

Interceptor

from the CHIPS



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HIGH ALTITUDE FAKER... see page 16

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spotlight

When people have no tyrant, their own public opinion becomes one.

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OUR COVER

A B-57A in formation with its long-winged big brother, the B-57D.

memo

from the **CHIEF OF SAFETY**

THE BIG BAD WOLF

"Once upon a time there was a little country girl whom everyone called Red Riding Hood . . ." the children's fable begins . . . take a shortcut and the Big Bad Wolf will get you—every time! And that's the way our accident exposure history reads for 1968. Five of nine major accidents in '68 were the direct result of our people taking shortcuts and not following the book! And, in each case, somebody got "hit"!

Every time there is a failure by flight and ground crew personnel to follow the established tested and well proven AIC procedures, accident exposure has resulted. Ten of twenty-two major accidents experienced last year were in this category. Support and supervisory personnel contributed. In the last six months, forty-seven incidents have been reported on our primary equipment in which failure to follow the book was involved.

I know it's trite to continually wave the banner for goodness, mercy, motherhood, and the "book" — but our statistics speak out loud and clear. If you deviate from the directives, tech orders, checklists, and policies, and take off on your own little shortcut through the woods — the Big Bad Wolf will eventually get you — and that's no fable!

COL. H. C. GIBSON

HOT LINE



MORE ON NOMEX

With red face and stout heart we print the following correction from Wright-Patterson:

"In reference to the article on page 4 of the August issue of the *INTERCEPTOR* entitled, 'The Orangemen are Back', the information relating to the nomex fabric flying suits is in error. There is no such article as 'solar weave nomex'; however, there are several flying suits in OT&E which are made of a lighter weave nomex treated with a softening agent to reduce skin irritation for the wearer. Various problems with the overall nomex suit program most probably make it at least one year before the equipment is available in the field.

"Comparison of the present cotton flying suit to the nomex article has shown that the nomex suit has a 3 to 5 second increase in exposure time to a flash type of fire. Nomex has shown it will not support combustion and will hold up until temperatures in the 750° to 800° region are reached. Since the temperatures generated by a JP-4 fueled fire far exceed these limits, nomex should not be referred to as 'fire-proof' or 'flame-proof'. Even references to the material as 'far superior' or a 'vast improvement' should be made with hesitation lest persons assume a degree of fire protection that does not in truth exist and exceed exposure limits inadvertently."

So much for "State-of-the-Gaunkin" art.

F-102 AND LANYARDS

We've heard through the grapevine that some Dewco pilots are hooking up their zero delay lanyards. It's our understanding that all F-102s have now been modified with the high impulse rocket egress system. The zero delay lanyard is not, repeat not, to be hooked up with this system. Seat/man/chute involvement will occur.

Misunderstanding may have involved from a change to the F-102 Dash One. A Safety of Flight Supplement instructed pilots not to hook up the lanyard with the rocket seat installed. A change to the

basic manual eliminated the supplement, but in the process the instruction on the lanyard was not included.

RETURN TO THE COCKPIT

Have you recently returned to the cockpit or are you pending return? If so, you should review all your insurance policies and be absolutely certain that you are covered while performing flying duties. If you aren't certain, you should contact your insurance company for clarification. Many commercial companies have flying clauses in their policies, including those companies who cater to military personnel.

FIGHTER PILOTS ANNOUNCE CONVENTION PLANS

Plans for the second annual awards banquet of the American Fighter Pilots Association were announced this week by Walker M. (Bud) Mahurin, AFPA president.

Guest speaker for the event which will be held at the Marriott Motor Hotel, Houston, Tex., Mar. 21, 1969, will be Senator Barry M. Goldwater, R-Ariz. Master of ceremonies for the event will be Bob Hope.

As in the past, this year's event will be held in conjunction with the Air Force Association's national convention.

At the convention held in Atlanta this past spring, the American Fighter Pilots Association's banquet was a complete sell out with over 700 attending. Maximum attendance at this year's banquet is being held to 1,000.

Highlights of the banquet will be the awarding of trophies to various outstanding units in each of the services.

AFPA members desiring to attend the 1969 banquet are being encouraged by Mahurin to contact the association at P.O. Box 90003 Airport Station, Los Angeles 90009.

OPERATION COOL RIDE



Our Air National Guard units have various ways of completing the annual field training requirements. We think that the 181st Fighter Group, Ontario, California, undertook an exceptional challenge in 1968. They were selected to deploy, lock, stock and barrel to Alaska for ten weeks of training. From a safety standpoint, this increased potential exposure to accidents or malfunctions. The success and safe completion of this operation only verifies the degree to which men and machines can perform when good heads-up planning comes first.

In an interview with Major Bob Boehinger, Group Flying Safety Officer for the 181st, we received the following account of the preparation and performance.

"Initial reaction to the news

that the 181st Fighter Group (Air Defense), Ontario, California, had been selected to go to Alaska for summer camp was greeted with considerable enthusiasm among the 'Indians,' considerable skepticism among the 'Chiefs.' Why?

"One reason for skepticism was that the 181st had not had a summer camp dispersal since 1960. On top of that, the last seven years had been spent under the 'Texas Plan' type of summer camp (i.e., fragmented sections by section year around camp at home station.)

"Another reason for the 'Chiefs' skepticism may have been some talking of the complexity of the move which had escaped the attention of the 'Indians.' For instance; a list of the agencies which played an integral part in the success of the move would include

the Adjutant General and his staff of the State of California, the National Guard Bureau, ADC, Fourth Air Force, the 28th and 27th Air Divisions (ADC), the F.A.A., the Canadian Air Traffic Control, the RCAF Station at Conoco, the Alaskan Air Command, the Twenty-first Composite Wing at Elmendorf, the Air Force Reserve, the four Air Guard Transport Groups which transported supplies and people both ways, and the 317th FIS at Elmendorf, our hosts for the stay in Alaska.

"A few people were neither optimistic nor skeptical. They simply asked, 'What purpose will this move serve that cannot just as easily be served at home?' For those who saw the 'Big Picture,' the answer was obvious. This was to be an exercise to develop and



There are no missing links between the Commander and the Safety Officer in this organization.

prove the unit's (or any like unit's) capability to lead and move rapidly to a forward operating area. Once there, the unit must immediately establish an operational capability. This, in turn, would insure that the unit and the individuals within it were fully trained, operationally ready, and immediately available to perform their assigned wartime tasks. It would add just a little more flexibility to our overall defense capabilities.

"In operations the movement was approached much as one approaches a cross-country flight. Everyone rushed to the big wall map. The map told the story loud and clear. The trip would be twenty-two hundred miles, Ontario to Elmendorf direct, with few alternates after departing the 'Lower 48'. Obviously this was going to take some planning.

"Safety is paramount." It was made quite clear from the beginning that this old adage definitely applied. The personnel realized one fact was evident; that this movement done correctly and well could be a great learning and training experience for all the people concerned. It turned out just that

way. For the 'Weekender' it was a learning and confidence building experience in job performance away from home. To the 'Wheels' it was a great lesson in planning, coordination and cooperation at all levels of command. It may be said that everybody was exercised, everybody was trained, and everybody learned just a little bit more about the whole defense operation and his place in it.

