combated.

The focal point for planning most routine operations is the flight commander's briefing. The thoroughness of these briefings usually depends on the talent and experience of the weakest flight member. If all members are considered sufficiently strong, then briefing may be condensed or shortened. This fact, coupled with the repetition of briefing data, may well cause a flight briefing to retrogress to that ultimate low of "follow me."

A briefing may simply culminate a prior series of instructions and be, of necessity, short and to the point. A classic example of this is attributed to General Nathan B. Forrest, C.S.A., who is alleged to have once briefed his staff by saying, "All right now, I have told every mother's son of you what to do; now, when I holler, get out there and do it." Although a long and impressive series of successful operations attest to General Forrest's excellence as a master planner and strategist, I do not mean that all briefings should be so blunt or forceful. The

technique and method used in briefing will vary with the manner and personality of the briefing officer.

To insure effectiveness, some standardization is needed. But, here again, we are faced with the problem of boredom induced by the sameness of standardized briefings. A briefing officer may easily become so hypnotized by routine that he omits, or fails, to adequately cover plans which are vital to the particular mission. Subsequently, the flight finds itself involved in that most undesirable situation; an airborne briefing. I am sure that most of us can recall our own chagrin on discovering that we were responsible for such a situation.

A solo flight greatly simplifies a pilot's flight planning, since he must no longer concern himself with planning for the number of situations which seem to increase beyond reason for each additional aircraft. But it is with the solo flight that we often find the more classic examples of poor flight planning. Because of the pilot's inherent self-confidence and "I can take care of myself" attitude or because he feels he is no longer under the scrutiny of other pilots, he will often take off with little or no prior planning.

An example of cause and effect is the pilot scheduled to ferry an aircraft on a short trip over a route he has flown many times and in an aircraft with which he is familiar. He quickly dresses, rummages around his locker until he finds an old Form 21A covering the proposed route; fills out a Form 175 at Base Operations and takes off. He arrives at his first checkpoint where he unpleasantly finds that his old flight log figures are based on a different fuel weight, altitude, and wind factor; therefore, his fuel and time estimates have to be recomputed. After a halting position report and much fumbling, he computes his next ETA and tunes in the next radio fix. A great deal of tuning and calling reveals something the NOTAMS would have told him before takeoff; the beacon is out-of-commission. The ancient and tattered chart that is firmly lodged in the bottom pocket of his G-suit does not cover this area and it is only through much sweat and study of the enroute charts that a line of position is obtained to plot the fix. From here on, the flight gets pretty routine, until arrival over destination. Here, he finds to his dismay, that the forecast VFR condition has deteriorated because of blowing dust. He must now make an instrument approach. Imagine his shock when he discovers the appropriate terminal flight information book is missing. Also imagine the disposition of the controller who must verbally transmit the approach

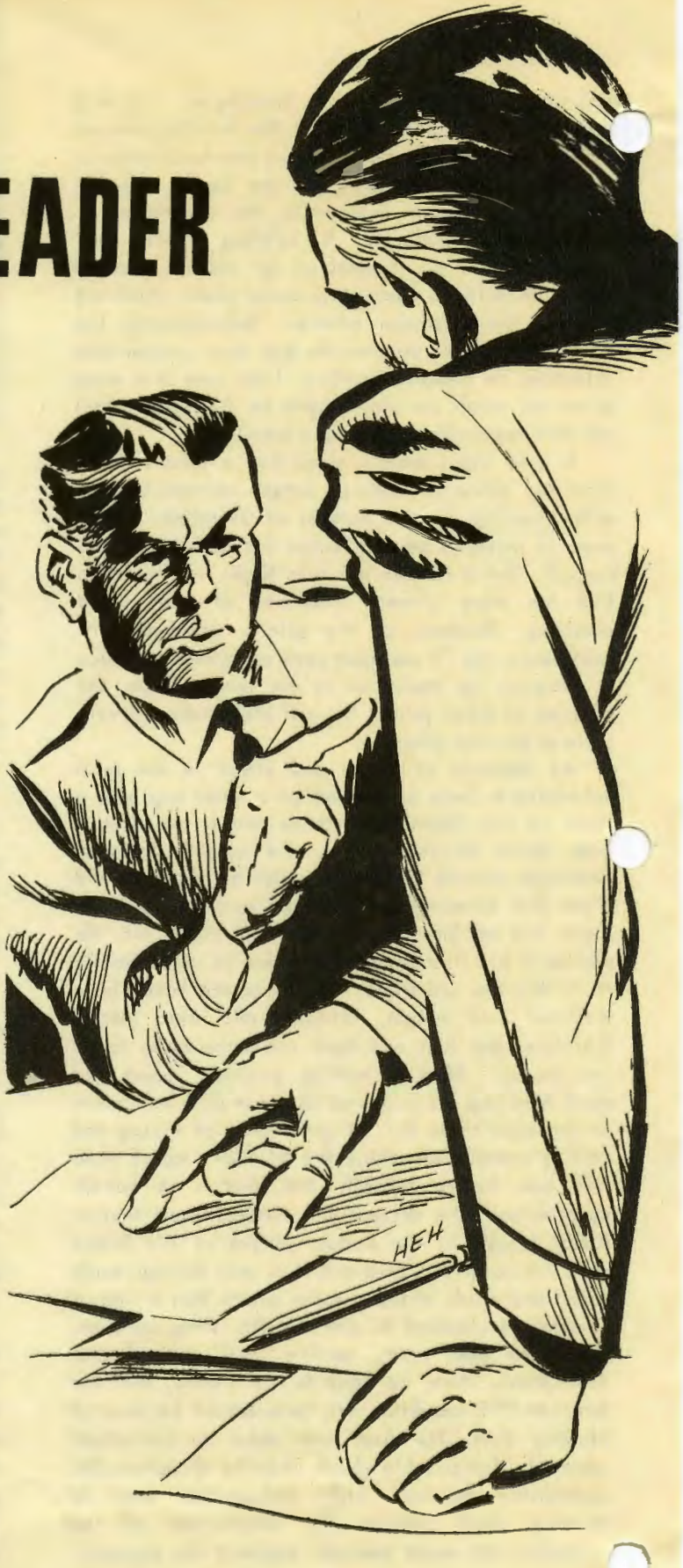
procedure. Eventually a landing is accomplished and, after the aircraft is parked, the pilot is met by a cherry AO who asks how the flight went. He laconically replies, "No sweat," and shuffles hurriedly off before the wrath of the Almighty strikes him down for such a prevarication. It is doubtful if this pilot will admit, even to himself, the comedy of errors he has committed. Given the proper opportunity, he may even repeat them. At this point, you may laugh at such a ridiculous situation. I can only reply that similar incidents have happened and can easily happen again.

Many of us can recall earlier times, when aircraft were few, facilities were scarce, regulations were meager, and the pilot was, in a sense, a king. It was the day of the long scarf and goggles, hedge-hopping, and a thing called the hammer-head stall. Invested with glamor and ignorance, he quite often did as he pleased and usually got away with it. But a lot of aircraft were destroyed and a lot of pilots killed. Although in the minority, even then there were those who went about their jobs in an efficient and businesslike manner, carefully programming their efforts and constantly planning. It soon became obvious that these pilots were the ones who were consistently successful in their mission. Survival of the fittest applied and these planners have progressed to the higher stations where they have, with the advent of more complex missions, machines, and methods, developed a status of true professionalism for the great majority of Air Force people.

