AEROSPACE

SAFETY

UNITED STATES AIR FORCE

AUGUST

KOLLIGIAN TROPHY WINNER

see page one

1960

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IN THIS ISSUE

CROSS • FEED

L-O-N-G Arm

I enjoy reading your magazine because you always have very good material. In the article entitled "A Back Seat Driver" by Major Jimmie L. Tissue, he stated: "He'll copy the new clearance, change the mode and frequencies for you . . ." Inasmuch as the T-Bird does not have a control for the APX in the rear seat, that back seat driver would have to have a fairly long arm, wouldn't he?

Guy W. Dryden, Jr.
UHF Radio Repairman
3615th Field Maint Sq
Craig AFB, Alabama

As another reader pointed out, an arm exactly 38½ inches longer is needed by the "back seat driver." Major Tissue manages to hog the front seat and evidently forgot what wasn't in the backseat. Since the story was written another solo T-Bird managed to end up out of control shortly after a low ceiling, low viz takeoff. Scratch one bird, scratch another CRT pilot.

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One for Lt Col Rex Riley

In the May issue you began beating on the time-worn theme about "death through diversion" but you still didn't come up with the real answer to this problem. Is there any reason why we can't have a flight indicator in the cockpit that offers a natural presentation? Why can't the "little airplane" resemble the one that it's in? And why can't the lined black ball show sky and ground instead of a black and white nothing? After all, instrument flying doesn't have to be 100% mechanical. It might even be nice to have a technicolor presentation.

I realize that my suggestions "aren't the way we've always done it," and aren't much good because they "were not invented here." But the way I see it, the only way we're going to eliminate "death by diversion" is to put a flight indicator in the cockpit that a pilot can interpret in a split second instead of sitting there in a graveyard spiral trying to figure out which way is up or which way he is turning!

Keep the keys clicking and if the weather is IFR, go UHF all the way.

David F. McCallister
Chief, Engineering Flight Test
All American Engineering Co.

WADD: Can you help our friend?

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More Than One

I have read the checklist page of the March issue, particularly the item appearing on page 12, credited to Flight Safety Foundation. While I was reading all this, the idea of cumulative effect again reared its ugly head. We see it constantly as we are reminded that normally not a single factor but the cumulative effect of several factors causes accidents. This idea prompted me to send the following item:

"While the displacement of the horizon bar on an attitude indicator to show climb during periods of acceleration is recognized and understood, another less understood factor is present during periods of acceleration. When accelerating from low airspeed, such as during a go-around from a low approach or GCA, the sensation of climbing is produced. This is a form of vertigo.

"An actual increase in the angle of attack at this time will increase the illusion causing the pilot to feel that he is climbing rapidly and that forward stick pressure is necessary. This phenomenon can readily be demonstrated in the aircraft. At approach airspeed in a straight and level attitude, have the subject close his eyes. Increase from this low airspeed to climb airspeed, maintaining a straight and level attitude. The sensation produced will normally be one of climbing, even though the aircraft is held straight and level. The effect is more pronounced when acceleration is rapid; afterburner equipment aircraft should give the best re-

sults, although the demonstration is effective in any type aircraft."

It is interesting to note that Tactical Air Command has included training to familiarize pilots with this type of vertigo; details can be found in TACR 60-13.

My best compliments to you and your staff for a fine magazine.

1st Lt. William E. Overacker
Physiological Training Officer
3560th USAF Hosp., Webb AFB, Texas.

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An Aye Vote

I should like to add my vote in favor of the suggestion by Col. Campbell Y. Jackson, published in Crossfeed, January 1960, that a Flying Safety Officers Course be made available to the Reserve and the Air Guard. I'm sure that such a course would be as welcome to all other Air Guard units as it would be to ours.

Maj. Clay O. Keen
Comdr, 188th FIS, ANG
Albuquerque, New Mexico

Sorry we haven't the word for the Reserve at this writing; we'll let you know in the next issue. ANG officers, however, are eligible and should apply through regular channels.

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Safety Officer VA-113

In the May 1959 issue my article "A Slight Change in Plan" was given space so now I've decided to make another contribution in the interest of aviation safety. [*Ed. Note: See page 6.*]

I am presently serving as a Safety Officer in a Navy light jet attack squadron which is equipped with the A4D-2 "Skyhawk." The old grinding J-65 is the source of propulsion for the kite and it is FOD prone *(foreign object damage)*, perhaps even more so than the ubiquitous F-84F of the 1955-57 era. We disassembled an A4D-2 that had received foreign object damage, and lo and behold! we found our old friend Mister Gravel chipped up and resting in the compressor housing. Sounds like near proof positive that a piece of rock that costs absolutely nothing and can be found in abundant supply is chewing up engines that cost in the neighborhood of $70,000, does it not?

Education on the problems of shipboard landing is being carried over to shore based operation to a highly effective degree. The "Mirror Landing System" shows this humble aviator one big bunch, and utilization of the system is simplicity in itself and, if used properly, makes every approach and every landing as safe as it can be. ME? I'm for ye olde tailhook!

Oddly enough—title notwithstanding—Safety is not my primary field, but Operations is. And as most of us know, both jobs are so interconnected that one can not really be separated from the other.

Capt. John A. Smith, USAF
Safety Officer, VA-113

Glad to hear from you, Captain. The FOD problem has been one of much concern; however, we're convinced that rock damage is not the big offender. See Editor's note at end of your article on page 7.

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From the Navy

A copy of *Flying Safety Magazine*, procured at a local Air Force base, contained information concerning aviation safety that would be of unlimited value in the program of this command. What's the procedure for getting on the distribution list?

Gordon Duncan
OIC, Util. Sq 5 Det ALFA
Navy #520, FPO San Francisco.

Your comment are appreciated. Policy directs that requests from Navy units be addressed to the USN Aviation Safety Center, NAS, Norfolk, Virginia.

Thank you for writing.

THE KOLLIGIAN TROPHY

The third annual award of the U. S. Air Force's Koren Kolligian, Jr. Trophy was made to 1st Lt. Ronald L. Warner by General Curtis E. LeMay, Air Force Vice Chief of Staff, in ceremonies held at The Pentagon. This trophy, presented each year to the crewmember who most successfully copes with an emergency situation in flight, was awarded to Lt. Warner for demonstrating unusual courage, outstanding airmanship and good judgment, in landing a crippled C-119 aircraft during an overwater flight between Okinawa and Guam on September 4, 1959.

Lt. Warner, 25, of Cattaraugus, New York, was piloting the cargo-type aircraft with 27 passengers aboard when a malfunction occurred in the right propeller, causing the aircraft to lose altitude rapidly. The plane was midway between Okinawa and Guam, with insufficient fuel to reach a suitable landing area. With the aircraft operating at reduced speed because of a defective propeller, Lt. Warner managed to get it under control and maintain a flyable altitude. He knew that he could not reach Guam, Okinawa, or Iwo Jima as the aircraft was then loaded, so he made radio contact with two escort aircraft, then jettisoned five 6-man life rafts and associated survival equipment. With the plane thus lightened, he was able to make it to Iwo Jima where he landed with practically no fuel left in the tanks.

In citing Lt. Warner for this operation, the Air Force said "His courage and determination together with his superior knowledge, skill and professional airmanship enabled him to cope successfully with an inflight emergency situation and undoubtedly resulted in saving many lives, as well as preserving his aircraft."

Lt. Warner is assigned to the 6313th Air Base Wing of the 313th Air Division, Pacific Air Forces, Okinawa. He attended Alfred Agricultural and Technical Institute before entering the Air Force as an Aviation Cadet in 1954. He is married, with no children.

The Koren Kolligian, Jr. Trophy was donated to the Air Force by the Koren Kolligian family of Winchester, Mass., in the name and memory of 1st Lt. Koren Kolligian, Jr., USAF, who was declared missing in a T-33 aircraft off the Farallon Islands near San Francisco in 1955. He was assigned to McClellan AFB, California, at the time. The Kolligian, Sr., family attended the ceremony honoring Lt. Ronald L. Warner. ▲

ROVING

Old aviators remember when one man could design an airplane, glue and bolt it together and check himself out flying it. He also could patch up the rips and cracks and tune the engine. He knew his flying machine from tail to prop hub.

By contrast, the basic trainers we fly today represent the design and engineering talents of hundreds of men, additional thousands of manhours in fabrication and mockup, then flight testing and evaluation by a corps of aeronautical experts.

Before the instructor and student climb into the cockpit, flight training procedures have been developed, tried, accepted and published. Other specialists have learned how to maintain the complex hydraulic, electronic and engine control systems and have prepared data on supply support.

The aircraft is delivered to the training base with a set of directions *Tech Orders* for pilots and mechanics longer than Dr. Eliot's Five-Foot Shelf. The basic subject matter is so vast and the engineering modifications so frequent that each mechanic must study constantly to know his job.

Within this complex activity, management needs to know how well each specialist understands his duties. The commander must affirm that all his maintenance people, supervisors and technicians, are proficient. But in this vast area, how can any one person map out the specific responsibilities of each and every worker? He cannot, of course. What he can do, however, is use the measuring devices outlined by AFM 66-1. Among the "calipers" or "gages" providing daily readings on skill levels are the Standardization Evaluators of the Chief of Maintenance Office. These men are nosey. They are all over the flight line and in the hangars asking questions.

"What is this, a quiz show?" one 43151 asked.

That's just what it is at Greenville Air Force Base, and the show is rigged. The answers to the questions are available. The evaluators who ask the questions want the contestants to know the answers.

What kind of a prize can be given away on such a program?

The prizes are safe flight and mission accomplishment. The more right answers to the questions, the more right-side-up airplanes.

Just as a pilot is questioned in detail on flight procedures by the base or command standardization board, the mechanics are screened for their job knowledge. Technical Orders are the major source for questions and answers, but all incidents and Operational Hazard Reports are studied for quiz source material. When there are too few questions in the hopper, word gets around and the boys have all the answers. This is fine because every man with the right answer is the goal. However, to cover the wide range of possible threats to safe flight there is a continued addition of new questions. An example is: *What is the required cooling time between starting attempts for T-33 jet engines?* Here is how this question was added to the package.

A student pilot had made three starting attempts without successful ignition and did not wait the required three minutes between each start. He then attempted a fourth start without waiting the required 30 minutes following the three previous attempts and without the ground crew calling a specialist to check on the trouble. Had the mechanic on the line known the answer to the cooling time question he would not have climbed into the cockpit and attempted two more starts before proper cooling was afforded and a specialist called.

Premature parts failures in the air have been linked to a lack of standardization of procedures and abuse of equipment on the ground. For example, starter pawl failure can be caused by repeated start attempts leading to an inflight emergency of loose metal hitting the compressor.

An aircraft abort often provides a question that can be used by the Maintenance Standardization Evaluators.

Here is such a case.

An instructor pilot aborted a mission when he got no oxygen blowback on the P. D. McCripe check. His write-up of the discrepancy was subsequently written off by a mechanic as "Checked. O. K." Another pilot flew the airplane without reporting the fault. Reviewing the daily abort list, Maintenance Standardization and Quality Control checked the airplane on this series of write-ups and found a faulty seal between the hose and regulator.

Mechanics are now asked the question: "*What does a pilot check when he checks his oxygen system?*"

Teamwork of Maintenance Standardization and Flight Safety personnel has corrected errors in both operations and maintenance. Only when brought to the attention of supervisors can action be taken to eliminate potential accidents. In some cases a maintenance problem could be given a light brush-over without really correcting the situation. A well-known cliché which is an example of the flimsy solution of a problem is: "Part apparently failed due to normal wear and tear. This incident is being brought to the attention of all maintenance personnel." As the troubleshooter for the Chief of Maintenance and as a Flight Safety team member, I can assure you that Maintenance Standardization won't buy such simple ideas or opinions. Following is an incident that illustrates this search for truth.

During a routine GCA, a T-33 pilot placed the flap handle in the DOWN position in an attempt to obtain full flaps from the previously set 25° position. The aircraft seemed to stall temporarily as if the flaps had been retracted. Recovery was made and the pilot landed without further incident, and reported the flap trouble. The first maintenance comment on his write-up was, "Pilot evidently lowered flaps at excessive speed."

This did not satisfy the Maintenance Standardization

Lt. Col. Homer P. Andersen, 3505th Maintenance and Supply Gp., Greenville AFB, Miss.

QUIZ MASTERS

Q. Which way are the battery connector fiber nuts turned to loosen?
A. Clockwise. (AIC Joseph Parnell quizzed by SMSgt Benjamin Cliff.)

Q. What does the pilot check when he checks his oxygen system?
A. P. D. McCripe. (AIC J. M. Mattison and 1st Lt R. H. Johnson.)

people. They investigated the aircraft records which showed the plane had flown 65 hours since the periodic inspection, and the T-Bird had had no maintenance performed on the flaps system since the last periodic!

Inspection of the aircraft showed that both flapbolts (*clevice, An24-19*) had sheared, causing the flaps to retract. The two bolts were replaced without making any adjustments, and then were inspected in accordance with T. O. 1T-33A-2. Standardization Evaluators found that the flaps were so tight—the actuators improperly adjusted —in the UP position that it took only 65 hours for a complete materiel failure to occur.