"One of the first concerns was the movement of the two TF-102As, fourteen F-102As, and three T-33As. These aircraft exhibit different cruise ranges, optimum operating altitudes, and performance characteristics. Yet, they all had one thing in common; they had twenty-two hundred miles to travel. Operations formulated a set plan to insure the safe transit of these aircraft and crews:

First: The Group Commander and Squadron Commander flew the route in a T-33A via Comox and Whitehorse, Canada to coordinate turn-around operations, minor maintenance, customs, air-sea rescue, fire and crash protection, and a myriad of other details. In addition, they looked the route over first hand. Since the T-33As and TF-102As couldn't make the leg from Comox to Elmendorf non-stop (1150 N.M.) and would have to go into Whitehorse, it was decided to send all of the aircraft through Whitehorse. It might be noted here that from the experience going outbound, it was decided on the return trip to send the F's nonstop Elmendorf to Comox. They all made it 'no-sweat' under essentially no-wind conditions. It was determined that a maximum ten knot headwind could be tolerated provided Comox was VFR. A go-no-point was established for fuel reserves and aircraft with less than a predetermined

amount of fuel at this point would divert to Whitehorse. Instructions were relayed to the 'Duckbutt' (Rescue) aircraft on station near this point.

Second: Special topography maps of the entire route of flight, and all of Alaska were assembled and on display around the squadron for several months prior to the trip.

Third: The simulator was set up so that Comox, Whitehorse, Elmendorf, King Salmon, Galena, and Eielson approaches could be flown by the pilots prior to departure. These were mandatory simulator sessions for all jocks.

Fourth: For two months prior to departure the pilots practiced short field landing techniques at home station preparing in particular for the Galena and Whitehorse operations. Drag chute failure stopping techniques were emphasized. These sessions were probed and supervised by an I.P. in Mission Control.

Fifth: Some of the more cross-country oriented jocks gave lectures during Unit Training Assembly on long range cross country techniques for the Deuce. Believe me, it isn't all in the Dash One. The trip from Ontario to Comox (approximately 3000 N.M.) provided the pilots with an indication on how their particular bird would react and consume fuel.

Sixth: The Alaskan Air Command sent Major Lowell Crawford down to brief the pilots on Alaskan operations, procedures, regulations, etc. Seventh: With the aid of ADC, August weather patterns for the route were analyzed, especially for prevailing winds aloft and expected weather at selected bases. Believe it or not, the computer was right. Winds and weather were as predicted.

Eighth: Survival kits were packed and set up for colder months

country operations. Here, someone got lost. It didn't rain one day while the unit was in Alaska, and the temperature stayed in the seventies.

Ninth: All the pilots made out individual flight plans, even though they were to be given a standard route and flight plan to follow. This served a dual purpose: First, it gave the aircrews confidence in the standard flight plan through comparison with their own. Secondly, it gave operations twenty-five verifications of their standard flight plan.

Tenth: An HC-97 rescue aircraft from the 303rd Air Rescue Squadron (Air Reserve), from March AFB, California, our neighbors, provided continuous "Duck-butt" (Rescue Aircraft) coverage. The aircraft stayed in the vicinity of Barke Island until all the fighters had made it safely through.

"Once situated at Elmendorf, the operation normalized as the standard intercept missions were flown. The pilots of the 106th FIS flew hand-in-hand with those of the 317th FIS. This proved to be an excellent learning experience in intercept procedures. The 317th FIS training program is very realistic. The pilots got their share of M.I.'s while at Elmendorf, the squadron flew 158 sorties for two hundred and seventy-three hours in seven flying days. Yes, the middle weekend was taken off for sightseeing, hunting, fishing, etc. The Group participated in a NORAD/Alaskan exercise on the 12th and 13th of August and collected twenty-eight MA's in twenty-nine attempts. In all, the Group flew two hundred and forty-eight Deuce sorties and forty-two T-Bird sorties for five hundred and thirty-three flying hours between the 2 August departure and the 17 August return."



ANG "Deuce" over Mount McKinley, the highest mountain on the North American continent

There isn't much that can be added to a success story like that. Five hundred and thirty-three accident/incident free hours in fifteen days; two hundred and forty-eight deuce sorties; twenty-eight out of 29 MA's in a NORAD exercise. This kind of performance spells out just one thing — professional Efforts to make safety paramount quite often leave the impression that operational effectiveness has to suffer. It is accomplishments like "Operation Cool

Ride" that demonstrate once again that a safe operation is the welcome by-product of operational effectiveness. The planning and execution of "Operation Cool Ride" was destined to produce one result — success! Many of us knew that the ANG is no longer a week-end "flying club". A tip of the old beret to Colonel Don Fribbe and his lads for confirming the ANG's professional image. Congratulations on a "hot" performance of a "cool" ride. ★



The 106th in place at Elmendorf AFB Alaska

TO GO OR NOT TO GO

?????

by MAJOR ROYCE MOSER, JR. USAF MC • Office of the Command Surgeon, ADC

In the August 1988 issue of this magazine, two crew members assigned to the Headquarters ADC Safety Office described the problems they had faced on the return portion of a cross-country. When the gyros went out, they wrote it up and BGN'd. The next morning they found the repairs had not been completed, and even worse, it did not look as if they would be completed that day. As a result, these intrepid aviators had to decide whether to accept a safety of flight hazard and make the return trip with the malfunction, or agree to an extended delay that might result in yet another BGN.

To avoid creating unbearable suspense in the few of you who did not read the article, we note that although the temptation to fly the bird back home admittedly was quite strong, the crew members successfully fought the desire and delayed the flight until repairs were made. (After all, think how it would look for safety types, and from Headquarters yet, to have an accident with that kind of background!)

While these of us interested in flying safety would hope this decision would be made every time, experience has repeatedly demonstrated that all too often the go decision is made. Unfortunately, the details of these decisions frequently come to light during the subsequent accident investigation.

The situation we are dealing with is get-home-itis. In spite of continuous efforts to overcome this

condition, the hazard is still prevalent today. Like many other hazards, this situation can either be very obvious or extremely subtle. Further, the responsibility for ensuring crews into get-home-itis may rest on people other than the often-blamed pilot.

Recognition of the problem is easy when a part breaks as you are preparing for the return trip, as in the example above. In such situations, just recognizing that get-home-itis exists will usually result in an appropriate course of action. Less obvious cases of this condition can be just as hazardous and have the same end result. These less obvious situations usually involve malfunctions of the pilot, and it is the malfunctioning pilot who must recognize his own problem.

An example of such a situation was described in the November 1985 INTERCEPTOR, involving the so-called "Champagne Flight." In this flight, after repeated delays, the pilot took off to make a cross pick-up. Takeoff time was finally 1733 rather than the originally scheduled 0730, and arrival at the pick-up point was 2240. In spite of the hour, the pilot woke the other crew member and the gallant young aviators departed for an intermediate stop on the way back home. It was later related that the trip was continued to the intermediate stop so there would remain only one more leg to home the next day. Incidentally, some friends were staying at a motel at the intermediate

stop. The resultant party broke up at approximately 0300 after some alcohol was consumed. After rising at approximately 0600, the crew had a quick breakfast and then returned to the motel where additional beverages were consumed. In spite of the effects of alcohol and inadequate rest, the decision was made by the crew to continue home, rather than admit they weren't physically ready to fly the plane. It can reasonably be assumed this decision was tempered by concern over subsequent official action, as well as the desire to avoid admitting to fellow pilots that they just couldn't back a program.