It is absolutely imperative that today's pilots be of this particular breed. Without the professional approach and without methodical planning that is inherent in the professional, we cannot survive. After all, a professional is simply one who places accomplishment of the mission before personal gratification, knowing that his satisfaction will follow a job well-done. This seems, to me, very little to ask of today's military pilot.

FOLLOW the LEADER

By their deeds
shall they be known!



THE SHORT WIRY major dropped the accident report on my desk and shook his close-cropped head. Figgering he wanted me to write a story on the accident, I asked, "What you got, a pilot error one?"

"I guess you'd call it that." I put my pencil down and waited. He continued, "Actually we're all a little at fault. This guy just got caught, that's all."

I shoved a chair towards him and said, "Tell me more."

"Well, the accident looks simple enough on the surface. A lieutenant in an F-100 on an authorized low level mission in rather rugged country. He stumbled into bad weather and ran into a hill . . . " He paused again.

"Didn't they forecast the weather right?" I asked.

"No, they didn't, but that isn't what bothered me. Usually you can tell when the weather is getting below acceptable standards. This guy was on a VFR clearance and like most of us was shot full of the program. He gambled that he could sneak thru, but got caught in a trap that he couldn't climb out of. I could be wrong, but that's how I see it."

I thought this over, then said, "Assuming you're right. How does that make the rest of us at fault?"

"Tell me, have you ever pressed just a little below minimums in order to complete an instrument approach, or cut thru a pint-size hole while climbing or descending VFR? Or have you ever flown over a broken cloud deck on a VFR clearance?"

I thought this over a moment, then said, "Well, ah . . . . "

"Don't act so innocent, you're no better than the rest of us. In fact, I can remember you hollering loud

and long about the danger of making 360° turns for spacing in the traffic pattern. Then just last week you ended up belly-to-belly with another T-bird because you made a 360 on initial to get spaced behind a gooney that was on final for a full stopper. Remember? I was in the other T-bird."

He struck home this time, and I could feel my face flush. "O.K., you win on that one. Of course that wasn't a violation of any existing regulations . . . just a violation of good practice. But how does this tie in with the accident?"

He frowned slightly, then as if carefully choosing his words, continued. "It's because we preach the regs and other safety procedures and expect these young bucks to follow 'em, but don't always follow them ourselves. They aren't dumb. They have eyes and they can see us ignore our own advice and watch us bend the regs, and they figure if we can get away with it, they can do the same. Only trouble, sometimes they get caught . . . sometimes one of us gets caught too. When that happens, someone gets hurt. That's why I say that we're partly responsible. We're the old heads and it's up to us to set the example. It's too damm bad we don't always set a good one."

He was right and I couldn't help but admit it; however, it seemed to me that this was only part of the story, so I said. "I agree with you wholeheartedly, but there's more to it than that. . . . . I was thinking of the ORI your shop laid on an F-100 outfit recently. You loaded 'em down with things to do. They were forced to cut turn-around time to the minimum; consequently, the ground crew couldn't use check lists for post flights and other checks. So either they ignored the established safety rules and passed the ORI or they refused to ignore 'em and flunked. Now, you take it from there!"

He leaned forward in his chair, shook his head vigorously and said, "Whoa! Hold on! This is news to me . . . and both you and the CO of that outfit are wrong! They do *not* have to violate safety criteria in order to pass an ORI. They may have *thought* they did, but they most certainly do not. They should have told the team chief that they didn't think the criteria would permit them to follow the proper procedures. If the team chief agreed, he would have initiated action to get the criteria revised. But he can't get the criteria changed if no one tells him it's in error. Actually, this is more of the same. We seem to think that the mission must be completed at all cost. If the balloon goes up, this is true. Until then, it certainly is not. The hard part is to get everyone convinced of this so they don't press on . . . straight into oblivion."

Letters to the Editor

Cannon AFB—Your attention is invited to the article on Page 3 of the August issue, lower right column. The comment implies the ability to receive voice communication on both omni and TACAN.

While the TACAN receiver itself may be capable of voice reception, there are no known ground facilities at present capable of transmitting voice from the TACAN ground station. This situation was first revealed when this command was converting the F-100 from omni to TACAN. We asked if we could enjoy a capability of tuning to an emergency voice channel similar to the procedure used in tuning the omni to 121.5 mcs, emergency for receiving voice transmissions after normal radio failure. Communications experts said, "No."

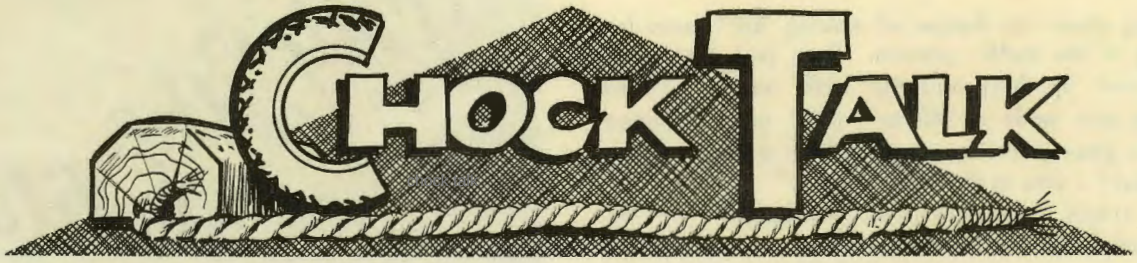
More recently while cruising over Atlanta Center, I was asked to monitor Nashville omni for a weather advisory. I explained that I had TACAN only. The reply was, "That's fine, they have VORTAC." I then explained further that my TACAN did not receive voice transmissions from the TACAN portion of a VORTAC station, and center obliged by reading me the advisory.

After returning home, I discussed this apparent misconception with our local FAA resident representative and suggested he spread the word to controllers.

If there are in fact, facilities in being or planned wherein we can receive live voice transmissions on our TACAN equipment, the information would be valuable.

Major JAMES O. COWEE

• *Thanks for the info. OLD TAT has gone to the instrument school to brush up on TACAN. Incidentally, Comm people say that the mechanics of the TACAN equipment make live transmission impossible, so it looks like we'll never have it.*



THAT LET DOWN FEELING. A mechanic left a ladder under #1 sound suppressor tube while he checked the exhaust support struts of #1 engine. The aircraft was fueled and settled approximately 15 inches, crushing the suppressor tube against the ladder. A depressing incident.

—FSF Mechanics Bulletin

KB-50 MAINTENANCE IMPROVEMENT PROGRAM. Maintenance data collection information has justified a 50-hour hourly P.O. on KB-50's. Additional items will require inspection at 300- and 600-hour intervals. The OCAMA team that devised the new inspection concept from the data collection system proposed it during a conference at Langley AFB in October of this year. They also revised and corrected the work unit code manual, T.O. 1B-50A-06. New inspection work cards and work unit code manuals should be available to all KB-50 units sometime this month.

TECH ORDER ERROR. The MC-193A Battery, Federal Stock Number 6625-557-5745, as shown in Figure 3-13, T.O. 11N-P2-1, for connector and lead assembly, Part Number 137968-00, is in error. According to the current NOCM Stock List, the correct stock number is NOCM 6625-557-5747. SAAMA has taken UR action to correct the tech order.