It was decided to evaluate, or re-evaluate, the mechanics who performed the work at the last periodic inspection to find the reason for the improper adjustment. Both mechanics involved admitted not using correct procedures. They did not use the proper equipment, which was available, to accomplish the inspection and were hazy as to what was done during periodic. The answers they gave to the Standardization Evaluators pointed to a need for more intensive OJT.

Now, we must ask ourselves, "Who is responsible?" You can't point to any one person directly. If Standardization had run a complete evaluation earlier they might have found the mechanics unsatisfactory. The inspectors of Quality Control should have found the improper flap adjustment. The Periodic Dock Supervisor should have found the maladjustment. And long before that the Periodic Dock Supervisor should have conducted a more aggressive OJT program.

The concept of job proficiency evaluations for mechanics is a positive step to insure that personnel who maintain our aircraft are standardized and qualified. It simply means using the technical order or appropriate directive and its outlined procedures for accomplishing the job. This evaluation must be done on a sampling question basis because of the time involved in occasionally reviewing every detailed procedure the mechanic must know. Even when the evaluator is armed with 500 or more sample questions he may miss an important area, and this is where a constant link with flight safety yields clues for important questions.

Although there are more than 600 mechanics on the line, in the specialty shops and the docks at Greenville AFB, by selecting significant questions the Standardization Evaluators probe each individual's talents. The roving quizmasters may show up at any time. When they get right answers, they can report to the commander that mechanical proficiency is keeping up with the bird. ▲

DUSTING HOME PLATE

Major Jesse C. Wilkins
Operations & Facilities Branch, DFMSR
Norton AFB, California

How are *your* airbase facilities?
A review of aircraft accident and incident reports has disclosed that there were 23 fewer accidents in 1959 than in 1958 wherein airfield facilities were considered factors. Naturally, this decrease is very encouraging news. Airbase commanders, FSOs, Civil Engineers, AACS personnel and pilots have done much to recognize and eliminate many of the airbase hazards. However, elimination of all airbase hazards is an expensive program. Complete corrective action often requires Military Construction Program *(MCP)* funding to get the money for approach lighting, stabilized overruns, additional parking aprons, maintenance of lateral safety zones, approach zones, clear zones, and elimination of ditches within such zones.

Safety surveys conducted by the Directorate of Flight and Missile Safety Research have revealed that commanders are doing an excellent job of programming such improvements into their airbase Military Construction Program, and that Headquarters USAF is approving planned construction commensurate with available construction funds. Unfortunately, funds available for such improvements fall far short of funds required, forcing a fallout of many improvement items. Therefore, a determination of the airbase improvement which would probably eliminate the greatest number of accidents and incidents would aid the airbase commander in attaching priority to his construction projects.

Once again, overruns have exacted the greatest toll of bent and busted birds. Twenty-two in 1958 and 19 in 1959. The existence of 1000 feet of level ground at the ends of the runway has proven inadequate in itself to prevent damage to overrunning aircraft. The increased loads imposed on the nosegear of an aircraft while engaged to an arrestor barrier are so great the nosegear is usually wiped out by being forced down into any unpaved surface of an overrun. The cost of repair on a typical F-100 accident of this nature is an average of $20,000, plus manhours. Surely, pavement stabilized overruns should figure high in the priority list of airbase construction programming.

From 1955 to 1959, there were 35 accidents in which the lack of runway approach lighting systems—or inadequate systems—was a contributing factor. These accidents destroyed 15 aircraft, caused 12 crewmember deaths, injured 14 others, and junked $20,750,328.00 worth of Uncle Sam's hardware. These accidents all occurred at night. We know that the Configuration "A" approach lighting system *(Reference article, "Project Narrow Gauge" March 1960, FLYING SAFETY)* is fully capable of providing visual guidance during low ceiling, low visibility, daylight conditions. Therefore, the daytime, low ceiling approach accidents were reviewed to reveal those accidents wherein the Configuration "A" approach lighting system would have provided the pilot the approach guidance necessary to have averted the accident. It was found that the 13 accidents thus considered —during the 1955-1959 time period—accounted for 10 aircraft destroyed, 3 injuries, and a dollar loss of $3,669,687.00.

These two airbase improvements—adequate runway approach lighting systems and stabilized overruns—are the MCP items that account for the lion's share of damaged aircraft. There are many airbase improvements, such as additional aircraft parking areas, that are operational necessities, but the absence of these items has not appreciably added to the aircraft accident picture.

There are many airbase deficiencies which are correctible within the resources of the airbase commander because they require no expenditure of MCP funds. These deficiencies, while appearing minor, still account for more damaged aircraft than the overruns and approach lighting combined and require far less money to correct.

For instance, takeoff and landing are two of the most critical phases of flight. Conditions that contribute to the seriousness of an aborted takeoff or the overshoot/undershoot accident are ditches, uneven surfaces, obstructions in the overrun, inadequate approach lighting and unmarked obstructions. A simple lip between the runway and overrun can be disastrous. To illustrate: a T-33—during the final approach—touched down four feet short of the runway. The gear contacted the lip, which was six inches higher than the overrun. The landing was

completed, sans gear. Improper maintenance of the overrun area was a contributing factor in the accident, which cost $25,000.00. Why set up a built-in boobytrap at the end of the runway when a few loads of dirt, properly packed, could prevent damage?

In 1959 alone, 15 aircraft which left either side of the runway were damaged because of striking ditches, protruding concrete bases of runway lights, or other obstructions within the runway lateral safety zones. Many of these deficiencies could have been eliminated by grader activity, shovel brigade, or policing detail to remove obstructions. When was the last time responsible personnel at your base walked about, inspecting these items?

Not to be overlooked is a significant item which in days of low-pressure, lightly-loaded aircraft tires was not of much concern: This is the hazard of foreign objects in aircraft movement areas. Foreign object damage *(FOD)* to gas turbine engines still figures prominently in the Air Force cost of operation. Now, in addition to this engine damage, it has been found that seemingly small objects are capable of inflicting destructive damage to the high pressure tires required to support the tremendous gross weights of modern high performance aircraft.

The tire personnel of Wright Air Development Division have stated that 80% of tires removed have been removed because of cuts and bruises inflicted by foreign objects. High footprint pressures (tire area contacting the runway) are no longer peculiar only to fighter aircraft. Modern bomber, cargo and tanker aircraft are now operating at or above the original design weight limitations of their tires. A B-58 was totally destroyed and two crewmembers were killed because of tire failure. It is suspected, though not proved, that the tires were damaged and subsequently destroyed by runway imperfections and/or foreign objects on the runway.

This is strong argument for maintaining outstandingly clean aircraft movement areas! It takes more than argument, though, to get the desired results. It takes a lot of painstaking, honest-to-goodness work. If you have the rotary broom sweeper, use it. If you have the newer MC-1 vacuum runway sweeper, use it. If you still aren't satisfied, do as some commanders are doing: schedule a periodic shoulder-to-shoulder airfield policing. It's a sure way to eliminate this hazard.

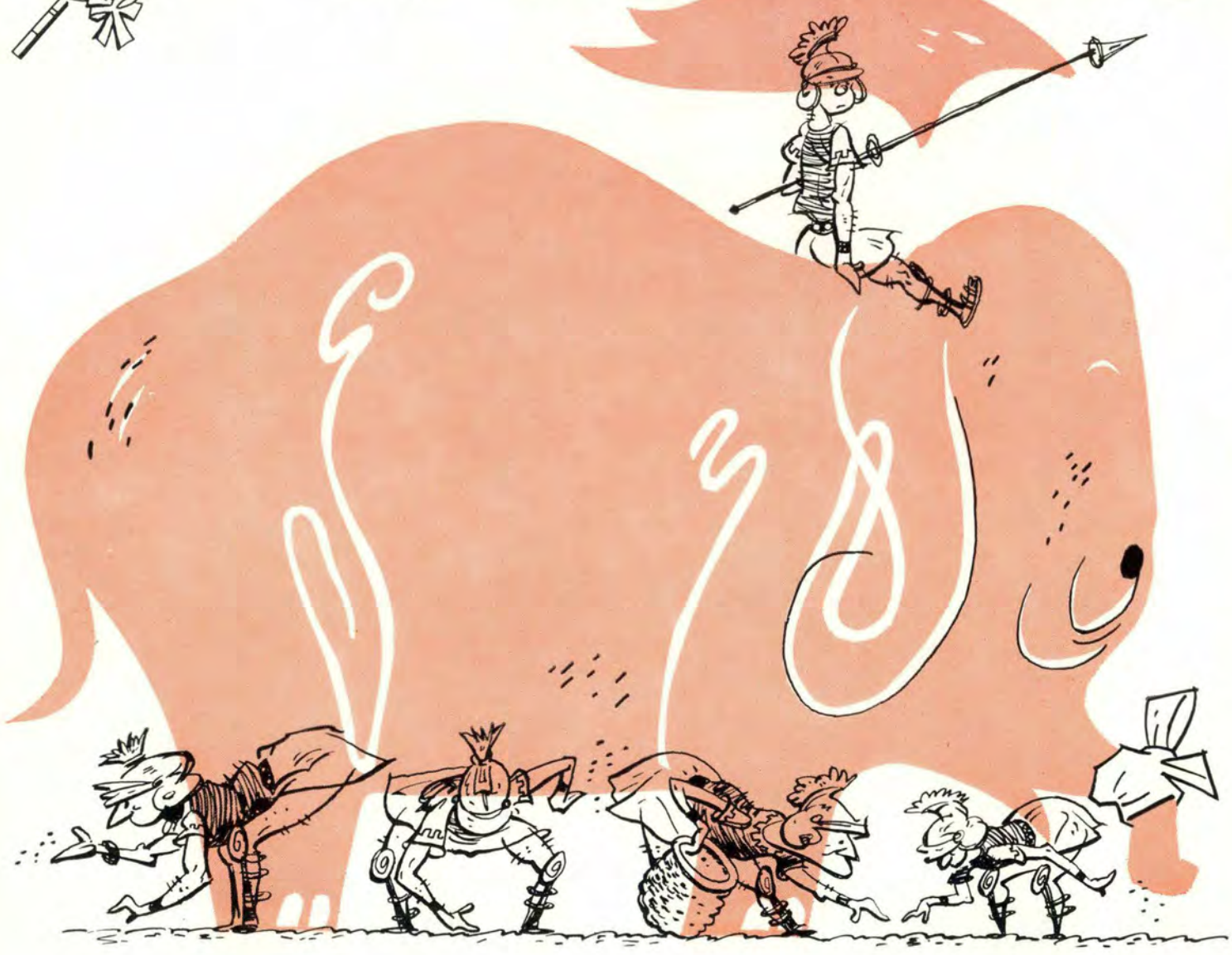
That's the picture. Two critical facility shortcomings that require MCP funds to correct, and certain irregularities and deficiencies that just plain old muscle and Yankee ingenuity can make up for, especially in aircraft movement areas and adjacent grounds. It is within the power of each base to take care of the problems in the aircraft movement areas by a little stooping and bending. If such areas are kept truly military—clean, smooth and neat—the Air Force repair bill for bent and bruised birds will experience a healthy decline. ▲

· TWO POINTS OF VIEW ·

"Colonel, I'm not the regular chief but I'm pretty sure that those T.O.'s that aren't complied with are just little bitty ones that won't make any difference."

"MAYDAY, MAYDAY, MAYDAY, Ejecting, over. . . ." woosh!

The ROMANS



Claudius Maximus, Safety Officer of Elephant Squadron 113 in Hannibal's Camel Attack Group (CAG), was faced with a terrible problem: foreign object damage (FOD). It seems that the A5Es (Light Attack Elephants) were picking up small particles of crushed rock in their trunks as they advanced along the Appian Way—admittedly a poor operating surface. At the rate the damage was being done, the CAG would be out of engines before they ever got out of Aquitania.

Old C.M., a serious-minded and industrious safety officer, was really in a bind. How was he going to tell Marcus Flavius, the CCO (Camel Commanding Officer) that they were getting into deep trouble? Just that morning "Flathead" Flavius had been giving him seven kinds of fits about the catapult officers. It seemed that they were using inferior grade rocks in their H-9 (Hemlock Branch Nine) catapults and these rocks weren't traveling as far as they should, so the whole CAG was pointing its finger and screaming about "cold" cat shots. And now this FOD problem! What next?

Well, C.M. called his EMs together (EM, the Elephant Maintenance Men) and asked them if they could think of a way to reduce this FOD problem. His CPOs (Chief Phalanx Operators) suggested that they stop using the elephants and lock them in a barn. That would be one way to cut down this FOD rate. Obviously, this wouldn't help and besides it would throw old "Flathead" Flavius into a spin and literally spin his ejection seat type basket right off the elephant's back. (This, of course, was another recurrent safety problem: Stall Spins.)

Then up jumped Lieutenant Cassius Casket, who suggested that all of the Camel Captains be issued brown shirts, and then instruct these brown shirted men to direct the attack beasts around any crushed rocks or other

had a word for it . . . . .

Capt. John A. Smith, USAF, Safety Officer, VA-113, Exchange Officer with the Navy.

foreign objects that might be found along the road. Well, this was an approach to the problem—not too good perhaps, but at least a positive approach.