On preflight, the fact that the plane was not serviced with oxygen was either missed or ignored. The flight consequently had to be made at a fuel-wasting lower altitude rather than the one initially requested. When the TAGAN went out, they relied on center for guidance. When the center in question provided an incorrect heading, the crew confidently accepted it rather than cross-checking their position. As a result, the aircraft flew 100 miles off course before the error was detected. At 50 miles out, the pilot exclaimed "We are on emergency fuel, but no sweat." In spite of the negative precipitation, the plane ran out of fuel before base was reached, with the impact point several miles from the runway. Fortunately, both ejections were successful, but the resultant administrative action markedly more severe than any of

might have resulted from the crew admitting that they couldn't continue on. Thus pilot malfunctions, combined with the desire to get home, set the stage for another "get-home-itis" accident.

Admittedly, numerous other factors, such as fatigue, may be involved in these cases and these other factors in and of themselves could cause an accident. But detailed investigation will usually reveal the underlying cause of the accident was this overriding concern with getting home. Even in the well-rested pilot, thoughts directed toward home can result in disaster. Pins and lanyard were called during takeoff preparations for a repeatedly delayed flight back home. When the plane crashed on takeoff, the pins were still in the seat and the lanyard was not connected. No one can say for certain now, but the question must be raised: did concerns over getting home invade the pilot's thought processes to the point the checklist was completed by rote, rather than by insuring all items called were actually completed? This failure to use available brain cells may also account for failure to note the absence of oxygen in the champagne flight, even though the checklist was completed. These thought lapses are difficult to control and can happen in anyone. Although particularly likely to occur when fatigued, they can occur in a man in otherwise optimum condition who is concerned about something else, such as getting home. A high performance aircraft is particularly unforgiving of these lapses.

Get-home-itis can set the stage for an accident by producing pilot malfunctions in other devious ways. These include skipping meals or (here comes the commercial) flying with illnesses you know should be treated by your friendly flight

surgeon. Another way is by biasing your judgment: you take off into weather conditions where national evaluation would dictate a delay. Poor judgment, due to such biasing, is one of the most frequent factors noted in get-home-itis.

A classic example of poor judgment, involving one of the "readily recognized" problems referred to above, was that of the T-bird pilot who "had" to get back to stand alert. His return flight had been repeatedly delayed due to various problems. Once everything was literally thought to be ready, he then found the attitude indicator did not work. Rather than delay the flight further, the pilot took off and the flight went as planned until the aircraft entered weather. The pilot's final transmission was "This is \overline{N} with a real bad case of vertigo and a real good chance to ora . . ."

While identifying factors that can be involved in a get-home-itis accident, it is equally important to realize that the fault may not always be solely that of the pilot or crew. How often do you commanders caution a pilot to make certain he is back in time for his alert tour, "or else"? Despite your admittedly heavy scheduling commitments, you must be on guard to avoid placing crew members in a position where get-home-itis is a natural development. The worse aspect of a "supervisory error" finding is that you are left with a long time in which to wonder whether you really had to set the pilot up for an accident. Scheduling personnel face the same hazard when they "talk" a crew into making a quick out and back, while at the same time reminding them to make certain they are back in time for their next alert or flight commitment. Maintenance, and particularly transient maintenance, gets into the act with a failure to ob-

tain a needed part or to make a repair in the time promised. This often results in the aircraft being delayed to the point the push is on to get back home before they run out of crew duty time and have to face a night away from home.

If get-home-itis can be such an involved, difficult to recognize condition, made up of any number of factors, and often produced by people other than the primary crew, what can be done to overcome it?

Repeated efforts have demonstrated there is no easy solution to the problem. Basically, correction must remain with the pilot. When he sees a situation developing which is ripe for get-home-itis, he must realize he is dealing with a dangerous, subtle hazard. Malfunctions of the pilot must be searched for as carefully as malfunctions of the aircraft. He must double-check his actions and decisions to see if they are biased by his desire to get back home. If he finds it necessary to scrub the flight and face the wrath at home, he will at least have the satisfaction of being around to explain the delay. Supervisors and support personnel must recognize and accept their responsibilities. A commander who again and again places his men in a situation prone to get-home-itis must realize he is fighting long odds. It is only a matter of time until an accident provides another example of just how hazardous this situation is.

Consequently, the problem must be recognized and met at all levels of a flying organization. Must we continuously act as if everything must be done today, because there is no tomorrow? If we do, it may result in exactly that situation for some unfortunate crew.

EPHLOGUE: Now we recognize what motivated Bill and Joe to pull that stupid trick last month. Will we recognize it in ourselves next Friday afternoon at Wayout AFB?

EXPLOSIVE SAFETY

by ME. H. J. RAFAEL • Ammunition Inspection Specialist, ADC

Explosive safety procedures are of paramount importance in operations involving explosives. Although some people think explosive safety is a new program, it has been in effect since 1920 and was made official by enactment of Public Law 1628, dated 1928. This law was established when a series of fires and explosions raged for several days at a Navy Ammunition Storage Depot, Lake Denmark, New Jersey. Thirty-one people were killed during this disaster, and it caused \$5 million dollars in property damage.

This law required the appointment of a "Munitions Board" which is now known as the Armed Forces Explosives Safety Board. This board is responsible for:

- Preventing explosive accidents.
- Assuring that an acceptable degree of safety is provided life and property inside and outside military establishments from the inherent hazards of ammunition and explosives.
- Minimizing damage and destruction in the event of an accident.

From our past and present experience, we find that the public and press will not accept death, injuries, or property damage caused by an explosive accident. In view of this, it is imperative that the explosive safety program be given your utmost attention.

Deputy Chief of Staff, Materiel, Headquarters Aerospace Defense Command, is responsible for establishing and implementing the Explosives Safety Program for ADC. Following is the ADC explosive safety functional chart:

AEROSPACE DEFENSE COMMAND	
RESPONSIBILITY	COORDINATION
HQ ADC ADMDC ADMME ADMME-D ADMME-DC	ADCSA
NUMBERED AIR FORCE MME-D	CSA
WING/GROUP/FIS MME	CSA

Two ammunition advisors are assigned to Headquarters ADC to direct this program. ADCR 130-1, dated 24 July 1968, establishes policy and assigned responsibility for the program within ADC.

There are two ammunition advisors assigned to each numbered air force. Whenever units in the field encounter problems, they are encouraged to contact the numbered air force ammunition advisor for assistance. We want units in the field to know that the ammunition advisor's sole purpose in life is to assist in the munitions program and that he is not an inspector. This headquarters realizes there are enough inspectors in the field, so this is one reason we are leaving the inspections of the munitions activities to the Inspector General (IG). The ammunition advisors at the numbered air forces have had at least 15 years experience in all facets of ammunition and explosives operations before being assigned to the ADC Explosives Safety Program. We encourage units to call on them for assistance and use their experience.