C-124A PROP SHAFT FAILURES. Until SAAMA comes up with a fix for the R-4360-20WA prop shaft, C-124 units will:

- Not operate above 165,000 pounds gross weight.
- Inspect the prop shaft for cracks on engines which have encountered serious backfiring.
- Torque propeller retaining nuts as close as possible to the 2500-foot-pound limit, when an engine is installed. Newly installed engines will be operated for at least 15 minutes and cycled into reverse three times, then will be shut down, allowed to cool for 15 minutes, and inspected to see if the propeller retaining nut has retained its torque. If a torque loss is noted, the nut will be loosened and the procedure repeated--until the torque value remains constant. If props are removed during this inspection, the prop shaft should be examined for cracks or flaws, using a three-power (or greater) magnifying glass. The nose section will be removed if a crack or flaw is found.
- Carefully inspect spline areas. Galling or pits over .004-inch deep will require nose section removal. Ridges or steps in the spline which indicate that the prop has been loose and working on the shaft, will also require nose section removal.
- Inspect the propeller hub for galling or ridges. If any are found, the hub will be rejected.
- Check propeller blade angles to see that they are within T.O. limits. Any blade that is not in these limits will not be used, since this will cause uneven prop shaft loading.

PIGTAILS. For one reason or another, tube assemblies (pigtails), P/N228467 and P/N272844, are being intermixed on J-57 engines. These pigtails are not interchangeable! Tube assembly P/N272844 should be used on engines incorporating T.O. 2J-J57-626. If the other pigtail is used, an obvious and critical gap will be left between it and bracket, P/N367386. If you aren't sure of the part number for one of these pigtails, compare it with a known tube. Stand the unknown tube next to the known one. Place them side-by-side on their short ends. The top curve of P/N272844 will be from .210 to .250 under P/N228467. Considering the aft section explosion problem, considerable care in this area is definitely warranted.

DISCREPANCIES IN SHIPMENTS. Please verify the identification of each line item you ship to SAAMA. Screen the documents that support each shipment for omissions. Be sure the quantity is accurate and the condition properly stated. Efficiency and effectiveness of depot receipt depends upon how well you, the shipper, have followed established shipping procedures.

UR EXHIBITS. When returning faulty material for UR exhibit, be sure that a completed AFTO Form 114 (UR tag) is securely attached to each item. If the AFTO Form 114 is not available, you can use a red tag, AF Form 50E. This is a dual purpose tag and may be used on either condemned or rejected material. Enter the base UR serial number and reason or authority for rejection under remarks.

SPRING LOADED. Installation or removal of tail hook safety pins can be dangerous. Those performing these tasks must lean forward under the hook, and if it should be accidentally released at this point, fatal or severe injuries could result. We suggest that a light weight support be fabricated to retain the tail hook in the stowed position while removing or inserting safety pins.

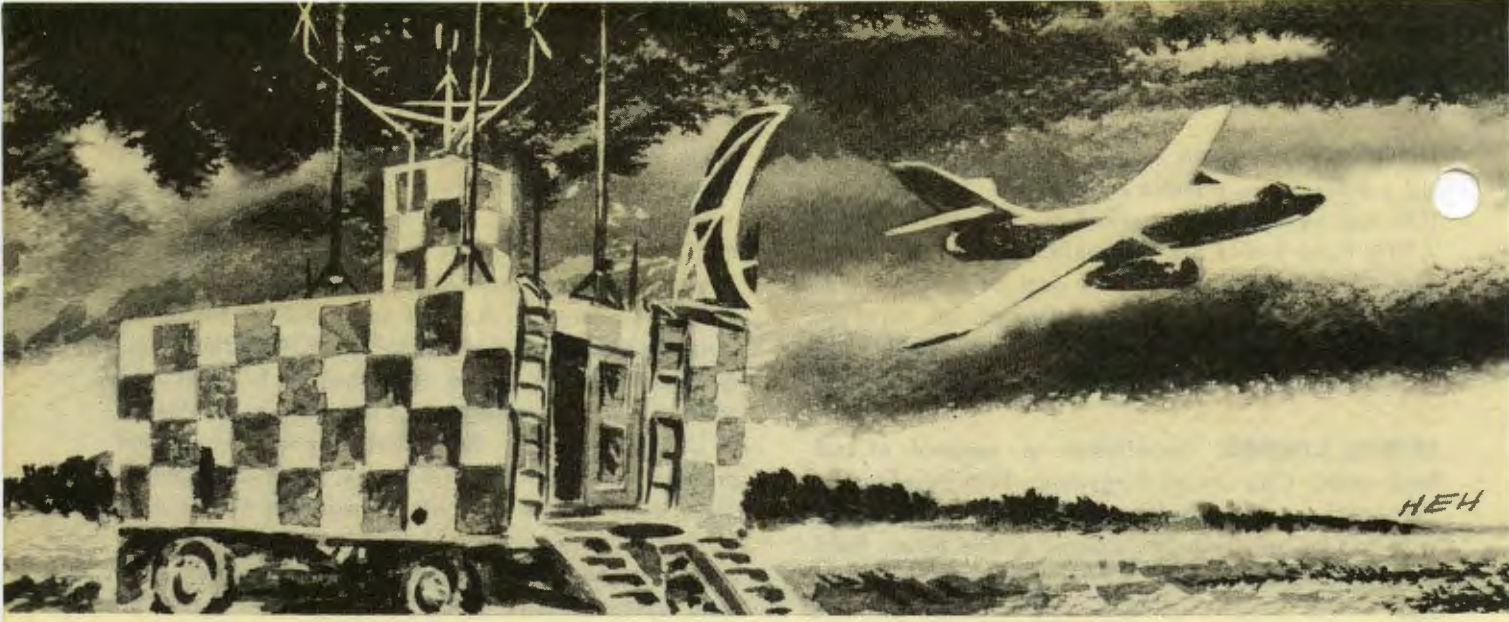
IMPROVED MAINTENANCE PROGRAM FOR F-105. A team from TAC and AFLC reviewed all maintenance records on the F-105B and D during July and early August in order to establish an improved maintenance program. The team determined the mean time to failure of aircraft components, established material improvement projects, corrected the dash six Inspection Work Cards, and sequence charts, and made up Air Force forms to support the computer program. The team also developed a new inspection criteria to increase periodic from 100 to 200 hours. This should save TAC some 350,000 man-hours per year on the Look phase of the inspection, without affecting safety. AFM 66-1 data used for the analysis covered the period December 1960 to May 1961 and was generated by TAC bases flying both aircraft. During the analysis, the team found some reporting errors for you to correct. Here are some examples:

- Different How Mal codes were being used to indicate the same failure.
- Many discrepancies were reported on a system or sub-system identification. (Ending in 5th digit zero, 4th or 5th digit zeros, or 3d, 4th, and 5th digit zeros.)
- Numerous items, not otherwise coded, were coded as 9. This coding is of little value and therefore is hard to analyze.