So-o-o-o-o, 6000 spear-throwing men were changed to gravel crunchers, and along they went, bending over, exposing their togas and clearing the roads.

"Not enough!" exclaimed C.M. "This weakens the force. Let's think of something else."

"Sir," said AEMC (Alpine-Elephant Maintenance Chief) Caesar Amelius, "Sir, leave us like screen the elephants trunks. Man, like make the screen small enough that not even a twig can like get in."

"Huzza," cried C.M. "Huzza and Eureka! We have done it! Issue the order, make the screens, fix those parchment pickin' elephants, and I do mean like now."

Well, the screens were made, the elephants trunks were screened, and everyone was happy, but the elephants.

Under normal conditions these screens worked just fine, but when the old A5Es went into battle and had to move faster, they needed more air, and the screens kept them from getting the air they needed to operate at optimum conditions. And not only that, they began to lose weight because they couldn't even get the smallest of small peanuts through the too-fine screens.

"Oh, Claudius Maximus," said Lieutenant Casket, "I have it. Let's make the elephants trunks larger. Indeed, double their diameters. Then we can replace the screens and the elephants can get the same amount of air they have become accustomed to."

"Zounds," said old C.M. "Your astute and brilliant mind amazes me. It shall be done!"

Well, it was done. The only trouble was that all of the elephants developed pneumonia because they were taking in too much cold night air through these new and larger trunks of theirs; also, far too many of them were going on sick call complaining of painful trunks and trunk-aches. The poor MO (Mule-curing Officer) just couldn't find enough bandages to cover all of the trunks of all the elephants that were complaining of this new and strange malady. Something had to be done, and right now. What a mess! The enlarged trunks were now sucking up much larger rocks!

Well, C.M. tried all sorts of things. He attached brooms to the elephants tusks, hoping to sweep the road ahead of their advance, but the added weight of the broom debilitated the elephants performance to such a degree that they no longer were able to turn inside the enemy camels on a high side approach. Then, he thought of sending scouts out in advance, but this cost too much in money and manpower. Next, he considered hiring civilian help to clear the roads, but absenteeism (obviously a Roman sabotage effort) knocked this plan on its back. Finally, it was putting the elephants on higher shoes to clear the deck better, but this fouled up all of the boresighting systems of the A5E elephant armament technicians. Nothing—was going to work.

And then one day a small but important miracle happened. One of the Day Fighter Camel Drivers, an eager and aggressive young lad, noticed that his right inboard camel shoe was dented, and that dent was making quite a mess of the road. Why, it was chipping the heck out of the cobblestones. Best he get with it and have that shoe fixed.

He reported it on the gripe sheet and his PC (Protector, Camel) fixed the shoe. All of a sudden like there were no more rock chips on the road. Also all of a sudden like there were no more reports of FOD in the elephant squadron.

Eureka! The answer had been found. Obviously, this reduction in FOD was attributable only to the fact that old C.M. had finally taken the bull (oxen) by the horns and ground up a little lizard tongue, mixed in some centaur hoof powder, put it in a pot of liquid witches' hair, and let it simmer for four hours while he prayed to the gods of the great rock heaven. Then he drank the mixture and the miracle was performed. Man, like it was really a miracle! Since then there hasn't been a single case of elephant-reported FOD.

Only trouble is—old Claudius Maximus never knew of the final results of the miracle. He died of a strange malady unknown to man, until Dr. Claud Max of Detroit discovered that this ancient drug known as centaur hoof is known to us moderns as strychnine.

Moral: Don't go around messing up the elephants. Find out what's chipping up the rock. It's easier to cure rock-chipping than elephant trunk-aches. ▲

Ed. Note: We thought our readers would enjoy this whimsical treatment of the serious problem of FOD. And it is true that rocks, gravel, and other bits of runway debris are causing foreign object damage to jet engines. However—and this may surprise you—Air Force studies have shown that the principal source of trouble is from misplaced tools, nuts and bolts, and self-generated aircraft debris, as from a disintegrating generator or broken shaft or wheel. Aerospace Safety will have an article on this subject in a future issue.

WANTED

OFFENSE: failure to submit requested information to Aeronautical Chart and Information Center.

F. H. Redmond, Aeronautical Chart and Information Center

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The first time that you saw the "Wanted" poster in base operations, featuring a girl with a gun, you may have thought for a moment that *she* was wanted—and you may have been right at that! A second glance should have convinced you that the poster was designed to attract good Air Force types needed for chart checking. As a matter of fact, this poster was prepared by Flip E. Bird of the Aeronautical Chart & Information Center in a sneaky attempt to call to your specific attention the fact that *you are wanted* for present and future participation in the program of keeping Flight Information Publications (FLIPs) up to date.

Postcards of the return reply type were sent to each flight operations office with the posters, for the purpose of providing our office, Det-1, ACIC, with any changes to US aeronautical information in accordance with AF Regulation 100-52. These postcards carried a listing of the publications which might conceivably be corrected by you, and it is only necessary to check the little box alongside the appropriate name to say, "I want to report a correction for this publication." Check the FLIP Enroute Low Altitude, the Enroute High Altitude Charts, the appropriate FLIP Planning Section, or whatever you may wish to correct.

Since these posters were set up in base operations last fall, the ACIC has received many, many postcards containing appropriate corrections and valuable recommendations. As a matter of fact, continuance of this system is planned because of the excellent results received. Also, the U. S. Navy has adopted a similar system. A "Grampaw Pettibone Says" poster is on display at Navy Base Operations offices. ACIC wants to encourage all of you to continue to use these postcards.

Perhaps you may want to recommend a change to a publication which would make it more usable. Maybe you don't like the way the charts are presently produced; maybe you'd like to see a different bar scale, perhaps a separate listing of certain types of stations. You think of it; write it; and mail the postcard.

You may have noted that two ACIC addresses are given in USAF/USN publications for Air Force changes: one for changes to information, the other for remarks regarding inadequacy of format or portrayal. You may use these postcards for either corrections or recommendations. They will all go to Det-1, but there they will be sorted; the ones to be used in correcting the publication will be reviewed, checked and doublechecked, and processed as required.

The recommending kind will be retransmitted to the Requirements Division of the Chart Center in St. Louis for evaluation and necessary action. No objections, of course, to your sitting down and writing a long letter. If you do this, your correspondence regarding any inadequacies should be directed to ACIC (ACORP), 2d and Arsenal, St. Louis 18, Mo. As a matter of fact, if the item you are interested in would involve a major change in the program, it would be better for you to address it through channels to your major air command.

These cards have been designed to make it easy to report corrections. Postcards, you will recall, were contained in Radio Facility Charts and Inflight Data for a certain period of time, but were discontinued for reasons of economy. Many corrections and recommendations for improvement of our publication were received by this method. They were, all in all, considered very valuable, but there were a large number of postcards thrown away with each new issue. Approximately 90,000 publications were produced each time (with postcards in each), and it would have been difficult to find even half that many changes to report.

WANTED are the following three types to fill in these postcards:

- First, base operations officers and other base ops personnel, to fulfill duties outlined by AF Reg. 100-52 in submitting changes to published data covering their base.
- Second, any of you throttle jockeys who may note an error in mileage when filling in your flight plan, or an error in a published frequency, a new intersection at which you may be requested to report but which is not shown on the chart, and the like. Admittedly, there could be one or two errors. Also, there could be changes which hadn't been reported and, accordingly, were not made.
- Third, anyone with a rank lower than a *six star general* who may note an error or want to make a change in the publication.

A policy set up by Headquarters USAF and republished in our Enroute Documents reads like this:

"It is the responsibility of any person noting errors, omissions, or recommended changes to report them for correction * * *"

This is a delegation of responsibility to one and all and the postcard will make it easier to fulfill your obligation. The greater your cooperation and collaboration in this program, the more accurate and usable will be the FLIPs produced for YOU and the U. S. Air Force and the U. S. Navy.

That old safety admonition could be repeated: "The life you save may be your own"—as it would be most appropriate; but, instead, we'll just say, "Let's hear from you." ▲

The desk jockey is often tempted to overextend when he finds some spare time to finally fill up squares in his 60-2 requirements. Read this with care lest someday you are the

FIRST ONE BACK

You might be the last one out.

The accident report states: "Primary Cause—Operator Error. The primary cause of the accident was the improper pilot technique during the landing roll in that he did not use proper procedures to correct a yaw to the right in time to maintain directional control. Pilot relaxation after main gear touchdown and prior to completion of landing roll was apparent."

F-101, F-104, F-100 accident? Guess again. It's a finding from a recent C-47 accident.

Par 25, AF Form 14b, Medical Report of an Individual Involved in AF Aircraft Accident, states: "Left propeller sheared off engine, ripping a large hole in the left side of the cockpit, destroying the left half of the pilot's seat and lap belt anchor. This in turn caused a head injury to the pilot which proved *fatal* two days after the accident."

There is more than one lesson to be learned from this accident, so let me tell you about it from the beginning. First, the pilot and copilot were training with industry. You know what that means? You live and work near the industry. You are assigned to the closest Air Force Base to maintain flying proficiency. You fly during your off duty time like week ends, nights, and holidays. To the two pilots, getting to the nearest base meant a drive of 149 miles each way.

They pulled in Thursday night, but found the weather wasn't fit to fly so they went to the VOQ about 2200 hours. The next morning the pilot went out on a C-119 as an extra pilot and the copilot flew in a C-47. Before they left it was decided that the first one back would make the necessary arrangements to schedule a C-47 in order to knock off some of their 60-2 night requirements. The copilot returned about 2000 hours, found that the C-119 wasn't inbound yet, so he went to the VOQ to get some sleep. The pilot returned about 0100 and called the copilot about flying. Why not? The airplane was still scheduled for them, and both professed to feel fine. At this point the pilot had been up and active for 17 hours.

At 0305 they took off for a round robin flight, estimating 3 hours en route. They were on top of the overcast except for the climb to cruise altitude and the approaches. When they returned the weather was 400 feet overcast, 1 mile visibility in ground fog, wind from 090° at 15 to 20 K. An intentional ILS missed approach was made. On the next approach the pilot requested a full stop landing on runway 28R. Wind direction was given again—from 090 at 15 to 20 K. The pilot acknowledged all transmissions.

The aircraft touched down on the left side of the runway about 1000 feet down and to the left of the center-

line. Touchdown was made at just under 100 mph with flaps in full down position. On the pilot's order the crew chief raised the flaps shortly after touchdown. As the tail wheel was about to touch down, the C-47 veered 30° to the right and started for the infield. The pilot applied hard left brake, but the aircraft left the runway still moving along between 70 and 80 mph. Once on the grass the pilot saw a deep wide creek in front of him. He applied power to both engines and managed to parallel the creek. The aircraft skidded for another 500 feet, lost both propellers, and ground to a halt. The left prop came through the fuselage. The flight was over. For the pilot, flying was over forever.

You already know the primary cause—operator error, improper technique in landing roll. No disagreement there. But what caused the "improper technique?"

In my book, it was plain out and out *fatigue*. When the pilot touched down at 0555 hours he had been on duty for 22 hours and most of that time he had been in an airplane. Just try staying awake for 22 hours sometime and see how you feel. I know how you'll feel. You'll be tired and irritable. You'll ache all over and your eyes will feel like somebody has thrown sand in them. You can't move as quickly as you would normally and besides, you haven't the desire to move quickly. Even if your tired mind tells you to do certain things, your body doesn't respond.

There is another point to consider in the accident—supervisory error. There was a Group Regulation 60-2 which required pilots to have one night landing every 2 months in order to maintain currency in the C-47. The pilot was not current in the C-47, according to the regulation. Let's not argue as to how many night or day landings in how many months keep a pilot current. Personally, I feel current is a sorry word. We should use only the term "proficient" when talking about flying. Anyway, the Group must have written the regulation to prevent the very thing that happened, but when controls aren't followed, they might as well not have been written.

Whether or not the Group had a regulation regarding crew rest wasn't brought out during the investigation. It was known to the scheduling officer, however, that the pilot and copilot had planned to fly that night. His instructions to the copilot were to use his own discretion regarding crew rest. This is not supervision, this is laxness.

No doubt there are many aircrewmen reading this who will be placed in a circumstance similar to that of the two pilots in this accident. Maybe, just maybe, you'll remember this story. If you do, what are you going to do? Will you let the pressure get you and take off anyway, or will you say, "Let's go home and hit the sack?"

Supervisors: For those pilots whose judgment is still maturing, do you have a nice, tight, easy-to-understand regulation that will spell out crew rest requirements, or will you continue to hope they do the right thing? ▲

Lt. Col. J. L. Tissue.

This is a story of two troops in a real bind. But, by using their heads and with some fine help from the ground, it turned out to be merely . . .

SEVEN MINUTES OF SWEAT

That exalted interpreter of the anemometer, the barometer and the thermometer was right. It was a miserable day. The ceiling was up and down—up to 300 feet and down to two. Rain had turned the ramp into a lake and the runway looked like the Colorado River rapids. At that time, if I had had any say-so, flying today would have received a much lower priority than that given by the powers that be. (No pun intended.)

As a T-33 instructor pilot, I had been assigned to ride backseat with a gentleman from Headquarters. Ordinarily, this is a pretty nice job. You're kept busy and it is interesting. However, on this flight I was a lot busier than I had anticipated being.