It is our desire to give you the best tools to work with, such as the ADCRP 136-1, Explosives Safety and Ammunition/Explosives Material Quality Assurance Program, and AFM 127-100/ADC Sup 1, Explosives Safety Manual. With these publications we are constantly trying to keep you up to date on the latest information and the best and safest way to accomplish your ammunition/explosives operations. In the past three years, ADCR 136-1 and AFM 127-100/ADC Sup 1 have each been revised at least three times in an effort to furnish current guidelines for the explosives safety program.

Great strides have been made in the explosives safety program at each ADC unit, and continued advances are encouraged. It is only through the interest and efforts of the personnel at each ammunition work center that our ADC Explosives Safety Program has progressed in an outstanding manner. Continue the good work and don't forget — if you have any new ideas or if you are having any problems, contact your numbered air force ammunition advisor for assistance.

The intent of the ADC explosives safety program as outlined in ADCR 136-1 is to train and familiarize all personnel with the hazards involved when explosives are not handled in accordance with all safety criteria. Explosives safety NCOs are assigned to each work center wherein explosives items are involved. The NCOs are all 7 levels in AFSC 461X0, weapons mechanic; 464X0, EOD technician; 366X1, AIM missile mechanic; and personnel of other AFSCs handling munitions items (such as egress, small arms range, security police gun room personnel, etc.). We have also established a requirement to send personnel from

each of these work centers to the Explosives Safety Course at Lowry AFB. The course for NCOs is 3AZR34150-1, Headquarters ADC was instrumental in having the explosives safety course established for NCOs. Since the course was begun, 93 attended the course in FY-67, 54 attended the course in FY-68, and so far, up to 1 January 1969, 32 have attended in this FY.

To enhance the explosive safety program, it is imperative that technicians continue to review all explosive operations to insure that every aspect is conducted with absolute safety. Waiving the safety requirements is not always the answer. A waiver should only be considered when all aspects have been carefully reviewed and it is impossible to conduct the operation without a waiver.

We continue to receive requests for explosives safety waivers that are for convenience only and not for an operational necessity. Some people in the field have been highly perturbed with us at ADMME-DC because we have turned down some of their requests. When we turn down waivers we are not just try-

ing to be hard to get along with, but instead we are trying to look out for your interest.

Should an explosive mishap occur, it is our prime concern to make sure personnel and equipment are protected from injury and damage. The cardinal principle to be observed in any operation involving explosives is to limit the exposure to a minimum number of personnel for a minimum time, to the smallest quantity of explosives consistent with an efficient, safe operation. So, prior to initiating a request for an explosives safety waiver, insure that all facets of the operation are analyzed to make sure it is an operational necessity and that it is impossible to reduce the number of personnel and explosives items.

Whenever waivers are granted, continued aggressive action should be taken to alleviate the deficiency and extreme care should be taken that all safety criteria are enforced.

Command-wide attention to the explosive safety program cannot be overemphasized, for without it there would be unnecessary injuries, loss of life, and material. ★



2.75" F4AB accident during shipment

ENTER MURPHY



Most of the accidents and incidents we hear about are those which occur during various phases of flight. This is true because they are usually the most spectacular and catastrophic. But there are other aircraft mishaps which take place from time to time and which are just as fraught with danger to life and property. We are referring to the little known and sometimes less cared about "pings" which happen during the course of B&B (remove and replace) on the flightline.

Everyone has checked over the crew chief who has tacked into the only brick wall on the ramp, or tok-toked at the specialist who was clutched by a speed brake. An impersonal shrug of the shoulders or some remote comment about stupidity might be appropriate if we all had hip-pocket guarantees that we would never find ourselves in the same situation some day. But that isn't the way it is. Murphy's Law is pretty formidable. Like the sarcastic prophecy that "there are those who have headed gear up and those who are about to head gear up," so, too, "there are those who have installed it backwards and

those who are about to install it backwards." Unfortunately, this has proven to be a fact of life on more than one occasion and has convinced a lot of people of the inevitability of flight line goofups.

Now we realize that the troops who keep 'em flying are human just like everybody else. But we don't go along with the idea that, because of Murphy's Law, Joe Wrenchbender on an appointed day at an appointed time will close a canopy on his buddy's ring finger and that nothing can be done to prevent it. If that were true, there would be a fortuneteller on every base.

The fact is that anytime someone is working in, under, or around a piece of hardware which weighs twenty tons or more, accident potential is present. Whether an accident actually takes place depends on the correctness or incorrectness of the work being performed. Past mistakes have been recorded and procedures established to make conditions as safe as humanly possible. Shortcuts or lack of knowledge will result in disaster eventually. It's just a matter of time. With very few exceptions, mainte-

nance accidents can be traced back to a failure on someone's part to follow procedures or to use a checklist. And that's the reason Murphy's Law enjoys such a success rate.

There's no denying that the flight line is loaded with pressure to get the birds in commission quickly. Using the checklist or Tech Order may seem to slow the pace too much, especially if the job has been performed a hundred times over. So, flap goes the numbers book; enter Murphy. The rank and file of ground accident victims increases once again.

With plenty of written guidance available, anyone would be hard-pressed to give a reasonable explanation for overlooking a critical step while installing, for instance, a flight control. Accusations of criminal negligence may not fully apply for the reason that rigid use of procedures and the checklist has not been the base policy. In that case, the supervisory function must share the blame for malpractice. The guy who does the work isn't always the lone guilty party. He could have been led astray by a big attitude on the part of the Boss. But that's a hard case to prove,

daily.

When you add up all the possibilities, you can easily accept the idea that right now a bird is sitting on a flight line somewhere with a part stuck in backwards or that a faulty procedure is about to bend some aluminum or heads. There is only one way to make absolutely certain that old Number One is not personally involved. Use the checklist and follow correct procedures every time, regardless of whether someone is looking or not. If everyone had used the Golden Rule in 1968, these choice goofups wouldn't have occurred.

• An F-101 was being moved from one maintenance hangar to another following nose landing gear strut seal repair. The top section to the nose gear upper drag link had been disconnected, but was not reconnected because it was overlooked. A tow bar was attached and towing began. Only the nose gear moved forward and the aircraft fell on its lever forward nose section. Fortunately, there were no injuries.

• Another F-101 was being pushed into a hangar on an icy incline. The tow vehicle lost traction so a decision was made to try another hangar. As the tow bar was disconnected to turn the tow vehicle around, the aircraft began to slide downhill even though checks were in place and emergency brakes were applied. The aircraft pitot boom broke through the right windshield of the tug and the fuselage sustained a dent on the left side before the slide could be stopped.

• An EC-119D was being unloaded by a fork lift. A truck to hold the cargo was positioned about 30 feet from the aircraft. After completing the unloading, the operator raised the fork and tilted approximately 90 degrees

to the left to miss the truck. In so doing, the fork struck the lower portion of the left vertical stabilizer.

• A C-119J loaded with a propeller malfunction. Before propeller specialists arrived on the scene, the left side of the aircraft was sprayed with a cleaning solvent (flashpoint 100°F) to remove an accumulation of residue from the tail boom and landing gear. Later, the right side was being sprayed when a flash fire occurred and the solvent on the ground caught fire causing extensive damage to the aircraft before it could be extinguished. The most likely cause of the fire was vapor from the solvent coming into contact with ignition or the exhaust systems of the compressor engine which was being used for spraying.