Incidentally, work card listings that have more than one item under a single listing will be corrected when the new cards are made up. In the meantime, try to keep your How Mal Functions uniform for like failures, give them codes that agree with the corrective action and don't end your WUC in 4th or 5th digit zeros or 3d, 4th, and 5th digit zeros. Only use a 5th digit zero if the malfunction and corrective action can be identified to the malfunctioning component. Any item that needs a 9 (NOC) in the WUC, should be called to the attention of the prime AMA so an appropriate WUC can be assigned. Until a WUC is assigned, the item or component should be coded to the next higher assembly. MOAMA (MONASI) is responsible for system code changes to 1F-105-06, while 01-08 code changes are now the responsibility of USAF and AFLC. This previously was a command prerogative. The -06 preface is being changed to show this. By the way, all maintenance that is done on the aircraft *must be reported* properly to the AMA; otherwise, 66-1 data will not be valid. The AFM 66-1 data system shows great promise and will provide many advantages for TAC and other F-105 users. However, your interest in the program is vital.

LEAKY DUCTS. The people at OOAMA removed Duct Assembly, P/N 33-83237-1, to let them get into an area where they had some work to do. They found that gasket, P/N 17189-200C (reference figure 111-39, T.O. 1F-101B-4), was deformed and leaking. The reason? Someone had used an aluminum gasket instead of the proper copper gasket. This was where duct assembly 33-83237-1 mates to duct assembly 33-83236-1. These ducts service equipment that isn't used on TAC aircraft, and apparently someone relaxed because of this. They shouldn't have, because a hot air leak is a hot air leak, and can cause a great deal of damage, as has been learned the hard way in the not so distant past.

CONTROL LOCK. Recently an F-100 crashed after the flight controls locked because a wiggins quick disconnect coupling poppet valve failed and blocked the flight control system return line at the aircraft split line. An immediate inspection was made of the TAC F-100 fleet. Several peened and bent stems were found which could eventually have caused failure of this coupling. Interim T.O. 1F-100-839 was published and sent to all F-100 units. This T.O. directed units to remove the poppets from the quick disconnect couplings. Although this eliminates the self-sealing feature, it prevents line blocks. This is an interim fix and will be followed by T.O. 1F-100-841, Replacement of Quick Disconnect Coupling, #1 and #2 Flight Control System. Delivery of this T.O. should start this month and should be completed by January 1962. Removing poppet valves in the existing couplings makes the system easier to contaminate, so maintenance personnel will have to take even greater care during aft section removal. In short, keep 'em capped with clean caps.



THE WEATHER WAS NASTY. Low lying clouds blanketed most of the southeastern United States and almost all stations in this area were reporting rain or drizzle.

At one airfield in the area, rain poured steadily down while an aircrew scrambled out of a blue van and dashed to a nearby twin engine jet. Each of the crew went thru the familiar ritual of pre-flight, grimly unable to ignore the rain that drummed against the silver machine, splashed into their faces, and soaked thru flight suits, gloves and jackets.

The rain continued without letup during the wait for a clearance, during start, and while the aircraft was taxied to the runway.

Finally, when the machine was in takeoff position on the active, the rain decreased to a more moderate level. The pilot hardly noticed since he was busy checking engine instruments making certain that all were correct. Satisfied, he released brakes and the aircraft started down the runway, clumsy at first, but appearing more graceful as it gathered speed. The navigator checked his watch at the start of the takeoff roll and wrote, "1330Z" in his log.

At 200 feet they entered the overcast, climbing steadily even tho buffeted by the turbulent air. At 31,000 feet, still in the soup and turbulence, the pilot leveled the aircraft and adjusted power to the proper cruise setting. He found it difficult to maintain his course and altitude due to the persistent turbulence, but busy as he was, he still noticed the needle on the right engine fuel flow gauge drop twice from 3000 pounds per hour to 1000 pounds.

The engine ice warning light was off. Nevertheless, he turned the de-ice switch on and placed the fuel control valves to "takeoff" and "crossfeed." The fluctuation stopped.

Two minutes later the fuel flow gauge fluctuated again followed immediately by an explosion and flameout of the right engine. The pilot glanced at the EGT and RPM. Both were decreasing rapidly, so he stopcocked it. The time was 1403Z.

Unable to hold altitude on one engine, the pilot called the center and asked for a lower level, explaining the trouble. In addition, he asked for the nearest suitable base.

The center gave him three alternates. The navigator was painting one of them on his scope, so the pilot headed toward it and asked the center for the existing weather for this base. Weather was given as 300 feet broken, 700 overcast, with 1-1/2 miles visibility; but about all that registered in the pilot's mind was 700 feet and a mile and a half.

During descent, turbulence continued to buffet the aircraft, making control difficult. To make it even more difficult, the rudder pedals began kicking violently in and out, practically pushing the pilot out of his seat. Kickbacks were accompanied by fluctuations in the control system hydraulic pressure. The pilot also reported that he had to hold a certain amount of left rudder between kickbacks.

The pilot decided he'd better get the aircraft on the ground, dropped speed brakes and descended rapidly to 2500 feet where GCA started vectoring the machine to the instrument runway. Since the aircraft was quite heavy, the pilot jettisoned external tanks shortly after GCA turned him onto final.

On this approach, the pilot never got the aircraft aligned on final, so the controller asked him to make a missed approach when he was about one and three-quarter miles out, some 60 feet above glide path.

Considering aircraft gross weight, airspeed and other conditions, the waveoff was accomplished under

THE HARD WAY

the hard way

very adverse conditions. Fortunately, the pilot managed to maintain control and was vectored onto another, longer, final. The second approach proceeded much better until at four miles out. Here the aircraft dropped some 60 feet below the glide slope and the GCA operator reported that from there on in the pilot responded erratically. Another waveoff was given at 1-1/4 miles because the aircraft was 1500 feet right of course and 20 feet low.

Meanwhile, back in the cockpit, the pilot had spotted the runway off to his left and about a mile and a half away. Altitude was 200 feet. He cranked the machine up into a 30-degree bank and headed for the runway . . . .

Later, a member of the accident investigating board asked the pilot, "As you made your corrective turn toward the centerline of the runway, did you maintain your airspeed?"

The pilot replied, "I don't know."

The board member then said, "Well, either airspeed or altitude must be sacrificed in a bank of that kind . . . "

"That is true."

"I am wondering how much altitude you lost as you completed that 30 degrees of turn?"

The pilot replied, "The whole business, like 200 feet. This is the reason I touched down some 1500 feet short of the runway!"

This is an oversimplification. But first, let's finish our story. Touchdown was at 1433Z, approximately thirty minutes after engine failure. The landing gear was sheared on impact and extensive damage was done to fuselage and wings by impact and post crash fire. Despite this, no one on board the aircraft was hurt.

In analyzing this accident, we'll start back thru the chain of events to see what happened.

First, was the flameout. Investigators found nothing obviously wrong with the engine or fuel system and at this writing the cause of flameout is not known. Very likely, the engine could have been restarted. The pilot didn't attempt a restart because he was under the impression that the engine had failed mechanically--the explosive noise gave him is impression.

It should be remembered that flameout was preceded by fluctuations in fuel flow and that these fluctuations could easily have caused a compressor stall and flameout. Talk to any F-100 pilot and you'll find that a compressor stall can make some impressive sounding "explosions."

When investigators looked over the aircraft, they found that the rudder trim was in the full right position instead of full left. Wiring was checked and found correct, apparently the pilot--who was very well-experienced--fed trim in the wrong way!