We received our clearance, checked the bird, and bounded down the active, braving the elements—innocent as newborn. The wake that we churned as we progressed from puddle to puddle would have made the "Bluebird" and "Tempo IV" look like a couple of river barges. Forward visibility was nil and it wasnt' much better out the side. Frankly, I gave one short envious thought to the boys back in the warm comfortable office, sitting around, sipping coffee and telling stories.

The "T" broke ground when it should have; we hesitated on the gear retraction as we should have, and "slurp" we were in it! Gear and flaps came up fine and I was beginning to relax a little. We were accelerating to climb speed and I was about ready to switch frequencies to departure control when my little world of contentment came unglued at the seams. The biggest, brightest of all the world's amber lights began to glow in the lower right corner of the instrument panel. Generator Failure!

Another thought that occurred to me: if there'd ever been a time when serious consideration was given to voluntarily terminating my association with the Armed Forces, it was then.

This T-Bird was of the unmodified species, equipped with small inverters, a small generator, and nastiest of all, a battery of the short life type. Mental and manual dexterity became prime prerequisites for what could otherwise be an extremely short flight.

Still on tower channel, I gave them a brief outline of the situation and told them we were going to radar frequency for a helping hand. Good ol' tower. Good ol' GCA. By the time I switched channels, radar was already waiting, NAY, *calling* me.

Meanwhile, back in the greenhouse, the electrical demand had been reduced to the barest essentials. The UHF, the inverters, IFF and pitot heater were the only accessories draining the life from those little old 24 volters . . . up in the nose. I wasn't happy even then. "Seven to ten minutes" kept running through my mind like a death sentence in a nightmare. Radar advised me that contact could be maintained without IFF, so the APX-6 went out with the lights, boost pumps and radio navigation gear. This, then, was minimum.

The controller gave us the word that this pattern would be as short as he dared make it and he would give instructions until he noticed that we were not responding because of radio failure. We were going to respond until we couldn't hear radar any more, and then if the runway wasn't in sight we were to "ball and alcohol" it to a safe bailout altitude and, after a very brief ceremony, there would be a "parting of the ways." Our touchdown—should this happen—would doubtlessly be less spectacular than the aircraft's.

The ceiling was still far below minimums; the visibity was worse than at takeoff. I couldn't see anything then. Now the rain was coming down by the bucketfuls.

Being relatively certain that this was anything but a "no sweat" situation, I felt that it would be within the realm of reason to perspire a little. So I proceeded to do so—within USAF limitations, of course.

The approach itself was flown with at least half of my attention searching for the first indication of a failing battery. Hopes began to rise when radar informed us that we were passing through minimums and were relatively close to where we were expected to be at that part of the pattern. At less than a half mile, the vague outlines of the approach lights began to penetrate the gloom. And then we were on the runway. I was pretty sure it was a runway because occasionally I could see lights along the edge, although all other indications of this being an Air Base—such as hangars, towers or other aircraft—were hidden from view under the curtain of one of Mother Nature's vilest moods.

We groped our weary way back to the ramp, logged our seven minutes of flight time, and breathed freely and easily for the first time since takeoff.

Well it doesn't take a mental giant to figure that my situation—and numerous similar cases (who knows how many?)—presented a definite hazard to life, limb and government property. Evidently many people in the business had been aware of this because recently the ol' T-Bird was laid out on an operating table and re-equipped with a new set of electrical innards, including a bigger generator, bigger inverter, and Ni-Cad batteries. Post surgical reports show that she's doing just fine now, and will probably live to a ripe old age. All this medical attention will certainly minimize, if not eliminate, the recurrence of situations similar to ours. The jockeys who associate with the little lady can now look upon her with a healthier respect, knowing that in the realm of dependability, she's definitely coming along in this world. ▲

Capt. Clayton Silliman, 3902d Air Base Wing (SAC), Offutt AFB, Nebraska

HEY, MISTER TOWER MAN

Headquarters USAF has informed the Aerospace Safety Magazine of a new Technical Order on Brightness Setting of Runway and Approach Lights, Airfield Lighting Equipment. It is TO 35F5-3-1-1, dated 1 April 1960, and has received automatic distribution for the 35-series publications. It is also to be included in the pilots and flight crews information file, in accordance with AFR 55-23, 31 March 1960. Since AFR 55-23 was recently issued, and some time will elapse before this regulation is fully implemented, copies of this new Tech Order may be requisitioned from Rome Air Materiel Area, New York, Attention: RONST.

Generally, the Tech Order provides air traffic controllers, base operations, and civil engineering personnel with instructions for proper operation and adjustment of the brightness setting. But, two paragraphs—under the General System Operating Policies—are worth passing on to all pilots. Here they are:

- DO NOT change brightness settings during approach, landing, or takeoff, except at pilot's request.
- Brightness settings are for the pilot's benefit. The visual acuity of pilots varies. This, together with other factors, such as type of cockpit, windshield, and precipitation action thereon, requires CONSTANT ALERTNESS AND IMMEDIATE ACTION ON PILOTS' REQUESTS TO VARY THE BRIGHTNESS SETTINGS. An occasional pilot check should be made by Air Traffic Control personnel to insure that the brightness setting is satisfactory and all lights are functioning properly.

So, if the lights you see are too dim or too bright, speak up and talk to the tower man. If you can't see the lights when you think you should, call the tower and ask for a higher intensity setting. ▲

Old habits had to be discarded when this N.J. ANG unit undertook to establish 66-1. Although they had to out-Bilko Sgt. Bilko to do it, they finally put the system into operation. It has paid off for them in sixty-six different ways . . .

VIA ROUTE 66-1

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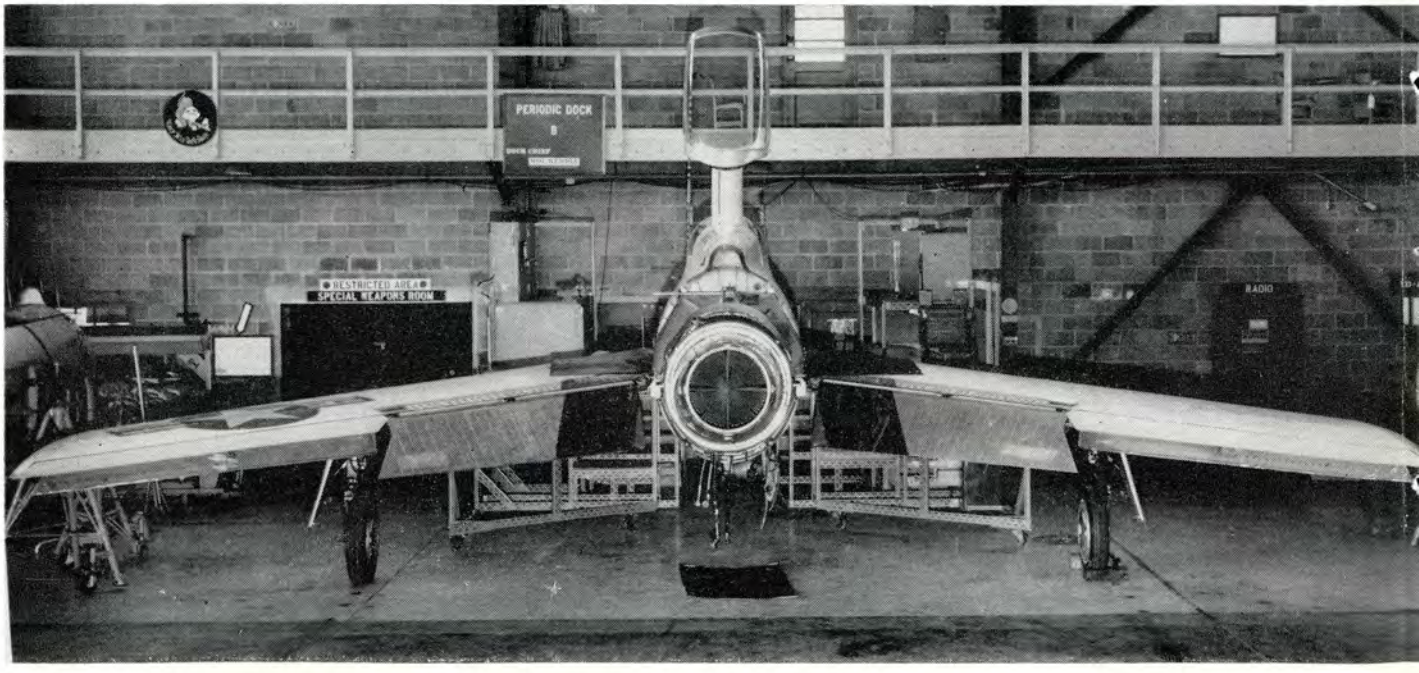
Col. Wallace L. Anken, Director of Materiel, 108th TFW, McGuire AFB, N. J.



Left, TSgt Harold Newman, Maintenance Controller, transmits and receives work orders, arrivals and departures, and aircraft schedules. Below, SSgt Stanley Janusz keeps project board up to date.

Below, MSgt Richard Spencer, Chief of the Quality Control Section, checks daily to keep the USAF Product Improvement board current.

When the AFR 66-1 maintenance setup was first proposed for the Air Guard, many of us exclaimed: "Nonsense!" We have highly skilled technicians and practically no personnel turnover, so the old crew chief method is OK for us. Besides, where would we get the personnel to run 66-1 for the 28 days a month when the Guardsmen are not available?"

This was, no doubt, pretty much the attitude and feeling in most Air Guard units, just as it was in our own 141st Tactical Fighter Squadron of the N. J. Air National Guard based at McGuire AFB. There were some dissenters, though, and they were loud in their praise of 66-1. They were old soldiers who had worked with the new maintenance concept in SAC during the Korean disagreement.

Despite the cries of protest and predictions of failure, however, we in the 108th Tactical Fighter Wing approached 66-1 with an open mind. We realized that some aspects of the new concept would be impossible for an Air Guard unit to accomplish without additional full-time personnel which we knew we would not get. Further, we saw that additional problems would be created by the fact that two of our Wing's squadrons were located at other bases—in effect, permanently deployed. Not the least of the obstacles facing us was the need to relocate certain units, to meet the physical layout requirements of 66-1. And adding to our woes was the lack of communications equipment, such as intercom sets and vehicle radios, which could make effective control and supervision difficult.

The believers, fortunately, went to work; one by one we resolved our problems and steady gains were registered. Admittedly, it wasn't easy, but we had one big asset—Brigadier General Donald J. Strait, the Wing Commander. He was one of the believers, so we had 100% support and backing. He was behind our efforts all the way.

Sometimes we had to out-Bilko Sgt. Bilko, but as we progressed, our efforts proved themselves and the results were apparent to the most confirmed sceptics. Our crowning triumph came during an Operational Readiness Test a few months back. We hacked the course in real good shape. This is not because we're any smarter than anyone else, but because we had a system that provided instant communication, support and follow-up with real coordination between all the sections of our maintenance organization.

How are we set up? Let's take a tour of our base and see just how 66-1 was implemented.

MAINTENANCE CONTROL is where we'll start. The Aircraft Maintenance Chief has been designated Maintenance Control Officer. He is responsible to the Base Maintenance Supervisor. The flying schedules, maintenance planning, work priorities, materiel control, and records and analysis are his responsibilities. Coordinating maintenance and the flying schedule had always been a sore spot. Operations always seemed to want the aircraft right now; maintenance wanted to have them ready tomorrow. Under our 66-1 procedure, the flying schedules are worked out—tentatively, of course—under three programs.

First, there is a quarterly schedule worked out when Base Operations submits to the Maintenance Control Officer the projected number of aircraft hours programmed month-by-month for a three-month period. Then, after the regular weekly meeting for programming, flying for the following weekend and the weekly schedule is worked out. To insure that the latest information is provided on aircraft status and to iron out any conceivable problems that might arise on systems, armaments, workloads, refueling, and all other flight line activities, the chiefs of the various units attend the meeting. These include: the Base Operations Scheduling Officer, the Maintenance

Below, MSgt John Potter, Line Chief, receives an aircraft status report from Crew Chief AIC Clarence Caminos. Sgt Potter immediately transmits this status report to the Maintenance Controller.

Control Officer, and the NCOICs for Workload Control, Armament/Electronics, Refueling, and Ammo Supply.

Finally, a daily schedule for flying requirements is worked out. This is done after Base Operations—not later than 1530 on the preceding day—submits a flying schedule with special mission requirements for the next day's proposed flying. If necessary this schedule can be either increased or decreased on a two-hour notice basis.

The actual maintenance planning is accomplished by the Maintenance Control Officer and the Workload Control NCOIC. They schedule the work, priorities, inspections, and modifications, based on carefully worked out operating requirements and projections. All priorities for requisitions are established by Workload Control. Cannibalization is programmed by Workload Control with the approval of the Maintenance Control Officer and the Maintenance Supervisor. The Records and Analysis Section, whose accurate bookkeeping and trend-spotting talents underlie the work of Maintenance Control, is handled by our squadron's T. O. clerks. They manage to combine both jobs with no difficulty.