• The pilot of an F-101 encountered difficulty in starting the number two engine. Maintenance personnel decided to start the number one engine, remove the starter from that engine, and mount it on the number two engine for starting. While attempting this Mickey Mouse procedure, raw fuel sprayed on the hot starter, resulting in second degree burns to the personnel involved. There was no damage to the aircraft.

• Although classified as an explosive accident, an F-106 was practically burned to the ground when an external fuel tank was jettisoned because a switch was activated about the same time a safety pin was being repositioned.

Concerning all of the above accidents, it's fair to say that damage and injury were sustained needlessly; needlessly because in every instance correct procedures were not being followed and/or checklists were not being used properly. But then, isn't that always the lament after the deed is done? And

it's so easy to go by the book beforehand. An honest mistake made while going by the book can and should be tolerated. Everyone is human. But when the book is disregarded, no matter how good the intentions, there isn't solid ground for legitimate complaint as the roof falls in. Everyone should know this, especially supervisors who bear the responsibility for their men and equipment.

A sharp outfit stands out like a sore thumb. The personal appearance of the working troops is outstanding. The hangar floors look like you can eat from them. Equipment is neatly stacked and positioned. The flight line is free of FOD. Somehow you get the impression that these guys take pride in their work. A deeper look at the operation will support that impression ninety-nine times out of a hundred.

We know that the men who keep our birds in the air are a hard-working and dedicated group. They have to be in order to keep the ball rolling under very difficult circumstances. Our maintenance types have consistently done a swell job in providing combat and support aircraft when the chips were down. We'd like to give them a well-deserved pat on the back for that.

The road ahead doesn't look like it will be any smoother. The ADC fleet is old and getting older. We can't afford to lose one bird to Murphy's Law or any other comic strip situation because the mission suffers. And when you really get down to the nitty-gritty, accomplishing the mission is what we were all trained for. So, use the checklist and follow procedures. If there's a better way, let's change them. *

And now, turn the page to a tribute to a couple of outstanding professionals.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE WASHINGTON, D.C. 20330
OFFICE OF THE CHIEF OF STAFF, AIR FORCE



22 January 1969

FROM: WCMME-P

SUBJECT: Letter of Special Recognition

TO: WCMME-O

1. This is to commend and bestow special recognition upon Sgt John E. Schaefer, AF149L7309 and Sgt Frank W. Millan, AF12760257, assigned to the F-402 section of the 475th Organizational Maintenance Squadron for their outstanding duty performance.

2. Sergeants Schaefer and Millan were assigned as Crew Chief and Assistant respectively, to aircraft F-402 856-4456, which was scheduled for two flights on 15 January 1969, one at 0813 and again at 1346. The aircraft flew the first mission and returned as incommision through-out. Sgt Schaefer and Sgt Millan began their thru-flight inspection in preparation for turning the aircraft around for the second mission at 1346. During the course of the inspection Sgt Schaefer observed that the afterburner cowls were not properly seated, which prompted him to examine them more closely. Both Sgt Schaefer and Sgt Millan began inspecting the afterburner section of the engine more thoroughly. Sgt Millan found a broken metal air line in the afterburner air actuators. The cause for the broken air line was not apparent at this time, since the entire aft end of the engine is covered by a shroud. However, the aircraft was called out of commission for further inspection by engine personnel. After removal of the engine from the aircraft and removal of the shroud, a cracked afterburner fuel line (ignition) was found by engine personnel. Each time the afterburner was fired, raw fuel would pour out at 750 pounds pressure, and burn as a welder's cutting torch. This melted the silver solder around the afterburner actuator air lines, and they pulled out of the sleeves and "B" nut. Several other pigtail were found with the silver solder nearly all melted away, which would have compounded the seriousness of the already dangerous condition. The complete afterburner had already been warped and damaged by the excessive heat to the extent that nearly 75% of the afterburner will be salvaged. Had this condition gone undetected, the result could very easily have been the loss of an aircraft and/or aircrew.

3. Through their alertness, attention to duty and thorough inspection procedures, Sergeants John E. Schaefer and Frank W. Milian averted what definitely would have developed into a disastrous situation. This is indicative of truly professional airmen who do not stop short of a predetermined goal, but proceed even further to insure that safe, reliable weapons systems are provided in meeting mission requirements. Sgt Schaefer and Sgt Milian are to be commended and are deserving of special recognition as a result of their outstanding efforts in averting an impending disaster.

David W. Rice
DAVID W. RICE, Lt Colonel, USAF
Commander



Sgt. John E. Schaefer



Sgt. Frank W. Milian

ADC's HIGH ALTITUDE FAKER



The F-105 currently in the ADC inventory is perhaps one of the most unique aircraft in the Air Force. It has a history that dates back into the mid-fifties, when Strategic Air Command first acquired the aircraft for high-altitude reconnaissance. Having served its purpose and usefulness in SAC, AFSC modified the plane for nuclear weather sampling in the Pacific and, subsequently, ADC had it further modified for its present role in ADC. The aircraft is now being used as a high-altitude faker (simulated enemy bomber) penetrating and exercising our vast air defense network. The home of the only nine now in the inventory is the 4077 Defense Systems Evaluation Squadron at Hill AFB, Utah,

commanded by Colonel Stanley W. Irons.

The aircraft is quite unusual and requires exacting maintenance and handling. The wings are 108 feet from tip to tip, and as such would place great stress on the aircraft structure if it were not specially designed. To keep the weight down, the wings are made of light-weight metal .008 inch thick. In fact, they are so thin a pencil will puncture it if pushed briskly into it. To strengthen them and to keep the weight down, a special honeycomb design material reinforces the wing foil. Its outer shell, including the honeycomb material, is approximately one-half inch thick. All the fuel is carried in the wing. There are no internal fuselage cells.

The wings can and do oscillate as much as eight feet at the tips when turbulent weather is encountered.

The gross weight of the "D" model is 45,000 pounds, and the thrust, delivered by two Pratt and Whitney J-57 engines, is rated at 21,000 pounds, giving it a thrust-to-weight ratio of almost 1:2. Because the aircraft is so overpowered, take-off thrust, depending on pressure altitude, varies from 82,500 rpm, and the thrust thus delivered is measured by engine pressure ratio, i.e., the engine inlet versus exhaust pressure. If full power were used on takeoff and one engine were to fail, the plane would do horizontal cartwheels uncontrollably, because of the asymmetric thrust that would exist. F.

power is applied once the aircraft is safely airborne and 100 knots is attained. The takeoff roll is usually 2,000 feet or less, and is airborne at 100 knots. The time to climb to 50,000 feet from brake release rarely exceeds fifteen minutes. The initial climb angle is 25° to 32,000 feet, then 10°-15° for the next 10,000 feet. Pilots compare its climb characteristics to the high performance century series birds. In fact, there are few aircraft in the inventory that can match its climb schedule.