Flight tests with one engine shutdown indicated that directional control could be maintained with effort even tho trim was put in wrong. In fact, on one test the rudder kicked back pretty bad when it was held in against full opposite trim. Rudder fluctuations and turbulence would have made it difficult to analyze the improper trim.

From here on in, most of the pilot's decisions were predicated on the control difficulty ... so it is hardly fair to criticize them. Certainly he would never have elected to attempt an instrument approach at an excess gross weight on one engine if he thought that the aircraft was capable of being flown to a more favorable airbase and landing weight.

But let's armchair this one a bit further. We've mentioned that the landing was attempted at an excess gross weight. To be more specific, the aircraft was 17,000 pounds over the maximum recommended weight for dropping gear and flaps with one engine caged. It was 15,000 pounds over the maximum recommended landing weight. Although the pilot was fighting turbulence and a jumpy rudder, he was able to fly for 30 minutes, make two GCA's and one missed approach. Had he put the navigator to work hunting for better airpatches, he would have learned that two airfields were almost as close as the selected landing site. The better of the two sported a 10,000-foot ceiling and six miles visibility, while the other had 1500 scattered, 10,000-foot overcast with between two and three miles visibility.

As one experienced pilot remarked, "It looks like his get-on-the-ground-but-quick decision just didn't give him time to analyze his problem and select the best course of action."

MISSILES and Munitions

MISSILE HAZARDS. A missile hazard is any condition that can affect the safety of missiles, facilities, equipment or personnel. Some examples are:

- Faulty maintenance and inspection.
- Improper tools.
- Improper handling, transportation, storage and disposal procedures.
- Faulty ground support equipment.

Prompt reporting of these hazards permits commanders to correct dangerous deficiencies before they result in mishaps. Missile hazards should be reported on *AF Form 471*, Missile Hazard Report. They may be either typewritten or handwritten and should be given to the supervisor, air munitions safety officer or unit commander.

NUCLEAR SAFETY. Century series safety rules are now available in regulation form. If you don't have them, be sure and check with your publications people. For your convenience, here are the reg numbers:

- F-100D, MK43, AFR 122-30; MK28, AFR 122-40
- F-104C, MK43, AFR 122-32; MK28, AFR 122-42
- F-105B, MK43, AFR 122-33; MK28, AFR 122-43

UR ROUTING ROUTINE. SAAMA tells us that the people who are writing UR's have been making some errors when they address the ones sent by teletype. Quite often, UR's are not properly routed or do not include the info addressees that are specified in paragraph 4-19, T.O. 00-35D-54. UR writers, we suggest you review paragraph 4-19; it will help speed up action. In addition, if your UR deals with a special weapon, its related support equipment, or equipment installed on aircraft or missiles that has a direct bearing on USAF special weapons capability, then read paragraph 4-28a(10). This paragraph requires AFSWC (SWV-UR), the Director of Nuclear Safety Research (AFCNS), AFLC (MCW-7), and SAAMA (SAWMT) be included as info addressees.

MF-1 TRAILER TOWBARS. Have you beefed up your MF-1 Trailer Towbars as prescribed by T.O. 11N-H4002-1001, dated 31 May 1961? If you haven't, one of your towbars may break where the safety chain is attached and you'll have a nuclear safety incident to report. Incidentally, T.O. 11N-H5002-2 and 11N-H5002A-2 is being changed to include a check of the towbar pivot bolt nut breakaway torque. This torque should be 50 inch-pounds. If it takes less than 50 inch-pounds breakaway torque to remove this nut, it should be replaced. This change will authorize keeping two of the nuts (Part No. MS20365-1216) in the MF-1 tool box where they will be readily available.

SLOGAN CONTEST: Interested in winning a Hamilton automatic wristwatch? Or a Hamilton Seabrook wristwatch? These are the first and second prizes in a slogan contest being promoted by the USAF Directorate of Nuclear Safety. Contest rules:

- In 10 words or less, submit an original slogan promoting Air Force Nuclear Safety to DIG/S (AFINS-B), Kirtland AFB, NMex, before 31 December 1961.
- Slogans should be submitted on postcards only. Send as many slogans as you wish, but use a separate card for each one.
- Each entry must include your name, rank, organization, and address.
- Winners will be notified by mail. Any member of the Air Force can enter, except DIG/S personnel.

THERE HAS LONG been considerable controversy over this business of jettisoning the canopy just prior to a barrier engagement or making an unscheduled high speed tour of the overrun. If the canopy is jettisoned prior to impact, the stalling speed is increased on some aircraft, dirt gets into the pilot's eyes, but worse, he is not protected from the barrier webbing or from a flash fire caused by ruptured tanks. On the other hand, many aircraft will twist enough on impact to bind the canopy latches. When this happens, the jettison system and normal opening systems will not work and as long as the plexiglass remains intact, the pilot is trapped.

The safety people at ADC tackled this problem after one of their T-33 pilots was killed in a deliberate ground ejection through a jammed canopy. In actual tests, they found that a determined man could hack his way out of a T-33, F-100, F-101, F-102, F-104, or F-106 canopy using a common hunting knife in approximately 10 seconds! The ADC people designed and built a special knife which worked even better. The ADC troops sent one of these knives to our personal equipment experts, so you can expect your aircraft to be equipped with it in the near future. These knives can also be used as a dinghy stabber.

Meanwhile, we all carry a hunting knife and with it you can chop out in about 10 seconds, even if you are only able to use one arm. Unless we miss our guess, an imprisoned pilot with a fire under his tail would shave considerable time off the advertised 10 seconds.

No set pattern of blows were required, and only three or four blows will open up an adequate escape hole in most canopies provided the knife is used point first. Naturally, you should first try to jettison the canopy, then switch to 100% oxygen and get out of your chute before starting to hack at the plexiglass. If no knife is available and a side arm is carried, shoot three holes about one or two inches apart, then jab the gun through, look for a weak area and break out a section. Shoot more holes and break off more, etc. Each canopy will present its own problems, but if you stay reasonably cool, you should be able to break through without taking that killing ride in the seat.

THE BIG THUNDERCHIEF didn't feel right during the turn to final even tho the TAC driver was holding 200 knots. He checked the standby airspeed but it agreed with the tape, so he pressed on. Stabilized on final at 195 knots, he figgered the nose was a bit high but decided this was because he had lowered the seat while flying gunnery and hadn't returned it to normal. Later, he decided that he should have taken it around at this point. He didn't. Instead, he crossed the overrun at 190 knots, reduced power during the flare and floated some 1500 feet with the nose rather high. During the last 500 feet he mentally congratulated himself on the fine landing he thought he'd made and flung out the laundry . . . What happened next can best be described as an arrival. The machine fell some four or five feet onto its aft section. The pilot was so disgusted with himself that he completed his after-landing check without looking to see if the trailing edge flaps were down. After he thought everything thru he decided that he must have forgotten them.

We'll sympathize, having forgotten almost everything it is possible to forget at one time or another. Only sheer good luck and an alert control tower operator saved us from a no-roller arrival in an F-84F one day . . . believe us we've been a changed lad since then, checking and double checking flaps, speed boards and rollers any time the machine feels just a wee bit different. When things don't feel right to you F-105 drivers, don't forget to add an extra set of flaps to the things you check. Being forewarned is being forearmed, and this troop's honest account of this hard landing mishap should serve to warn you.