WORKLOAD CONTROL, our next major management division, is conducted from a room that affords complete visibility of the flight line. This reduces RT chatter to a minimum. The Workload Control Room is the hub of our maintenance activity. All specialist shops, periodic docks, engine test run area, and operations are connected to the Room by intercom. In addition, there is radio communication with the five radio-equipped vehicles used on the line, and a radio receiver for monitoring tower transmissions. This last comes in very handy when there is an abort, a test flight, or an emergency, for example.

A fire, accident, or any other emergency on the flight line can be spotted instantly from this control room. A switch on the control panel sets off the warning sirens.

As part of this section's management and control tools, the Master Aircraft Status Board, Periodic Flow Control Board, Flight Scheduling Board, and Aircraft Locator Board, to name but a few, are kept in the Workload Control Room. The section is manned by two air technicians and augmented by two Air Guardsmen on Unit Training Assemblies (UTAs). Personnel manning with fulltime technicians, under our setup, involved a lot of thought. But we've proved, at least to ourselves, that we are making a lot more money with an L-12 (Workload Supervisor) in the Workload Control Section than we did with a Hangar Chief.

If you can't do anything else in 66-1, set this section up. It really works!

MATERIEL CONTROL—formerly Tech Supply—used to operate the tool crib and ordered the parts for maintenance. A survey of the tool crib operation proved it to be one of the largest sources of wasted manhours in maintenance. For example, mechanics lined up half a dozen times a day to draw tools, and then had to stand around wasting time while they filled out forms to get them. The forms had to be completed, and carbon copies retained in the files. And the crib tried to stock a vast array of items, most of which nobody ever used. These things and more were part of the wasted effort department.

Every item needed now is located in a maintenance dock, on the flight line, or in a specialty shop, signed for by the respective supervisor. An interesting by-

product of the new system: our tool loss dropped almost to zero the past year.

Under our 66-1 plan, pre-issue and bench stocks are binned in each shop and dock. Each item is identified and reorder levels are clearly indicated. Now we rarely run out—at least not without warning. The entire business of maintaining pre-issue, bench stocks, additions and deletions, and of ordering and binning for all shops and docks is accomplished by one Materiel Control Technician. He does this in addition to his other duties. Now our Shop Chiefs and Dock Chiefs are out of the supply business. They are free to concentrate on the job at hand.

A two-way intercom we set up between Materiel Control and our Base Supply has done wonders in expediting parts requirements and has generally smoothed out and increased coordination. The benefits of the intercom are increased, it should be added, by having another technician assigned to Materiel Control; he acts as bottleneck breaker, planner, coordinator, stock level expert, and scrounger, when necessary.

Even if you have a real plush and fancy tool crib, try this system. We don't know how we ever got along without it.

The next stop on our itinerary is the hangar. There'll be no hangar chief to greet us: there has been no need for an assigned hangar chief since the adoption of workload control. Instead, there are three docks, each with a Dock Chief of its own. Two of the docks are for periodic inspections, and the third is for unscheduled maintenance. One Dock Chief has the additional responsibility of hangar housekeeping.

While work schedules, deadlines, space allocations, and aircraft movements in and out of the hangar are established by Workload Control, responsibility for meeting these requirements is entirely on the Dock Chiefs. As highly experienced NCOICs, they require a minimum of supervision. They always get the job done with dispatch and efficiency. If they didn't, they'd hear from the Aircraft Maintenance Chief, for they are responsible to him.

The docks themselves are permanent structures, built to be self-sustaining. Each has an intercom box from which the Dock Chief can receive instructions from Workload Control, and through which he can request parts, additional help, or special information. The

docks have proved their worth abundantly; down time for periodics has been slashed because tools, bench stock, power, air, light, communications, and just about everything needed for first-rate maintenance is at the dock crew's fingertips. As an additional benefit, using the docks enabled us to eliminate a major portion of the maintenance stands and other impedimenta which use up valuable hangar space and clutter up the work areas. Each dock structure has built-in space for accommodating cowling, canopies, and other bits and pieces. There are no more loose "hunks" scattered around the hangar to booby trap the work areas.

Our shop procedures can be covered briefly by explaining that each shop has an NCOIC responsible to the Aircraft Maintenance Chief for his shop and personnel. Workload Control issues the work orders and establishes the priorities; when the work is completed, it is called in either from the radio-equipped "Specialist Dispatch" truck on the flight line or over the intercom system from the shop. There is no lost motion or misdirected effort. The completed Form 48 work orders are forwarded daily to Records and Analysis, where they are used—among other things—in setting maintenance time standards. These time standards are a "must" if workloads and schedules are to be planned with any efficiency.

The Flight Line, of course, is the focal point of any unit's activities. This is our Line Chief's bailiwick; he rides herd in a radio-equipped truck. With him, he carries a status board, the flying schedule, and a record of arrivals and departures. He keeps work order and parts requests, turn-arounds, aircraft status, and other matters up to date via radio communications with Workload Control. The Line Chief carries out Workload Control directives while supervising line work activities and personnel. He too is responsible to the Aircraft Maintenance Chief.

Finally, we can wind up our tour with a visit to the lads who may not win any local popularity contests but whose services are indispensable if you're going to insure flying *and* ground safety—the Quality Control Inspectors. We use them for just that, Quality Control, and do our best to minimize their clerical work and extraneous chores.

They monitor our U. R. Product Improvement Program, and all our T. O. compliances. In 1959, for example, the 141st Tactical Fighter Squadron submitted 108 U. R.'s—all of them honest. Many of them were instrumental in getting product deficiencies corrected. We believe firmly in the U. R. Program as an important facet of flying safety.

Another important responsibility of Quality Control is that of control agency for test flights. They brief the test pilots before and after their test flights. This agency is the only one that can release an aircraft for operational use after a test flight.

The above are not the only duties of Quality Control Inspectors. They have many others; among them are inspecting the shops, flight line, and hangars; keeping tabs on fire prevention activities; and sampling inspections of in-commission aircraft. Another highly effective function they have taken on is that of checking the knowledge and procedures of maintenance personnel. In the beginning, we were shocked at some of the answers received, and from old pros at that! Now we conduct a written exam (multiple choice) once a month for all maintenance personnel. The papers are carefully graded and the boys briefed and coached on any incorrect answers. Yes, as you'd expect, we had some gripes about these tests at first. But now the average grades are way up from what they were when we started, and the tests are now accepted as part of our overall program.

As you can see, our Quality Control Section keeps busy, but their work has paid off handsomely. One last thought before we leave this critical and productive area of Quality Control: the group must have the steadfast and enthusiastic backing of the Maintenance Supervisor to be most effective. Then give them their head. You'll see the results in a strengthened flying safety program.

Well, that's the picture. Now that the 108th Tac. Ftr. Wg. has been reorganized with a new UMD providing personnel for the 66-1 concept, our goal is to have the capability of operating identically the same as our gaining command. Some phases of 66-1 such as standardization, training, and such, are being implemented and set up for operation on Unit Training Assemblies (UTAs). We decided that activities such as these could be successfully accomplished by Air Guard personnel on weekend training.

Actually, we are operating practically all the portions of AFM 66-1 that will produce efficiency for an Air Guard unit with three full-time air technicians, 24 manhours a day. We *know* 66-1 has greatly increased our operating efficiency and, through improved controls, has enlarged our maintenance contribution to the cause of flying safety.

In sum, it is our opinion that AFM 66-1 is nothing more than a designation for a system which provides the tools and controls for establishing efficient management and supervision. And without efficient management and supervision, regardless of the skill level of assigned personnel, you cannot realize production and flying safety. We use 66-1; we like it; and we recommend it. Just give it a try and you'll probably agree. ▲

[*Ed. Note: The 141st Fighter Squadron had no accidents in 1959, and none so far in 1960 as of this writing. While this splendid record cannot be attributed solely to the adoption of the 66-1 maintenance system, it surely contributed in important measure to their success. At the very least, as the author says, it immensely strengthened their flying safety program.*]

CRASH LANDINGS

If a crash is inevitable, and you *can't* get out, face it and fly your aircraft right up to the moment of impact—and beyond. For there is much you can do to insure survival of yourself and those on board if you follow some suggestions worked out by those who learned them the hard way.

First: to crash land successfully, the wings must be level, or nearly so, and the aircraft must be under control. To put it another way: "Don't stretch your glide." Here are some brilliant examples of controlled crash landings and evidence of how they pay off. Major William Pouncey, in a C-124, had a prop that reversed on a practice go-around. He discarded the idea of heading back to home base and decided on a nearby large field. When he saw that this was out of reach, he instantly settled for the only patch of open terrain he could get to, levelled the wings, and brought the crash landing off beautifully. He flew it all the way.

Open level terrain is desirable for crash landing, but not absolutely essential. Captain W. A. Barrett had a prop reversal on final approach in a WB-29. The field could not be reached, so Captain Barrett put the aircraft into the trees—wings level and under control—and 10 of the 11 persons on board survived.

In another case, a C-124 crashed into a steep slope —wings level, under control in a climbing attitude— and all on board came through.

For those flying the single-engine types, the rules are the same. Recently, three crash landings involving single-seat fighters occurred in a one-week period. One aircraft was a few seconds after liftoff, one was on the go-around, and the other on final. Only one of the

3 CLICKS THROUGH 20

In the spring of 1958, I cleared in a T-Bird from Springfield, Illinois, to Amarillo AFB, Texas, via direct St. Louis OMNI, Jet Victor Airways, to Amarillo.

Weather over Missouri and Illinois was running broken to overcast at 1,500 to 2,000 feet, with layers to above 30,000. This, then, required an IFR climb out of Springfield and a "hard" altitude for cruise.

Things went unusually well at first. Only a short time spent in the cockpit awaiting the clearance, and a simple climbout from Springfield direct to St. Louis—with the proviso that I cross St. Louis OMNI at or above some easy-to-make altitude.

Shortly after takeoff I cleared from Springfield Tower and attempted to contact St. Louis Center. No luck—probably still too low. Climbing through 10 to 12,000 I tried again and noted an ominous lack of sidetone as I transmitted. Quickly I switched back to Springfield Tower and tried them; no luck and no sidetone, then to Springfield radio with the same results.

By this time I was climbing through layered clouds at 15 to 20,000 feet. I could see the ground occasionally through breaks and was tempted to spiral down "VFR" and go into Lambert or Scott and get the radio fixed, but the holes seemed pretty small. At about this time, St. Louis Center came through with, "AF 16937, this is St. Louis Center; give us a call please."

I ran through the channels quickly: discrete frequency, 301.4 back up, and after one-half second delay, guard channel. Still no sidetone and no answer from St. Louis on any frequency.

I switched back to discrete frequency and kept climbing, trying to remember what AFR 60-16 said about loss of radio communications. But St. Louis was soon back again loud and clear, and sounding rather urgent with, "AF 16937, if you read, give us a call."

I pressed the mike button a few times and tried to answer. Then, in disgust, I hit it angrily several times in rapid succession. No question about it, my transmitter was out.

But St. Louis came back immediately with, "AF 16937, we've just heard a series of clicks on our receiver—if you read us, click your mike button three times!"

Somewhat surprised, I did as requested and was gratified to hear St. Louis come back with, "Roger, AF 16937, we read your clicks!" Complete rapport had been established!

three pilots got his aircraft wings level and under a semblance of control before touchdown. He survived with minor injuries. The other two went into the ground, left wing down, from a stall or near-stall condition. Both pilots died in the ensuing violent impact.

One characteristic of pilots and crews stands out conspicuously in all reports of controlled crash landings: they never quit. They flew their aircraft right up to the moment of impact and all crewmembers did everything to prepare for the crash and its *aftermath*.

Knowledge and training was the basis on which the personnel involved made the split-second decisions and performed the actions which cut loss of life to a minimum. There was no time to consult the Dash One. These people knew the answers, immediately. Therefore, they lived.

The opening paragraph said that if a crash is inevitable and you can't get out, face it and fly your aircraft right up to the moment of impact—and then beyond. It's true, for just as there is more to the normal landing than just touchdown, so also, a crash landing does not end with the initial impact. The pilot may have a chance to control direction of travel with the rudder during the first part of runout.

Once stopped, there is likely to be extensive damage, debris, and fire. This is where training, knowledge and discipline pay off with the biggest dividend check in the world—*your life*. For now you must know your emergency procedures and your emergency exits, not just for your station, but for all of them. And you must have on protective clothing. Thousands of recorded cases illustrate the fact that the thinnest, simplest, lightest garments can sometimes protect the body from severe burns and irreparable damage. Gloves are of vital importance, for you may be fighting your way out of blazing hot wreckage with just your hands to serve you. Wear your gloves at all times, or have them near you, ready to put on instantly if the occasion requires.

Accident experience and reports indicate that if a crash landing becomes inevitable, the following should be remembered:

- Keep the wings level and the airspeed above stall *at all costs*.
- Don't give up. Keep flying the aircraft even if the terrain looks hopelessly unfavorable.
- Wear gloves as much of the time as possible while flying. Keep them handy if you have to take them off.
- Wear clothing that covers your whole body.
- Wear shoulder harness if installed.
- Know your emergency procedures and all the emergency exits—not just the one assigned to you by the Dash One.

The final, as well as the first lesson to be learned from almost all crash landings, is this: If everyone on the aircrew and in the support agencies had done their jobs properly, the accidents would never have happened and the need for this piece would not exist.