Because of airframe limitations, the aircraft is limited to 190 KIAS; therefore, the plane climbs, cruises, and descends (gear down and spoilers extended) at 180 knots. Not too impressive? At 50,000 feet, this gives a true airspeed of 450 knots and mach of .73 — not bad for a powered glider. The plane can cruise at altitudes in excess of 50,000 feet, but because of Air Force regulations restricting flight above 50,000 feet without pressure suits, it is now being flown at 40,000 feet. Originally, an MC-3 pressure suit was used for flight above 50,000 feet, but because of oil vapors from the aircraft pressurization system contaminating the suit, it was declared unsafe. Another suit is now being designed and should be operational before long.

With 10,500 pounds of fuel in the wings, the plane can remain airborne for five hours and thirty minutes at 50,000 feet. The fuel consumption at 50,000 feet is 1,300 lbs./hr/engine, and at 45,000 feet, it drops to 1,100 lbs./hr/engine. With a dual flameout at 45,000 feet, the aircraft will glide over 250 NM, or a pilot can flameout over Chicago at breakfast time, remain airborne for over two hours, and have lunch in Cleveland when the aircraft finally runs out of altitude and airspeed and has to land.

The descent for a normal landing begins 60-70 miles from the airfield. Because there are no drag devices, the gear and spoilers must be extended for the letdown. The letdown is made at 180 knots, with a final approach speed of 120 knots. The approach requires exacting airspeed with no room for error. The aircraft cannot be slowed with drag devices, and a go-around is a certainty if excessive speed is held on final approach. With the lift provided by the vast wing surface, the plane will float the entire length of the runway with power at idle; hence, very light and precise elevator control pressure is a must on a normal landing. Pilots jokingly say that a go-around entails raising the gear, retracting the spoilers, and leaving the power at idle.

In a sense, the aircraft is so different that it is hardly a B-37. The wings and the engines are quite distinct from those used on the original B-37, as are the main systems, i.e., fuel, hydraulics, and elec-

trical. The ECM jamming equipment aboard this bird is unique in the same sense — in that there is no such equipment used other than in the "D" model. In fact, the only thing the two models have in common is the basic designation. Most maintenance men at bases other than home field look in awe upon the odd-looking aircraft. This one-of-a-kind aircraft and its one-of-a-kind systems create varied and unusual maintenance and support problems. The big birds occur on the road, however, for the uninitiated it is a maintenance nightmare. And to the unsuspecting interceptor crew it is a nightmare of another color.

A testimony to the safe and effective operation of the EB-37D is its accident-free record since its tenure in the ADC inventory. Aerospace Defense Command is justly proud of the 4657th Defense System Evaluation Squadron, the long-wing B-37s, and of the role they play in our national defense. ★



"If it doesn't work, bring it back and we'll give you a new one."



**OPERATIONAL
READINESS
INSPECTION TEAM
HQ, ADC**

"IF I WERE THE CHIEF"

Every so often we OHI guys spend a few days in the big beautiful cement head-shed at Colorado Springs — that is between readiness inspections and things like that. So on one cold day last January, the ground environment inspectors, affectionately known as the "Wienies" (sat back (coffee cup in hand) discussing such minor problems as the State of the Union — retirement benefits—Dove-Jones averages etcetera. We finally got around to some serious chitchat on the subject, to wit — "Now if I were the direction center chief of a SAGE outfit, this is what I would do." Actually the gang was doing some Monday morning quarterbacking and the discussion became quite spirited. Many ideas, some good and some not so good were pro and conered, based upon close hard looks at many SAGE "blue light" operations. So a few choice ideas and thought provokers were sorted out and are passed along for rejection or application by the many fine direction center chiefs we have met. Our ideas may or may not be suited to your operation and the thoughts expressed are not necessarily the ADC party platform. So dear direction center chiefs, consider the following discussion only in the light of operational improvement based on several "old timers" ideas and observations. So here we go—

First thought — Why do so many direction centers fail to use airborne orders? With adequate pre-planning for STOP manning and replacement, use of airborne orders to maintain a smooth fighter flow, seems the ideal way to go. But more important considerations are the additional benefits and ease of operation by the fighter units. For instance, ramp management by the fighter operations officer becomes significantly easier. He can line up his birds and get the crews in place with minimum delay. Enhanced flying safety factors are also a by-product as aircrews are given more time to check their birds. Weapons directors don't have to "sweat-out" the airborne times of the birds they have just scrambled, hoping it will come close to the prescribed five minutes. A final thought — airborne orders are kind to the intricate fire-control systems which require a warm-up to operate properly.

Next, I would make sure that my senior directors and senior weapons directors have a good working knowledge of the air surveillance activity. Why not detach these birds to training under a good air surveillance officer for at least a solid week. Too often, the SD and SWD are either unaware, or not interested in the full capability or inner workings of the



"GENTLEMEN,
YOUR NEW DC CHIEF!"

air surveillance branch. We have seen SDs tolerate poor tracking and have observed others give lip-service approval to ASD's actions because the positional handbook states that certain coordination efforts are required—even if the actions are not understood fully. Along these same lines, we wonder why the SDs, SWDs and WDs do not exploit the use of height finders on low altitude problem tracks or getting relative height to improve intercepts operations. Dear DC Chief—check this one—it will pay off. The top DC crews we have observed were those that practiced close coordination between the weapons and surveillance branches.

A very important item and of major interest to most DC chiefs is the method, concepts, and organization of other Military Training Units. The most successful programs we have seen are those established under a centralized concept. The head of this type of program has the full responsibility for the initial training of all non-combat ready personnel

until they have the capability to do a job on the crew. A centralized system buys standardization, provides a more effective program, and more importantly, permits the SD to concentrate his efforts on his air defense job—this is what he is paid to do among such other things as worrying about the morale and welfare of his crew, OGRs, APR's, etc. So take a long look at your training program and check the following bits and pieces.

Is your training section realistically manned to do the job? (Maybe it is manned too heavily.)

Are the assigned personnel qualified and dedicated instructors or do they have the job by virtue of rank or desire (hate shift work)?

Are spot checks made of the quality and scope of lectures, briefings and cross-training conducted by the crew?

As a DC chief, the morale of your people is vitally important. In this regard, to crew members who have to work midnight, holidays, weekends, anniversaries,

etc, their "break period" is rather an important facet of morale. Therefore, I would do my damndest to keep these "breaks" earned by scheduling crew members extracurricular activities when they were working—not when they are off duty.

Let's try this for size — How do you assess the supervisory capability of your chiefs? One of our most chronic complaints and a prime and frequent ORI report write-up is the failure of supervisors to supervise. Again as DC boss, I would improve the supervisory quality of my key personnel. I would train them in the fine art of being an operational chief. In many cases, we have seen "nice guy" types contrasted to extremely dogmatic "scoopers." Many books are available dealing with the intricacies of effective supervision. Relate the operational job at hand along with proven supervisory techniques — your job will become easier and improved operations will naturally follow.

How about you — dear DC chief? What do you do when your effort is being put to the supreme test during a live mission, exercise or ORI. Our thought here is — don't spend your time on the battle staff (unless you are assigned there by the commander), get out in the blue light area and take a hard look at your boys in action. Put 'em on the back for their good work but don't interfere. Save your caustic comments for a post-mission critique at which time you should be harshly critical about the missed intercept(s), the use of poor tactical judgment, inferior surveillance performance which you observed. Along with the crews, point out the way to go in the future. Of course, most of the time things will go smoothly because your crews are well trained and well supervised. The above comment is made only for those rare occasions when the opposing pitcher was real hot and you had a bad day at the plate.