The handbook is usually correct!

THE OLD DOLLAR NINETEEN was AOK during preflight, taxi, and runup. It stayed that way while it flounced down the runway and heisted itself some 250 feet into the bleak blue. Then it decided to get contrary. Speed was an honest 140 knots, the rollers were up, and power was being reduced to METO when the right mill backfired and torque oil pressure fluctuated. The pilot checked the mixture. It was rich. He reduced power on the right engine and started a shallow left turn back toward the air pasture.

Torque oil pressure dropped to zero, so the pilot feathered the prop, cut the mixture, and told the co-pilot to clean-up the engine with the check list. Meanwhile, back at the ranch old Gene had things pretty much under control . . . . not so in the office of the dollar nineteen. Airspeed had dropped from a fat 140 to between 120 and 125 knots. Nevertheless, the shallow turn toward the field was continued. Airspeed dropped to 110. Altitude was down to 150 feet. The pilot rolled out and asked the tower if the diagonal runway was available. It wasn't. He tried to line up with the main runway, saw that he couldn't make it, and elected to land on the sod. Gear was lowered and he greased the bird on with 3000 feet of sod between him and the fence . . . . the far fence. He applied brakes and figgered everything was hacked. It wasn't. By the time the big machine (anything with more than one engine is "big" to TAT) had slowed to 50 knots, the pilot realized that the airpatch was rapidly disappearing. He sucked up the gear and the contrary old bird slid to a stop about 125 feet from a ditch that helped form the field boundary. Only the aircraft was hurt.

Excuse us one moment while we untilt our chair to a more stable position, adjust our glasses for hindsight, and peruse the dash one.

Ah yes, as the board said, this good book warns the pilot who loses an engine during takeoff to maintain straight and level flight for several minutes in order to get some air under the machine before trying to circle back for a landing. The book also says that climb may be as little as 100 feet per minute, and that once a turn is started, the recommended single engine speed should be held even at the sacrifice of altitude. It kinda looks like someone has been over this route before, doesn't it?

In addition to the turn, the pilot failed to wind number one back up to takeoff power . . . which didn't help matters.

One last item. According to the handbook, the aircraft should have been capable of stopping in less than 3600 feet. Not much less mind you, but enough to make the board and TAT wonder if the pilot applied the binders as firmly and as early as he should have.

O.K., from this, you can file at least four items in your if-it-ever-happens-to-me check list. First, if you lose an engine at low altitude in a two-fan van . . . . go whole hog and apply full power on the other . . . then decide whether or not you can get along on less. Second, don't get in too big a rush to get on the ground; avoid any turns or activity that will knock your airspeed down below that all important recommended single engine climb speed . . . until you have gained enough altitude to do a little maneuvering. Third, if you have a crew with you, let them share some of the workload. TAT received the distinct impression that this lad was trying to do some chores he could better have delegated to his co-pilot. This may not be a correct impression, but the item is still a good one. Last, like with Christmas shopping, any time there is the least bit of doubt about the amount of runway remaining, get your stopping started early!

AN F-100C DRIVER CALLED the tower on channel one and very calmly reported that he was over the field flamed-out and needing landing instructions. The tower asked if he could make runway 15. The pilot allowed that he thought so, and reported going thru 20,000.

A long moment later he reported going into the clouds at 16,000 feet. Clouds were scattered with bases at 7500 feet. Terrain was about 5000 feet. Wing was SSE 10 knots, gusts to 18.

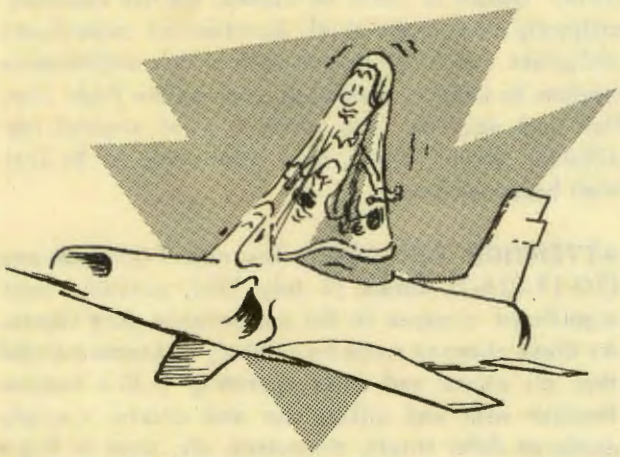
After a few moments, the pilot radioed that he couldn't make runway 15, but would come in downwind on 33. A few seconds later, he advised that he couldn't make 33 but would try for 21. 33 was 12,000 feet long while 21 was 10,000 feet. Next he radioed

that he wouldn't be able to make the runway. He touched down a couple of seconds later at a sharp angle to the runway. According to the tower operator, touchdown was smooth, but on the left wing tip and left main gear. The aircraft settled on both main gear and rolled a spell before the right gear started to retract. Despite this, the aircraft continued in a near straight line . . . directly into a concrete block building. And that ended that. This troop was no green hand. He had almost 5000 hours flying time, over 3000 jet time, but only 22 hours in the F-100. Add his lack of F-100 experience to the scattered clouds and we can understand the loused up pattern. He knew it was loused up, otherwise he wouldn't have kept changing his intentions.

The mere fact that he couldn't decide which runway to take should have warned him that he was heading for trouble . . . . trouble which could easily have been avoided just by making two short motions with either hand!

True, you have a certain sense of security sitting there in that big cockpit surrounded by all that massive strong-looking structure. You'd almost expect to be able to punch thru a crummy concrete block building and come away a winner . . . but that kind of security won't even console your widow.

Look this one over. Check the sequence . . . and then plan on bugging out should you find yourself descending toward 2000 feet with a dead engine and no sure plan of action.



Boo!

AN F-100 DRIVER selected AB at about 35 angels, didn't get a light, waited a minute and tried again. It lit, but after 30 seconds of AB operation the engine cut loose with a lusty bang or two.

It sounded like it had come completely unglued, so this lad stopcocked and glided down towards home plate.

At around 23,000 he decided that his trouble just might have been caused by a compressor stall, so he tried a light. The unit started and he was once more at peace with the world. The pilot stated that this was his first experience with a compressor stall and that stopcocking was an instinctive reaction.

Well, it looks like one more troop has learned not to go shutting down an engine without confirming the difficulty by checking warning lights or EGT.

Don't laugh young man, at least not until you've had a few things shatter otherwise tranquil missions.

OLD TAT read an article in the September Interceptor which told of a parachute problem we've had for some years. Briefly, an Air National Guard investigating team started looking into the parachute after one of their troops failed to survive an F-104 ejection. Several well-qualified witnesses watched this lad's parachute streamer some seconds before he hit the ground.

The Guardsmen did some experimenting to find out why most of the risers were still in the quarter bag pockets on the victim's chute, knowing that normally it only takes a light force to pull them free.