That's the way Aerospace Safety would prefer it. ▲

[*Ed. Note: This is a condensation of an article that apeared in the MATS Flyer, May 1960.*]

Major Glenn Crum, Fighter Branch, DFMSR

The initial contact was followed with, "If you've climbed through 20,000, give me three clicks; if not, don't click at all." I clicked three times, since I was at about 25,000 by this time.

This was all that was needed. Questions followed about my altitudes, and instructions were given to click when passing St. Louis OMNI, again when reaching assigned altitudes, and so on.

This controller was sharp! He even eased my tensions somewhat by transmitting in a chuckling voice that I was sure a man of few words. Now in high morale, I clicked a "Roger" as loud as I could.

He carried me on across Missouri in this fashion. I clicked for a passage over Vichy, Springfield, and whereever required at that time on this airway.

A few minutes out of Oklahoma City I was further amazed to hear Oke City Center come through in the blind with, "AF 16937, St. Louis has passed to us that you're coming through without a transmitter, but that you *can* receive. If you read, give *us* three clicks!"

This system has merit, I thought. Let them do the work! So I started the clicks, and then for some unexplained reason the sidetone was back and so was the transmitter. The rest of the flight was routine. But it did sound like the Oke City Controller was a little disappointed at having to work me the easy way, and, frankly I felt a little let down myself.

The drinks are on me if I ever bump into those lads.

But there's a good lesson to be learned from this flight. The ANC Manual and the FAA bible that these controllers were using didn't tell them to use this procedure. They used common sense and a little judgment on their own.

Recently, on another T-33 flight, I had *complete* UHF radio failure. This time the weather was VFR and no real problem existed. Over destination at a large military base, I circled warily, searching for a green light from the tower and for other landing clues. I tunneled my VHF omni receiver to 121.5, VHF guard channel, in hopes the tower would think to try this channel and broadcast landing clearance and information in the blind. But this guy didn't think of it. Fortunately, I didn't need more than the green light which I finally got, and a landing was made without further event.

Something to think about: When you can think for yourself, as these controllers did, you're using your head for more than a hatrack. ▲

HOME ON THE FOAM

Mr. Harrie D. Riley
Operations and Facilities Branch, DFMSR

The practice of foaming runways was originated and used extensively during the Korean conflict.

By 1952 the practice had spread to use within the continental limits of the United States. General recognition was afforded this use by articles appearing in flight safety publications and, despite the lack of technical evaluation, the practice has gained in popularity.

The use of foam has been a controversial subject ever since its first application for an emergency gear-up landing. Attempts have been made to standardize the most efficient procedures, equipment and mixtures for runway foaming. The many variables involved in any particular gear-up landing attempt preclude establishment of fixed rules for use of foam. Therefore the practice of foaming runways has been developed by Air Force operating units without official USAF guidance. The practice is an accepted operational procedure but has been left to the discretion of individual commanders as to propriety and manner of use.

The Directorate of Flight and Missile Safety Research has concurred in the use of a foam blanket on runways to minimize aircraft damage and to reduce the possibility of fire in gear-up emergency landings. Such concurrence was based on evidence gathered after a review of aircraft accident and incident reports concerning landing of aircraft with damaged or inoperative landing gear.

Foaming the runway certainly doesn't do any harm. An analysis made of 125 aircraft accident/incidents involving landing with other than normal gear-down configuration during the period 1 January 1957 through 31 December 1959 revealed that:

- When foam was *not* used, fire occurred in 18 cases.
- When foam *was* used, fire occurred only four times.

However, in these four cases, fire occurred only after the aircraft left the foamed area, or when that part of the aircraft involved did not ride in the foam. Statistically, this is good evidence that foaming the runway is beneficial in reducing the fire potential.

Generally, the foaming operations procedure is carried out by using an O-10 or O-11 crash fire truck to spread the foam blanket down the center of the runway. The widths and lengths of foam strips vary; for example, for bombers, a strip 20 to 30 feet wide by 3,000 feet long was used and it appeared to be effective. None of the bombers skidded more than 2,200 feet in the foam with all gear up. On one occasion, where only the nose gear was retracted, the nose was held up until the airspeed dropped to 50 knots. Upon lowering the nose in foam, the aircraft slid only 800 feet. In this instance the foamed area extended down between the 5,000-foot and 8,000-foot runway distance marker. In all other cases the strip commenced about 1,000 feet from the approach end.

For fighters, a strip 10 to 14 feet wide, depending on gear configuration, was the most popular. When the nose gear was in retracted position, a 10-foot wide strip was generally used. The length of the strip varied, as an average, from 2,000 to 2,500 feet.

At bases where cargo aircraft landed with other than normal gear configuration, the popular strip dimension was 40 feet by 3,000 feet, as an average.

Strip dimensions were observed from the extremes of 5 feet by 6,000 feet for a T-33, to 90 feet by 3,000 feet for an RB-66B.

From a review of the 36 instances of using foam, the following observations are passed along for consideration when contemplating the use of foam on the runway:

- The aircraft were landed with as little remaining fuel as possible.
- The foam operation was completed to coincide with the landing of the aircraft to prevent foam from dissipating before landing.
- As an average, the foam strip was commenced 1,000 feet from the approach end of the runway. Length of strip depended on amount of foam available and allowance for reserve to fight any fire.
- When only the nose gear was retracted, consideration was given to spreading the foam strip farther down the runway and holding the nose off until speed was lost—then lowering it in the foam.
- After the emergency landing is over the foam may be washed off with water or, if dry enough, swept off.

Wright Air Development Division has conducted tests to determine the effects of foam on the coefficient of friction between rubber tires and a concrete surface. The results of the tests indicated *only a 3% reduction in tractive efficiency* from the application of foam. This information should alleviate any concern about allowing aircraft to land, where necessary, on a runway before the foam is removed.

Headquarters USAF considers that it is not feasible to standardize foaming procedures and mixtures for foaming. This finding is based on the many variables involved: type and size of aircraft, configuration, speed, amount of foam available, and kind and number of pieces of equipment for the operation. Therefore, at this time, a standard criterion for foaming of runways is not being planned for publication.

In April of this year a case of foam-on-the-runway

REX SPECIAL

Rex was on a trip last month trying to find fresh material and new ideas for the troops who read the magazine. While having lunch at Williams' snack bar Rex got to yakking with a couple of troops from Laughlin AFB. One of them, Captain Robert M. Wood, OIC of Laughlin Instrument School, asked him if he ever heard of a "new" procedure for getting the landing gear of a T-Bird down when the gear handle was stuck in the UP position. The Captain explained that it was a "last ditch" effort but it would work. After listening to the various steps, Rex promised to help further the idea into an approved procedure.

A few days later we at the DFMSR heard the story about a T-33 that entered the landing pattern at Scott AFB and as the pilot attempted to lower the landing gear he had a rude shock—the handle wouldn't budge out of the UP position. After more than several unsuccessful attempts to dislodge the handle he explained his situation to the tower operator. A T-33 instructor pilot, Capt. Charles H. Hubb, whistled up to the tower armed with the Dash One and all the printed emergency procedures were tried, plus a few procedures that hadn't been printed.

By now the T-33 was down to about 80 gallons on the "gimme-gimme" counter. As a last resort, Captain Hubb had the pilot try one more emergency procedure that wasn't in the book either. This involved dissipating the hydraulic pressure then going over to the emergency landing gear system (this was similar to Captain Wood's procedure). Sure enough, all three gears came down and locked. After a safe landing some surplus equipment was found to be jamming the landing gear handle in the unoccupied rear cockpit.

Shortly after this "save" we at the Directorate heard from the Air Training Command. They have prevented five T-33 gear-up accidents by having pilots use an unpublished and unapproved emergency procedure to lower the gear when the gear handle is stuck in the UP position or when the handle is broken. They were so sold on the procedure that they were trying to get the Dash One Handbook changed to include the procedure and enlisted the help of the Directorate of Flight and Missile Safety Research. To make a long story short, the procedure *has* been published as of 3 June 1960 in the Safety Of Flight Supplement T.O. IT-33A-1EZ. You should have received it by this time. But for those who didn't read it, didn't understand the story behind it, have forgotten it already, or might not have received it, here it is:

"3. INSTRUCTIONS.

In the event the landing gear lever becomes stuck in the UP position or broken off in the UP position, proceed as follows:

a. Landing Pattern—Fly a rectangular or flameout pattern, keeping airspeed below 195 knots.
b. Engine rpm—Reduce to lowest setting possible consistent with maintaining safe flight conditions in the landing pattern.
c. Speed Brakes—Cycle continuously to reduce normal hydraulic pressure.
d. Aileron Boost—OFF, if normal system pressure indicates less than 500 psi during speed brake cycling.
e. Emergency Selector Lever—EMERGENCY.
f. Emergency Hydraulic Pump Switch—ON.
g. Engine—STOPCOCK, after touchdown.
h. Speed Brakes—Cycle continuously until engine rotation has stopped.
i. Emergency Hydraulic Pump Switch—OFF, after landing gear pins are installed."

One final word of caution: continue cycling the speed brakes to keep the hydraulic pressure from building up. Remember, the landing gear is still getting an UP signal from the gear handle. Should the hydraulic pressure build up after the gear is down, the gear could still retract. ▲

occurred at Edwards Air Force Base. The B-58 blew out 7 tires of the 8 on the right side on takeoff. After flying in the local area for 3½ hours to burn off fuel the aircraft was landed on a foamed runway. The foam was spread in a strip 5,000 feet long and 75 feet wide, commencing at the 3,000-foot marker. This aircraft was landed with all gear down. When the wheel with the blown tire rode outside the foamed area, an intense magnesium fire was observed but this disappeared as soon as the aircraft was steered back into the foam. The aircraft stopped in the foam near the end of the strip with no fire occurring. In this instance there was sufficient time to spread an ideal foam strip. In fact there was enough time to obtain additional equipment from another airfield 25 miles away to help in foaming the runway. ▲

Ed. Note: For more data, The Navy's APPROACH Magazine, Feb., 1960, has some interesting material; and for those having access to The Air Line Pilot magazine, the May issue has an article entitled "To Foam Or Not To Foam."

As a newly appointed Flying Safety Officer I've tried to kindle the interest of our squadron personnel through the use of all sources possible. DFMSR publications have come in mighty handy as material for bulletin boards and lectures. Therefore I feel it is only fair to contribute some original material from this end and hope it is useful to someone else's unit. For the lecture on aircrew professionalism, an open letter from the FSO to the Squadron Commander was read aloud. It was well received. The troops commented that flying safety in the squadron was concerning itself in their behalf. A copy of that letter follows:

Dear Sir,

During the past month I have flown with five different crews of this organization. On these flights I've attempted to be extremely observant of items concerning flying safety which should be brought to your attention. This is a report of those flights from my viewpoint as your Flying Safety Officer. It should be noted that I have made no attempt to specify flying safety items by individuals or crews; I'm merely reporting the discrepancies.

The major discrepancy which I noted is one that has been discussed and briefed many times: that of inadequate scanning, particularly prior to making turns. This may seem like a biased opinion; however, it is primarily the copilots who are at fault. They seem obsessed with their responsibilities for position reporting, fuel readings, and other "head in the cockpit" type activities, and evidently feel that they are "doing their job." Obviously, they are not aware that they can do their job so well that it can kill them—and the rest of the crew too! This is a matter I shall bring up again at my next Flying Safety meeting.

Another major discrepancy noted is the lack of interest by crewmembers in policing the ramp around their aircraft while on preflight. Every month my flight safety publications have mentioned the excessive damage caused to jet engines by foreign objects. In addition, the KC-135 maintenance officers have stated that the tires on this aircraft would last five times as long if it weren't for all the bolts and other metal objects the tires run over on the ramp. True, it is not the crew's primary responsibility to be "nut and bolt" pickers in addition to their other duties. However, a few bendovers while preflighting will certainly add to body conditioning and might be just the thing to prevent that tire from blowing on takeoff or losing an engine during a critical moment of flight.

Nonconformists are always a problem and I feel that we have a few in our organization. The worst part of it is that they do not mean to be nonconformists, but are so sure they are right in every case they would rather die than admit they could possibly be wrong. Trying to explain how to compute takeoff EPRs for the "up-trimmed" engines to an old experienced copilot just prior to lineup, after discovering he was misconstruing the charts, is not my idea of a pleasant experience. I should like to point out that I was checking his Aircraft Commander out as an IP and had no reason to be checking out the copilot. I should further like to point out that I won a double whiskey as a result of a bet as to who was right or wrong. I feel this is the hard way though. Incidentally, I haven't been paid off yet.

Another individual of the same type shook me up on final approach when he didn't apply a gust-correction factor to the computed touchdown speed for his Aircraft Commander. Final approach is hardly the time for a dissertation on Dash One procedures, particularly with an "unchecked-out AC" in the left seat. Fortunately, we both agreed on the correct procedure and got the aircraft safely on the deck.

The copilot later admitted that he'd been using minimum control speed for his touchdown speed computation and since that exceeded the computed touchdown speed plus gust correction, he did not see the need to give a corrected speed to the aircraft commander. He further stated that he'd been doing this for the past six months but that he now saw his error. Upon mentally straightening myself out after this one, I began to wonder about his remarkable success in outmaneuvering the standboard and his AC for such a long time.