Now, that we have covered some of the abstract points like supervision and morale, we believe the following idea can be a solid improvement and incorporated without too much trouble. How often has this phrase been bandied about in your weapons room — "Where is the confounded Page folder?" Or, "Hey Frank, where is the Project Redhead prop?" We are certain you have heard this quite often and to your embarrassment, the information was somewhere in the weapons room, hidden in the local telephone book or on the floor between the IND's console. To prevent this situation, one direction center came up with a simple but effective fix. A magazine rack was built and located on the SD's desk. The rack was partitioned and a space was provided for a specific docu-

ment — an excellent folder system was used and information for Page — Snow Time — Special Mission, etc — was readily accessible and never the subject of search, chaos and panic. The same direction center also published a daily activities report which contained current information necessary to update these folders plus day-to-day activities. Everyone was kept informed. This is a nice management tool.

And here's an idea that has been successfully used by many divisions and has quite a lot of merit. Just before the air battle, the division commander had a final cup of coffee with the SD, SWD, DC, and DC chief and he very informally discussed the plan of action. This little informal get-together, reminiscent of football huddle, got the team together and each one knew where they were going, at least they knew the play, which was altered only with the changing tactical situation.

Here's another idea to mull over. One Division DC had an aid to provide factual data of all recovery airfields suitable for emergency recovery aircraft. Most DCs have an aid of this sort, but this system provided an immediate lat folder reference to the controlling IND who simply selected the Georef for the area in which the trouble is occurring. All the necessary data were concisely detailed for him — and the IND and the pilot could quickly decide on a course of action.

So dear direction center chief, we have proposed many ideas for your consideration. These ideas have worked for many units and some of the methods and gimmicks have been devised by you — but in case the information is new, see if your DC can use any of it profitably. So we will probably be seeing you soon and any innovation or idea you have, tell us about it and we will peddle the idea to your sister Divisions all for the benefit of the ADC Aerospace Command and Control mission.

If you think all this sounds familiar, you are correct. This article is an updated reprint from the "April 64" issue of the "Interceptor". Recent blue book comments indicate that much of this discussion is still relevant. Although the technical aspects of operational problems continually change, the basic principles of sound management and supervision seldom do. Think it over!

TOM WILLE, Colonel, USAF
ADC ORI Team Captain

PILOT RESPONSIBILITY



A contemporary safety magazine recently published an article on pilot responsibility. We read it and gagged.

Apparently, the printed wisdom was prompted by two incidents involving classic examples of over-enthusiasm.

The first occurred when a pilot, after engine start, experienced a canopy malfunction. The crew chief responded by opening an access door to correct the difficulty. Shortly after takeoff, the access door departed the aircraft.

The second incident occurred when a pilot failed to get ignition during an engine start. The crew chief gave a "cut" signal. As the pilot started shutdown procedures, the crew chief climbed the ladder, reached the cockpit and pushed in the ignition circuit breaker which had popped. Up and away went the

ECT as accumulated fuel in the back end ignited.

Consistency on the first incident went something like this: The pilot is responsible for making sure that his aircraft is ready for flight. If work is performed after engine start, he is still responsible and should consider shutting down the engine, leaving the cockpit and making another inspection.

On the second incident: When the pilot signs the TSI Exceptional release, he assumes full responsibility for the aircraft. If he accepts or directs poststart maintenance assistance, he assumes responsibility for that assistance.

For a number of reasons, we can't agree with the philosophy used in either case.

It has always been our understanding that maintenance is responsible for insuring that an aircraft is ready for flight and that a pilot is responsible for doublechecking inspection items contained in the aircrew checklist. After preflight, the pilot has no more than a superficial knowledge of aircraft condition. To say that from this point on he must directly supervise all subsequent activity is to insinuate that maintenance people are incompetent and not to be trusted. If this happens to be the case, then a major problem exists which isn't going to be solved by putting another monkey on the pilot's back. He can no more assume responsibility for the action of a crew chief than the Chief of Maintenance can assume for a pilot's ability to fly. What good would "Last Chance" and "Quick Fix" be if you couldn't trust the ground crew because you couldn't see and supervise them. Mutual confidence is an important part of effective teamwork, and that gets airplanes in the air safely.

One last point is this: When a pilot signs the TSI, he accepts the aircraft as being, insofar as he can determine, suitable for flight. When he put on his wings, he assumed responsibility for operating in a safe, professional manner all aircraft entrusted to his care. He "boys" the bird when, through personal carelessness or neglect, he causes an accident, not before. The mission responsibility of others cannot be swept away by the wish of a pilot's pencil.

A more reasonable explanation of the incidents mentioned is that two crew chiefs were over-enthusiastic in their efforts to avoid loss of a sortie. Enthusiasm is not to be criticized, but without knowledge and skill, it can be dangerous. A more effective training apparatus and the watchful eye of a line chief would go a long way toward eliminating the danger.

We bring all this up (pardon the expression) out of fear that a regrettable safety philosophy might become contagious. ★

WARNING

Except for "in-flight" emergencies, do not remove this junction box cover while power is on.

WARNING
HIGH-POTENTIAL D. C.
ELEC. CIRCUITS

WARNING
High-potential voltage in radio and radar systems is dangerous. Use care when working with equipment when power is on.

LOW VOLTAGE CAN BE LETHAL

by **MSGT BOBBIE L. MASHBURN** • 400 CAMRON QC

Warnings such as these are so common to aircraft operations that often it is only after an accident has occurred that we realize the complacency of our own actions. To ignore such cautions naturally constitutes negligence and would be recognized as a danger. However, to apply such warnings only to high voltage circuits is equally as dangerous. Voltages in all electronic systems can very easily be fatal. If unusual conditions exist, an alternating current of only one-tenth of an ampere can kill. Because of this deadly factor, each of us should be aware of the most treacherous feature of electronics: in an electrical circuit the presence of current cannot be pre-determined or detected by any of the human senses.

For the purpose of definition, high voltage will apply to any circuit in which the potential to ground or between conductors is 600 volts or more, and in which the probable current would be in excess of 50 milliamperes.

Low voltages are especially dangerous in that they disturb the muscular activity of the heart. The electrical current produced by such voltages can reduce the rhythmic process of the heart to erratic contractions. Higher voltages differ in that a large amount of current produces a severe contraction of the body musculature, holding the heart at rest. When the body is released from the voltage source, and providing contact was very brief, the heart normally will resume activity. In such cases the victim will usually receive serious injuries, such as burns, but the probability of death is reduced.

Briefly, these conditions will determine the seriousness of an electrical shock: the voltage and the electrical resistance of the body, the current path through the body, duration of contact, and the condition of the body organs in the current path. When contact is made with any voltage, the quicker the victim is released from the source, the better the chances of survival.

To minimize the possibility of damage to the brain which is relatively easily influenced by the passage of electrical current, always use proper precautions, i.e., insulation, when attempting to handle an item that you are inspecting for possible defective connections or wiring, but, in particular, never allow both hands to simultaneously come into contact with a suspect piece of equipment. This precaution can eliminate a direct path for current flow, which will always be the path of least resistance to a common ground. Death by suffocation can result from current passage through the chest muscles, even when the heart and breathing centers of the brain are not damaged or paralyzed. An alternating current of only 15 milliamperes flowing from one arm to the other can render the victim incapable of releasing himself from the current source. There are few A.C. circuits within an aircraft cockpit which do not exceed this hazard in amperage.