They found that when they laid a demonstrator face down and tried to pull the chute back over his feet, it took up to 150 pounds to break the quarter bag out of the main pack. They took their findings to System Development Command who said, "Never happen, he must have hung up in the seat . . . " SDC then suggested some changes to the seat. This is essentially the same story that was given to other investigators who wondered why a chute failed to open when it looked like ample time and altitude were available. It just didn't dawn on the experts that the chute could be at fault. They weren't alone. It never dawned on TAT either . . . even tho we can remember reviewing a similar accident and can recall wondering why on earth the poor fellow's chute didn't have time to open when other pilots had gotten away unscathed after ejecting at more critical altitudes.

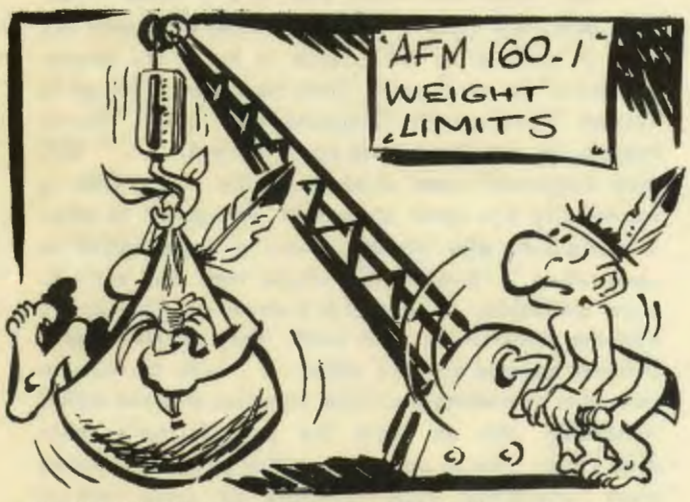
To make a long story short. Another Guard pilot lost his life and some more tests were made at base level. Then some people got hard-nosed, so now, the problem is fixed . . . or it should be. Each of us can thank those ANG troops for having the smart to wonder why, the curiosity to make experiments and the conviction to stand behind their findings and buck the alleged experts. Who knows how many lives they will save? We'll scat on that, TAT.

TAC TIPS

PILOT TRAINING. Back in 1920 the Air Service put out a set of 'General Rules to be followed at all U.S. Flying Fields'.... here are some excerpts:

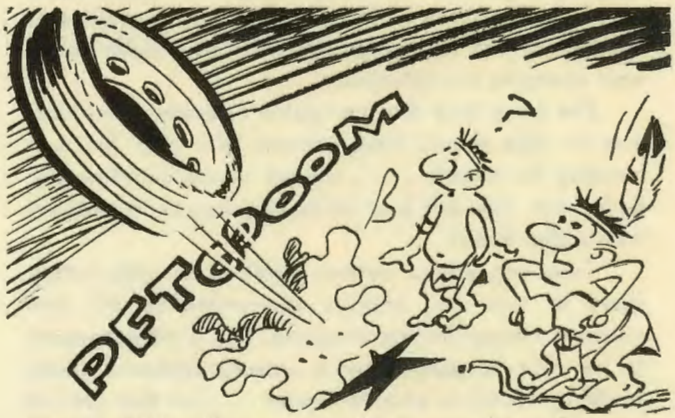
- Don't take the machine into the air unless you are satisfied it will fly.
- Never leave the ground with the motor leaking.
- Pilots should carry hankies in a handy position to wipe off goggles.
- Aviators will not wear spurs while flying.
- You must not take off or land closer than 50 feet to the hanger.
- Never take a machine into the air until you are familiar with its controls and instruments.
- It is advisable to carry a good pair of cutting pliers in a position where both pilot and passenger can reach them in case of an accident.
- If you see another machine near you, get out of its way.

—Flight Safety Foundation



WARNING TO WEIGHT WATCHERS. If current rumors prove correct, the Surgeon General may soon change the weight limits in AFM 160-1 to the current standard plus 15%—regardless of age. This could shave as much as a rotund 12 pounds from the familiar figures! This is in round figures of course. So, if your figure is likewise, best take heed and have a chat with your friendly flight surgeon. He can set you up with a personalized diet that can—with a certain amount of self-control—get rid of the lard.

STIFF NECK. When a pilot looked up to watch his parachute open, his neck was wrenched violently . . . fortunately it wasn't broken. The chute opening position which produces minimum shock and injury is body erect, feet together, and arms close to the body.



BLAST OFF. When a crew chief started to inflate an aircraft tire, he found that the low-pressure chuck was missing from the MC-1 compressor. The 3000 psi air source was connected to the tire and, at a signal from the chief, his assistant opened the air valve 'just a little.' Before it could be closed, the tire exploded, critically injuring the chief. Maintenance supervisors and pilots can help prevent some of this maintenance mayhem by keeping their eyes open on the flight line. Not long ago, we read where a pilot stopped two different ground crews from attempting to do just what happened here.

ATTENTION T-BIRDERS. The new T-33 dash one (TO-1T-33A-1), dated 15 July 1961, contains some significant changes in the performance data charts. As these changes could be critical, it is recommended that all pilots and units operating T-33's become familiar with and utilize the new charts. Locally produced data, charts, computers, etc, used in flight planning should be removed or revised to bring them into agreement with the new dash one.

APPROACH KNOWLEDGE. Here are some good check points to know when making radar or ILS approaches. On a 2.5 degree glideslope, altitude above ground at 1-1/2 miles is 400 feet; at 1 mile it is 260 feet; at 1/2 mile it is 130 feet. This mean

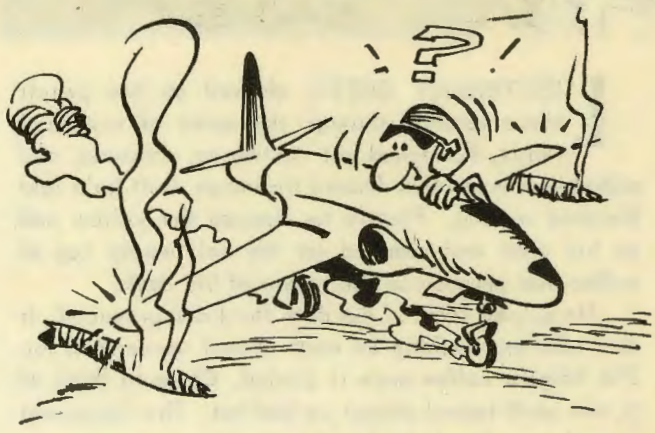
that you pass through 200 feet at 3/4 mile, which is a figure that has some meaning when minimums are 200 and 1/2. In practice, most GCA/ILS touchdown points are 750 feet down the runway, so at 200 feet you should be picking up the approach lights.

OBVIOUS MORAL. A T-33 pilot reported an unsafe gear indication to the tower, which was confirmed by a fly-by. The pilot went through the emergency procedures step-by-step, but the gear remained unsafe. Another T-33 pilot took off to examine the position of the gear, but misjudged rate of closure and collided with the first T-bird. He lost control and ejected successfully. The T-bird with the gear trouble landed with minor skin damage. 'Nuff said.

P. McGRIPE? While cruising at FL 260, a T-33 pilot realized that he was becoming hypoxic. He immediately selected the safety position on his regulator and landed ASAP. Investigation revealed that the white rubber grommet on the CRU-8/P connection was missing.