While the next is not a major discrepancy, it is my observation that operation of the fuel panel is not being conducted according to Dash One procedures. The manual allows a variation of sequence when necessary to maintain a correct center of gravity. Many of our pilots are of the opinion, however, that this permits them to change a "don't" into a "do." This is not correct, in any case, and I recommend a course in fuel panel management for all pilots—as soon as possible—in view of the number of discrepancies noted here.

It is interesting to observe that all the copilots could give a valid reason as to why a certain "don't" could be overlooked during fuel management. The Boeing Tech Rep, however, who is a sharp cookie, admitted that he didn't know the answer and is still checking up on it for me. Could be this proves that copilots are smarter than anyone?

Other discrepancies are incorrect color codes being used on rotating beacons during mass refueling missions. I'll admit some receivers will grab any tanker available but there are others who read the "TAC Doctrine," and this could prove confusing at times.

Excessive use of engine ignition switches is another discrepancy noted. The Dash One states they will be used a maximum of 10 minutes, except in emergencies. I haven't noted any emergencies but have seen excessive use of the ignition switches. Personally, I don't think that burned out igniters give adequate airstarts.

Maintenance is another area for consideration. When a crew chief tells me that he has the nose strut high because on the next flight he is putting on a heavier load, I am curious as to why the pilots should bother to check the expensive strut placard in the wheel wells. I'll admit I shouldn't have requested him to lower the strut, since he broke the seal in doing so and had hydraulic fluid squirting all over the nosewheel area and its occupants. This resulted in shaking up all the line chiefs, supply people, and others, to repair the part.

Their haste and concern were understandable—the Wing Commander was aboard and engine start time was due! Sometimes it pays to be ignorant, I guess. Also, I think the crew chiefs who tell us we are allowed a leakage of six drops of fuel per minute in the boom system are confusing this with the notices in the latrine concerning the wasting of water. I'm certain these people mean well; it's just that we have difficulty rationalizing some of their statements with our Dash One procedures.

My observations of navigators and boom operators were limited since I was so busy watching the pilots. However, I am inclined to be dubious of the professionalism of a few of our SAC navigators when I see four in a row flunk their standboard rides. I wouldn't mind this so much except that my Fly Safe Program is given 50 minus points for each crewmember flunked. At this rate I'm taking two steps backward for every one forward. This makes progress a bit difficult, you must admit.

It may seem as though the aircraft commanders are above reproach from this report. However, their flying proficiency has been generally good. They are <u>good pilots</u>! But, from my viewpoint as FSO, they are not so hot, at times, as <u>commanders.</u> In other words they are failing to supervise in a continuous and complete manner.

This is understandable, in most cases, because they have com-

DEAR SIR, (continued)

plete confidence in their crewmembers. However, they should be alerted to the fact that all of us are prone to forget and since we are human, to err. Consequently, continuous and unceasing supervision is a must. I can see an aircraft commander clobbering because his wife burned his toast at breakfast, which made him mad at the world and life in general. But to allow his copilot to do the same thing is inconceivable!

Respectfully yours,
Louis J. Kaposta
Major, U. S. Air Force
Flying Safety Officer

P.S. After a month in this nerve-racking racket I know now why we've had four FSOs in the past 6 months. Who's my successor? ▲

PAN PAN FOR DF FIX

Capt. Gerald S. Thurnau, Flight Service Center, 1912th AACS, Olmsted AFB, Pa.

"PAN when lost" is included in the distress procedures discussed in the En Route Supplement. How many pilots could have used this call and saved the embarrassment of a possible bailout because of fuel starvation? The answer to this question would be something to see if all "lost" or "disoriented" flying time were officially recorded. Unfortunately, too many pilots feel it would be a reflection on their professional ability to use the distress call "PAN" or "MAYDAY" for anything short of imminent bailout. Few seem to realize or remember that, among other things, either of these two words immediately alerts control towers and one of the oldest standbys still in operation—Direction Finding assistance, commonly known as DF.

There are few, if any, areas in the United States wherein an aircraft cannot be DF fixed within a few miles of its actual position by military Flight Service or Navy DF nets. In short, almost all military and civil towers with DF capability are interphone-connected to a central coordination agency, and within minutes after a request for assistance is received, this network of towers is alerted. As the pilot works the tower of original contact, other DF stations are plotting and transmitting courses to the coordination center. A fix is plotted by triangulation and this is transmitted to the pilot. DF logs show that a reasonably accurate fix can be determined within four minutes of original contact.

This illustrates the basic mechanics of the system; however, the aforementioned four minutes delay could mean precious fuel to a jet pilot who is only "confused." To quote from the En Route Supplement, use "PAN" when your situation requires *urgent* action but is not actual distress. This call is heard simultaneously by all stations and immediate courses are taken, giving the coordination centers a workable solution to your position within minutes of your original call. There are recorded cases of pilots calmly stating their intentions to eject without transmitting the standard distress "MAYDAY"—a call which would expedite rescue through DF fixing the ejection point.

To summarize, let's use DF! It's an old system but it is a good one and it works. Practice DF fixes may be requested on Channel 14 (*305.4*); and net coordinators and station operators can use the practice. You will, at the same time, help establish your own confidence in the system. And last but not least, use your PAN and MAYDAY designation on calls for assistance. Don't wait until it is too late. Everybody associated with the DF system would like for you to *help them help you!* ▲

PASSENGER CARE

Champagne flights, free tranquilizers, chewing gum, and that doll of a stewardess all spell COMFORT. They bring relaxation, ease, pleasant flights. Of course, these are impossible ingredients for a military flight, but who's to say that carrying our own passengers couldn't be made easier by an adequate briefing on the part of the pilot? An extremely important area of flying safety is that of passenger welfare.

The pilot who mans the LSD (*large steel desk*) must meet his flying requirements in just about any available aircraft. Most of these pilots are checked out in the C-47, C-54, and other passenger planes. They are given these types to fly and are assigned a list of cargo to move. This assignment might very well mean *human* cargo.

The pilot's own inclination is often all that moves him to brief his passengers. This varies and runs the gamut between a perfect job on the part of some, to absolutely nothing on the part of others. All pilots should—and they probably do—know the importance of passenger care. Crew chiefs can attest to the fact that two or three sick or apprehensive passengers can be a hazard to the aircraft. It helps, therefore, to frequently review your briefing procedures and note if they are adequate and up to date.

Let's face it: the responsibility of the passengers belongs to the pilot. It is the duty of the crew only to carry out his orders. Military flights cannot be expected to pattern the deluxe commercial runs, but there are many ways to make them much more pleasant. What can be done? An appraisal of the passengers will help you. Then, each person aboard should fully understand what is to be expected of him, or her. Recruits, civilians, and even seasoned servicemen all need individualized care.

A standard briefing form helps to get things started. This can be included in the PIF so that all can have it available. This form can and will vary with geographical localities. The following points, explained in detail later, can serve as a guide for a sample briefing form:

- Designate a preflight briefing time.
- Explain certain equipment.
- Give weather conditions.
- If necessary, distribute contents of drug kit.
- Explain inflight checks.

First of all, the exact time of boarding and departure should be made clear to the passengers. This will facilitate the briefing of the passengers as a group; also, it gives everyone ample time to order the box lunches which are usually available. Air Force regulations state that a member of the crew or some other responsible person must accompany all passengers on boarding. Several months ago a late arrival nearly became propeller bait while running alone towards a waiting C-130. He was saved only by quick action on the part of both pilot and loadmaster.

The explanation of the plane's layout, plus the use of certain equipment, is vital. The function of safety belts and the operation of seats should be noted in detail. Everyone appreciates knowing the location of the lavatories, and of the magazines. Parachutes, if available, should be carefully explained. When on the subject of parachutes, however, tact should be used in order not to panic individuals who might construe your explanation as meaning a crash is highly probable. Recently a C-47 pilot was reported to have gone into such detail about the use of the parachute that a female passenger—an Air Force recruit, at that—was sick during the entire trip, from anticipating its use!

Emergency procedures vary with the aircraft; but it is very important to explain to the passengers the location of the escape hatches, which groups will use each hatch, and the method by which the hatches are reached and used. The procedures over land, water, the tropics, and the Arctic all differ. Each area presents a separate problem and equipment, such as life rafts, Arctic and jungle survival gear, merits special attention.

The weather is always of interest and occasional reports in this respect are usually appreciated. Also, since flights at altitude are often in nonpressurized aircraft, the passenger should be told how much moving about is allowed, and about the use of oxygen if he needs it.

The flight surgeon can often be of assistance. At our base each passenger-carrying aircraft is equipped with a drug kit, locked in the plane. About 30 minutes before flight, or as soon as possible, the passengers are questioned during the briefing and those so desiring may obtain airsickness pills. Nose drops are provided for blocked ears; APCs are distributed for the innumerable headaches developed both before and during flight, and a small supply of medicine for diarrhea is included for the occasional trip south of the border. These kits are not fixed or definite in any way and can be varied to meet the needs of the individual and of local conditions.

Inflight checks are extremely helpful in putting the anxious passenger at ease. After all, anxiety is directly related to airsickness and it makes sense to find that the more nervous and apprehensive passengers have the most airsickness. Many pilots find that occasional talks, a view of the cockpit, or even a little oxygen will ease most of the passengers. If there is any change in destination or plans, this should be made known as soon as possible.

The Air Force pilot flies minus the airconditioned, foam rubber conveniences of commercial traffic; but he does have that all-important sense of military pride and confidence. If the pilot is able to transmit this feeling to his passengers, his airborne battle is won. Remember, the key to a safer, more efficient and more relaxing flight lies in the *briefing*. Use this key properly, and the trip will be a pleasant one, for crew and passengers alike. ▲

Capt. Marvin C. Beil, USAF, MC, AME, 2843d USAF Dispensary, Olmsted AFB, Pa.

15 April 1960

REPORT OF USE OR ATTEMPTED USE OF EJECTION SEAT

Please check appropriate answer or answers, and briefly explain unusual circumstances: (Please type or use soft pencil)

SECTION A — GENERAL

1. FINLEY (Last Name) | ROBERT (First Name) | W. Jr. (M.I.) | Capt. (Rank) | 68' (Height, Inches) | 150/175 (Weight, lbs. w/equipment)

2. F—100F—10 (Acft, Type, Model, Series) | 9 miles South Spangdahlem AB, Germany (Location of Emergency) | 1 Mar 1050 (Date) | Local (Hour) | Front Seat (Crew Position)

3. Reason for jump: (If more than one, please indicate): Fuel Exhaustion ____ Fire ____ Engine Failure ____ Explosion ____ Mid-Air Collision ____ Loss of Control X Other (Explain) ____

4. Attitude of aircraft: Level X Inverted ____ Dive ____ Climb ____ Bank ____ Spin X Spiral ____ Other (Explain) Lost rudder and vertical stab. in collision, very high rate flat spin

5. Altitude (Above Surface) 11,600' and IAS (Knots) ? at time of ejection. If not known, approximate altitude ____ IAS below 100 kts.

Get Out!

Soon after collision at 39,000 feet, I made a half-hearted decision to eject but wanted to wait for positive loss of control and lower altitude. If control was not restored by 20,000 I intended to start leaving then. At about 25,000 feet the aircraft started a violent, high rate, flat spin with no hope of recovery. I told the pilot in the rear seat to "Get Out" and the canopy left immediately. I listened and waited for his seat to go, but by 12,000 feet could wait no longer—so I left. (Altitudes given by deduction and other observing pilots; couldn't read altitude or airspeed; my head was forward and my face toward the floor; was unable to sit up or look up. The delay I gave him was on time—not altitude.)

In the seconds before ejection I had sensations of desperation—perhaps even panic—and yet I felt very clear headed, recalling details of ejection and bailout procedures I hadn't thought of for years. I felt no ejection discomfort, only a relief from the forward G. I let go of the seat and the chute opened before I knew it. I think I tumbled forward one full turn before the chute opened.

It was not until after the chute opened that I discovered I couldn't breathe. With my helmet and mask still on and fitting properly I couldn't get any air so I took my mask off to catch my breath, thinking I was at about 20,000; then I pulled my bailout bottle and put my mask back on. After descending through a cloud deck I found myself directly over a large river. I unhooked the left side of the survival kit and pulled the dinghy; it opened immediately and beautifully! I drifted away from the river and the dinghy started swinging in a 90° arc below me, but I had no difficulty keeping my feet clear of the lanyard fastened to the dinghy.

The landing, in soft mud in a German apple orchard, was very easy. I unhooked the survival kit about 50 feet in the air—so I wouldn't fall on the box—and, recalling the "hands on the risers, feet together, knees bent, eyes on the horizon," I'd been taught two years prior at Survival School, I did these things and on ground contact, pulled the risers and fell lightly to my left knee. I stood up again, unhooked the harness from me, then my mask from the harness, and walked 25 feet or so to the survival kit. I was looking for the smoke flares, should the airplanes I could hear above the clouds come into sight.

I searched the entire kit and couldn't find them but did find the survival radio. I attempted contact with this, but with no success—the batteries were found nearly dead—and later found the flares in a plain paper package. The base helicopter came into sight just as I was getting a call put through to the base by telephone.

Here are some of the lessons I learned:

- The ejection seat system in the F-100 is a tremendous invention.
- If you wait until you *hear* or *feel* the man in the back seat eject, you will go in with the airplane. He had left within a few seconds of my telling him to go.
- Don't try slipping a chute to control landing spot unless you have made many jumps before. I hadn't ever jumped before and could only detect a tremendous increase in my rate of descent and no change in drift.

You've invited constructive criticism; following is my offering:

- Why not wrap flares and distress signals in survival kits in a clearly marked wrapping.
- Our Wing goofed by allowing the survival kit radio batteries to go unchecked for over a year, when a check is due every 90 days. We learned our lesson and Wing Flying Safety is taking care of it here, but how about other Wings?
- If I had been unconscious when the chute opened, I might have suffocated because I hadn't pulled the bailout bottle before ejection. Only by hard rapid breathing was I able to get any air at all through my mask. Maybe an automatic opening bailout bottle could be devised, to be activated by the force of the ejection.
- What about my knee? If it was the windscreen, as

I think, then a tall pilot might have lost his leg. Is there a height limitation on F-100 pilots? *(Ed. Note—No, there is not. Measurement of the horizontal distance between the projected position of the seat guide rails and the windscreen lip will convince any pilot that there is room for clearance provided he is in proper position for ejection.)* It may have been the alligator clip on the aircraft oxygen hose after it stretched and snapped back. This is a possibility since the other pilot was cut in about the same place and had an identical setup. I have eliminated my helmet visor as the possible cause, since there were no marks on it, and the doctor says he thinks there were metal particles in the wound.

• The time, effort and money used in training crews on emergency procedures were well spent. I'm sure that if I hadn't been exposed to so much of other pilots' ejection experience through *Flying Safety Magazine*, USAF ejection success bulletins, and such, I might well have succumbed to panic and remembered nothing, instead of recalling a myriad of details all in a logical order.

My warmest personal thanks to you, Colonel Pletcher, (Chief, Aero Medical Safety Division, DFMSR) and your staff, for the part you played in saving my life. ▲

Robert W. Finley, Jr., Captain, U. S. Air Force.

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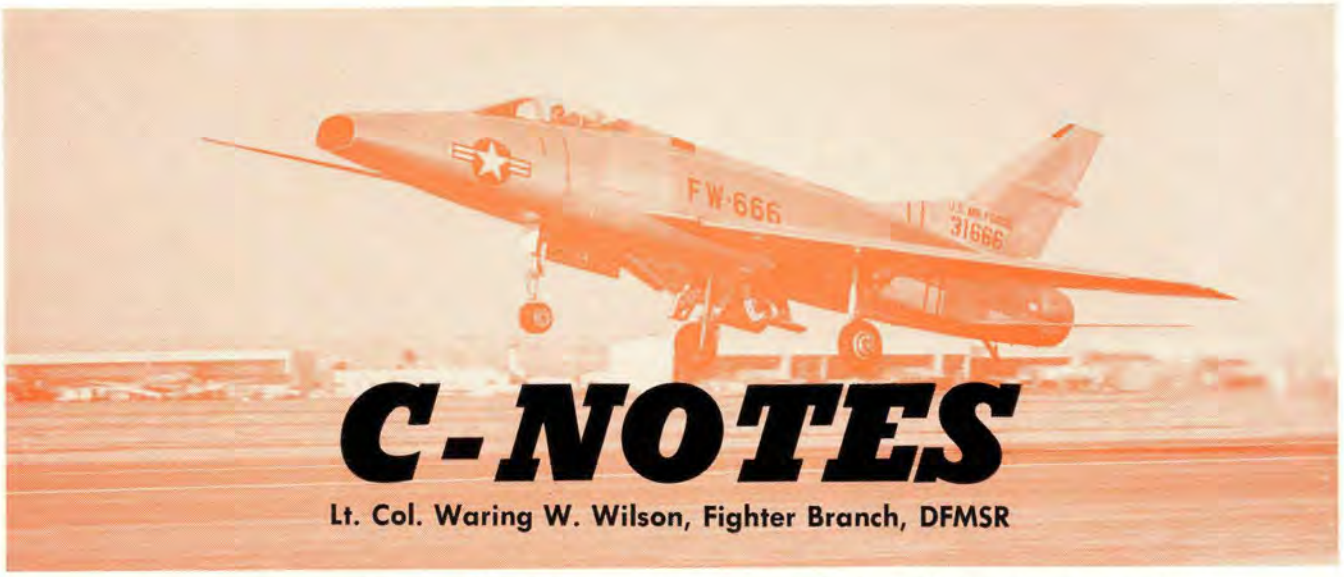

C-NOTES

Lt. Col. Waring W. Wilson, Fighter Branch, DFMSR

A new heat and vent problem has popped up its ugly head in the F-100s. Some mishaps occurred two years ago because the 16th stage extraction airbleed manifold started breaking at the engine attaching flange, allowing hot air to escape and burn through wires and hydraulic lines. This was fixed by removing some makes of ducts from service and attaching a bracket to the clamp on the end of the duct where it connects to the aircraft plumbing. The bracket dampened the vibrations in the duct and stopped that type of failure. However, the addition of the bracket set up some new stresses and are now resulting in fatigue failures of the clamp. These failures may be accelerated by improper seating of the sealing gasket or overtorquing of the clamp bolt.

When the clamp breaks it allows hot air to escape in the fuselage, which in turn burns through wires and lines, giving false indications to the pilot. The fire warning light usually comes on (not false) and the flight control pressure indicators may drop to zero. In all cases thus far, the latter has been false; however, prolonged high power operation might cause burnthrough of the hydraulic lines and actual loss of fluid and pressure. Oil pressure indication has fluctuated or dropped to zero in most cases because the pressure transmitter wires were burned.

Several near accidents have occurred because pilots have become somewhat panicky and executed some poor patterns and landings. This is understandable. One fellow we know came over the approach end at 220 knots and sat down about 4000 feet from the barrier. His drag chute worked, however, and a safe stop was made. It isn't easy to keep a cool head when it seems like the bird is coming unglued in two or three places all at once!

Some new and better clamps are in the offing, but of course these things take time. It's pretty much of a cinch that several pilots will be confronted with this problem before the new clamps are installed. What to do? The flight manual procedures are the answer. They require a check for fire and reduction of power, followed by a landing as soon as possible.

Oil pressure fluctuations or flight control failures require landing as soon as possible; therefore, when *all three are indicated,* a landing should be made immediately. If power is kept at minimum—practical to sustain flight—the escaping air is a lot cooler and the chance for loss of control is minimized. We hope it won't happen to you, but if it should, maybe this C-Note will help you analyze it and keep your blood pressure within safe limits. ▲

CHECKLIST

An All Major Commands message dated 16 May 1960 from Headquarters USAF concerning the phrase "via flight planned route," states:

- Investigation of a flying violation of Section 60.21 of Civil Air Regulations revealed that the phrase "via flight planned route" as issued by Air Traffic Control is still being misinterpreted by some Air Force pilots.
- It is necessary that all aircrews fully understand that this phrase only approves the route of flight filed. It does not approve altitudes filed. Only those altitudes specified in the clearance are approved.
- Explanation of the phrase is contained in Paragraph C 3, Section II of the Flight Planning Document. It will also be republished in the Special Notices section of the Enroute Supplement.
- It is desired that the subject matter (of this message) be brought to the attention of all pilot personnel and included as an item for discussion at future flying safety meetings.

✔

T-storm Tips. Spring hath sprung and summer's in our midst and along comes the season of thunderstorms. Experienced pilots may disagree on many points, but one fact which enjoys unanimity is . . . the best way to stay out of aerial trouble during the summer months is to stay out of thunderstorms. The best storm-avoidance tool in the cockpit is radar. The following are a few recommendations for keeping alert to T-storms:

- **Study all weather forecasts, severe weather warning advisories, and PIREPS before planning the flight.**
- **Make certain the airborne radar is operative. With it you can watch-dog the airways and spot those unexpected storms.**
- **Enroute, keep current on the overall weather picture, and particularly the T-storm situation.**
- **Never take off or land into a T-storm area. Wait out the storm or, if approaching destination, go to an alternate.**
- **If on an IFR flight plan and a T-storm looms ahead, request a deviation from your route from ATC. Don't detour the storm without having first received a clearance.**

Put the T-storm into the same category as a mountain top or another aircraft. They can spoil your whole day, so keep away.

Flight Safety Foundation, Inc.

✔

A survey begun on March 1, 1960, by the Air Force, while directly in the interest of national defense, promises to benefit the entire aviation industry, according to a recent FAA release.

Labeled "B-66 Gust Survey," the FAA explains the purpose of the four-month project as follows:

"The survey will provide information on forecasting what will happen to a high performance aircraft after a specific number of flight hours when subjected to certain known fatigue factors. The information will be applied in preventive maintenance of first line combat aircraft. The results of the program will also be made available to the entire aviation industry, and will provide realistic criteria for designing structurally improved civil as well as military aircraft. As a dividend, some of the aeromedical aspects of pilot reaction to low altitude turbulent flying will be determined."

AIR TRANSPORT ADVISORY, Air Transport Association

✔

Profit from the mistakes of others. You might not live long enough to make them all yourself.

✔

The Federal Aviation Agency proposes more airspace for VFR pilots. The agency has suggested an amendment to the air traffic rules, Part 60 of the Civil Air Regulations, which would provide pilots operating under visual flight rules with additional uncontrolled airspace above obstructions and congested areas.

The proposed amendment would provide uncontrolled airspace in the vicinity of airports beyond the control zones from the surface to at least 1200 feet above the surface. Additionally, the proposed amendment would provide at least 500 feet of uncontrolled airspace above obstructions underlying airways.

The current CAR Amendment 60-14 provides 700 feet of uncontrolled airspace above the ground to the VFR pilot in the vicinity of airports, and 1500 feet above the ground in the en route areas. However, this fails to resolve some of the problems arising from flights conducted over congested areas and obstructions, since obstructions may be higher than 700 feet or even 1500 feet. Current air traffic rules require that en route flight be conducted at least 1000 feet above congested areas. By establishing 1200 feet of uncontrolled airspace over congested areas, the proposed amendment would provide an additional 500 feet of uncontrolled airspace for the use of VFR pilots when flying over congested areas.

The rules applicable to VFR operations within control zones would remain essentially unchanged. However, the size of control zones would be increased from approximately five to approximately nine miles in order to provide sufficient controlled airspace for arriving and departing aircraft operating under instrument flight rules.

The significance of the proposed amendment is that pilots flying VFR in uncontrolled airspace during periods when flight visibility is less than 3 miles are provided with more vertical airspace so that they may fly above all obstructions within the uncontrolled airspace. This is not the case under the present regulations.

The amendment would have no effect on VFR flights when flight visibility is more than 3 miles.

FAA News Division, Office of Public Affairs.

WELL DONE

MAJOR JACK M. LARRABEE and CREW

4050th Air Refueling Wing, Westover AFB, Mass.

Aircraft Commander Major Jack M. Larrabee's KC-97 was providing aerial refueling practice for a B-52 in mid-December of last year. Aboard, as part of Crew T-40, were 2d Lt. Thomas Domingues, Jr., pilot; Capt. Batholomew K. Cobey, navigator; MSgt. Wilmer E. Hale, flight engineer; and SSgt. Winston T. Spencer, boom operator.

Suddenly, the B-52 receiver collided with the KC-97. The impact caused loss of the KC-97's left horizontal stabilizer, left elevator, rudder, part of the vertical stabilizer, and the ramming of the boom through the fuselage which permitted JP-4 fuel to escape in the aircraft's interior. Major Larrabee was able to bring the tanker back under control and back to level flight after the impact had caused the aircraft to pitch upward, then downward for approximately 1,500 feet. Because of the presence of fuel fumes in the aircraft, Major Larrabee put the crew on oxygen, proceeded with his fuel fume checklist, and initiated a MAYDAY call. After an unsuccessful attempt to obtain a radar position, the crew turned off all electrical power to prevent the possibility of a fuselage fire. Following a thorough assessment of damage to the aircraft, the control characteristics, airspeed limitations, and crew injuries were examined. Then Major Larrabee elected to land at Dow AFB, Maine, the nearest suitable base.

Upon arrival at Dow the crew manually lowered the gear and then assumed crash landing positions. Major Larrabee's assessment of the situation had confirmed that severed hydraulic lines made normal brake and nosewheel steering impossible and that a minimum of 160-knot landing airspeed was required to maintain control. With the aircraft in a no-flap landing configuration, Major Larrabee, immediately upon touching down, turned on electrical power and reversed propellers. This action, together with the use of emergency brakes, succeeded in maintaining the aircraft's directional control and stopping it within runway limits.

The performance of every man on the crew was unquestionably outstanding. Crew discipline and integrity were of the highest order and exemplary to all other Air Force crewmembers. The accomplishment of this crew reflects great credit upon the United States Air Force.

Well Done! Major Larrabee and Crew. ▲

Mal function

Things are in an awful plight
Mal commands through oversight.

Safety rate has rich aroma
FSO has strangling coma.

Mal ignores the pleas of staff
Figures he can stand the gaff.

Mal as usual figures wrong
Last wheels-up bash has hit the gong.

Two-star type descends on base
Mal descends to nether place.

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