BIG DRIP. Five F-105's have been found with fuel leaks in the teflon plug holder on the forward fuel cell. In each case, fuel was seen drooling from the underside of the aircraft when it was on the ramp. Since all fuel cells in the F-105 have teflon plug holders, there is a possibility that other tanks may be affected as well. Until the problem is completely defined and solved, all hands will have to stay alert and look for leaks during post flight and preflight of this big bird.

IN THE GROOVE. A Visual Glide Slope Indicator (VGSI) system has been developed to provide pilots with positive glide slope guidance during VFR approaches and landings. It consists of light units arranged so that the pilot will see a row of red lights and a row of white lights when on the glide slope, only white lights when above the glide slope and only red lights when below. VGSI units are programmed for delivery to TAC bases beginning this month.



HERE'S A SWITCH. A couple of T-bird pilots were momentarily embarrassed when the tip tanks on their aircraft salvoed during taxi-out. As it turned out, they were not in any way at fault. Since the flight was to be made in instrument conditions, the pilot turned the navigation lights to FLASH. Approximately 400 yards from the parking area, the pilot placed the tip tank jettison switch on the AUTO DROP position and both tips departed the aircraft. Investigation revealed that the tip tank release solenoid actuated each time the navigation light flasher cycled. Electrical specialists found that an improper microswitch had been installed and power from the flasher was connected to the release mechanism. A check of the maintenance records revealed that the improper switch and connections had been present for an extended period of time. It is fairly evident, too, that the pilots who had previously flown the aircraft weren't following the check list or the incident would have occurred earlier.

—Combat Crew

HIGH SQUEAL. I settled down in the front seat of a T-bird the other day, put on my helmet and uttered the traditional, "How do you read?" All I heard was a continuous high-pitched squeal. I disconnected my helmet and asked the rear seat pilot to re-check the position of all jackbox switches. They were all at the proper setting so I hailed a comm man. He listened briefly, then said it sounded like the interphone relay was defective, but to check our helmet connections. Mine was O.K., but the pilot in the rear hadn't pushed his connectors all the way together. The mystery was solved, and we proceeded with the mission.

LIEUTENANT GREEN chewed on his pencil while reading through the maze of scribbled words, scratched out sentences, erasures, and added sentences that formed the rough draft he'd just finished writing. Finally he dumped the yellow pad on his desk and reached for the half empty cup of coffee that perched on the corner of his desk.

He gulped some of the dark fluid and grimaced. It was cold and nothing on earth tasted worse than the Old Sarge's coffee once it cooled. Come to think of it, the stuff tasted almost as bad hot. The lieutenant vaguely wondered why he ever drank it.

"'Smatter, sir, get stuck on that report you're making for the investigating board?" It was the Old Sarge speaking, and as usual he'd guessed right, although the lieutenant didn't know it.

Because he didn't, Lieutenant Green sounded fairly confident when he answered, "No, I think I have it hacked."

"Would you fill me in, sir?" the Old Sarge asked, his expression indicating complete interest.

"Sure," said the lieutenant, twisting his chair around."You remember it was a 13th squadron bird. Pilot was turning final on a gunnery pattern when he heard and felt an explosion. He looked in the cockpit and found that all the engine instruments were in the green. Then he checked hydraulic pressure and found that the utility system was zero. He got the gear down o.k. using the emergency system, but couldn't get flaps.

"It was old Ed Springer, and this didn't bother him much, at least he got it down, no sweat. They called me in on it as the maintenance member of the board. We found that the flap accumulator had failed. It caused some more damage, but that's about it."

The Old Sarge nodded his head as if in agreement, then pointed his pipe stem at an object on the lieutenant's desk and asked, "Is that part of the accumulator there?"

The lieutenant grunted an affirmative.

"Seems odd. Looks to me like it had overheated." He was thoughtful for a few moments, then asked, "Lieutenant, what else was damaged?"

"Well, there was some shrapnel damage. A heat and vent duct line was cracked and the Marmon clamp on it was under-torqued. We figure that this was caused by the accumulator exploding..." He saw that the Old Sarge was shaking his head from side to side--and added just a little lamely, "But I rather gather that you don't agree."

"Right, I don't. The evidence is right there on your desk. That, and the past history of the heat and vent system. When I was in Japan, the outfit had one accident and one incident attributed to a heat and vent leak squirting hot air on the flap accumulator, causing the fluid to boil and the accumulator to fail. That bluish look on that piece on your desk tells me that heat was applied from the outside. They solved their problem by taking more care with the heat and vent system."

The lieutenant frowned, pitched his pencil on the desk, and muttered, "Well, back to the drawing board . . . . blast it, that machine is just too complicated, that's all."

"It's complicated all right," said the Old Sarge, "but I don't think that this is the cause. We've pretty well proven that we can keep on top of this heat and vent problem by using normal caution and by careful inspection. After all, we've gone well over a year without having an incident . . . and my guess is that people have started to relax. We can't afford that. Incidentally, we aren't alone. I got a letter from Frank Seagram just yesterday. He was singing the blues because one of his birds had received major damage to electrical wiring because of a heat and vent leak. The failure occurred right after takeoff, and the pilot stayed right in the pattern and landed. Things had started to short out before he got all the way around, but he was lucky and made it anyway." He paused and started tamping a charge of Old Barnsmell into the scorched bowl of his pipe, then continued, "According to Frank, the failed clamp had been used quite a bit and the adjustment nut had been screwed down some 22 turns. This couldn't be duplicated with a good clamp, so they were positive that the clamp was partly broken before it was installed. Obviously, the guy who did the work failed to check the clamp before he installed it and then never got it to the proper torque . . . And you can hardly blame the clamp or system complexity for that!"

Lieutenant Green started to say something, but the Old Sarge was still wound up. "And lieutenant, you needn't tell me that these things are inaccessible. I know they are hard to get at, but so are a lot of things on a lot of airplanes. I know the designer can stand to improve in this area . . . but darn it, we can't use that as an excuse for poor work!"

TAC TALLY

MAJOR RATE ALL AIRCRAFT 1 JAN - 30 SEP	
1961	1960
16.5	14.9

ACCIDENT FREE
(MAJOR & MINOR)

JET

ACTIVE	MONTHS		ANG
474 TFW	6	34	123 TRW
		13	121 TFW

CONVENTIONAL

ACTIVE	MONTHS		RESERVE
4430 ATG	34	71	442 TCW
314 TCW	26	58	434 TCW
464 TCW	7	49	302 TCW
4505 ARW	6	47	94 TCW

SEPTEMBER MAJOR ACCIDENTS

ACFT TYPE	4510 CCTW	4520 CCTW	117 TRW	514 TCW	363 TRW	31 TFW	131 TFW	4 TFW
F-105								1
F-104								
F-101								
F-100	4	2				1		
F-86	1							
F-84	1		2				1	
B-66					1			
CONV.		1		1				

MAJOR ACCIDENT RATE
1 JAN - 30 SEP

TYPE	1961	1960
F-105	21.8	96.2
F-104	75.1	39.7
F-101	7.4	23.2
F-100	23.4	27.0
F-86	50.3	0
F-84	62.4	38.4
B-66	30.2	0
T-33	3.5	4.7
KB-50	7.1	7.6
C-130	8.6	0
C-123	6.8	2.2


Princess
ANN
says:
a KEY ...
115/145
JP-4
JP-4
JP-4
JP-4
for preventing P.O.L. errors!