Dry skin has a very high resistance and is the greatest natural protection against electrical shock produced by low voltage. The resistance it offers will vary from 70,000 to 100,000 ohms per square centimeter. If the skin is wet from any cause — perspiration, rain, fuel — or once the current enters the body tissues, the resistance is greatly reduced. Low voltage has many peculiarities and this matter of body resistance is particularly important. If your hands are dry, if you are standing in an insulated area and not touching any grounded objects, the resistance to ground through the body may be great enough that you will not even feel the current. But if unusual conditions exist and contact is made with this same voltage, if your hands are sweaty, if you are standing in contact with a grounded object, the body resistance can be low enough to permit sufficient current flow which can result in death.

In all aircraft electronic systems numerous protective devices are employed for the protection of the aircraft and crew. Each of the methods will have its own particular advantage, however, bonding is perhaps the most important mechanical device for the protection against low voltage hazards. Simply stated, a bond is a conductive connection between two metal objects. By bonding the separate parts of the aircraft to the structure, the parts and structure are made a single unit electrically. This has a number of advantages: it provides a low resistance current return path, it prevents development of RF potentials, it protects the aircrew and mechanics from shock that can result from internal failure of equipment, and it prevents accumulation of static charges.

Once airborne and confined to the restricted space and body movement, very little can be accomplished to detect hazards which

may arise from normal usage of low voltage circuits. In this environment, the most important precaution is the proper application of equipment. If it becomes necessary to replenish fuses used in flight, replace only with a fuse of appropriate current rating. Tripped circuit breakers indicate that an abnormal electrical overload occurred and even if after resetting otherwise function properly, it should be reported for immediate investigation after landing. Before resetting a circuit breaker, check for evidence of burning or overheating in the area adjacent to the manual actuator. The burned area is usually caused by electrical arcing which results from a combination of moisture and poor dielectric characteristics. Before applying power, assure positive manual operation of the breaker by actuating the push-pull button or toggle several times. This also serves to remove any superficial contamination or foreign deposits on the internal electrical contacts.

During cross-country flights, ten-

porary repairs to defective wiring may become necessary. In such cases there are two very important safety rules which should be observed. Wires removed from the aircraft must be replaced with wire of the same type and gauge of that removed. Wire is selected for a circuit because it can withstand the circuit loads and heat that is generated by the voltages and its location in the aircraft. Insure that tapes (such as friction tape) which will dry out in service, produce chemical reactions with wire or cable insulation, or absorb moisture, are not used.

Without a dramatic change in methods, there will always be the problem of preventing fires, injuries, and deaths associated with the use of low voltage. It is doubtful that these hazards can ever be completely eliminated. The solution can only be found in an intensified awareness of the dangers of low voltage and a sound safety program which assures that all items of equipment are properly installed, applied, and maintained.★

Sgt Markburn is an Aircraft Electronic Navigation Technician assigned to the 4600 CAM Squadron, East AFB, Colorado. Upon completion of a tour in South Viet Nam, Sgt Markburn began his present duties as NCOIC of the FCP Section and Quality Control Inspector in May 1968. As an aircrew member, he has completed over 400 test flights in evaluating maintenance and electronic systems performance.

Seven of Sgt Markburn's nine years of continuous Air Force service have been in ADC, previously serving with the 325 Fighter Wing, McChord AFB, Wash.

His first article "TACAN Tips" appeared in the July 1967 issue of the INTERCEPTOR. This injor-

mation an operating technician and limitations involved a potentially hazardous operational situation in the ground system. His follow-up action resulted in full scale studies by HQ USAF and his being awarded the Air Force Commendation Medal.

Reader response to his second article "Selective Identification Features" in the February 1968 issue prompted an idea for possible improvements in the SIF emergency feature. His proposal, approved by ADC, is now pending USAF approval.

More recently, Sgt Markburn received the distinction of being selected for the 1969 publication of Outstanding Young Men of America.

DOWN

and out

F-106 APPROACH END ENGAGEMENT

A flight of four F-106s was scheduled to perform an officially approved flyby. During the briefing, formation procedures were covered and included the type of formations to be flown, and the takeoff, joinup, and landing procedures. A normal preflight was accomplished with no discrepancies noted. The aircraft were started and the flight taxied to the runway in flight order. Before taking the active runway, a "last chance" inspection was performed. Takeoff was made in two flights of two aircraft. Joinup was made in the turn out of traffic and a finger tip formation was established. The flight proceeded to hold in a clear area east of the field until it was time for the first pass.

After other aircraft completed their passes, the F-106 flight was cleared for a pass down the runway. After completing this pass, the flight went into diamond formation and made a second pass down the runway. Then the aircraft went into afterburner operation individually at three-second intervals to obtain 1,000 to 2,000 feet spacing for in-trail formation positioning. Each member of the flight called coming out of afterburner. A left in-trail turn was made for a south to north pass down the runway. Prior to this pass, lead called for a right turn

at the north field boundary to initiate a joinup in the clear area, to the east of the airfield. The 106 flight made their third pass in trail formation from south to north using power as necessary to maintain spacing. As Number Two reached the north end of the runway at a speed of approximately 330 knots, he selected afterburner and initiated a climbing turn to the right to effect a joinup. During the climb, he got an unsafe gear light and warning horn. At this time, he requested a visual inspection by another aircraft in the formation. The time was 57 minutes after takeoff. Number Three and Four joined on Number Two in echelon to the left and observed that his left main gear fairing door had been torn off. The Flight Leader informed Number Two to take the lead and then proceeded to join on the right wing. The pilot attempted two normal gear extensions, but only the nose gear and right hand main gear door extended. The left hand gear and door remained up and the right hand gear remained up. Number Two decided to have the flight change from control tower frequency to squadron common frequency. More discussion was carried on about the possibilities of getting the gear down before the flight returned to the control tower frequency. The flight checked in

and an emergency was declared.

The pilot was told to try gear extension by the emergency system. Number Four advised leaving the gear handle up and Number One said that he should probably emergency extend with the gear handle in its present position, down. The pilot slowed the aircraft to approximately 200 knots and attempted emergency extension. He was informed that the nose gear and right main gear came down and locked, but the left main gear and main gear door remained up. The leader informed Number Two the only thing he had left was an approach end engagement. He told the control tower that the other three members of the flight would land before the emergency aircraft. The flight of three F-106s landed.

The Mobile Control Officer (transmitting on control tower frequency) asked Number Two for fuel state and the pilot replied 330 pounds. He told Number Two he could either attempt an approach end engagement or eject. The pilot elected an approach end engagement. He asked to make a touch and go landing to attempt to bounce the left gear down. He was cleared and an attempt was made with negative results. The Mobile Control Officer advised against doing it again because the left wing dropped during the attempt. The control tower then asked if Number Two wanted the runway fanned and he said yes. The Fire Department proceeded to lay a twenty foot strip 2,000 feet long. During this time, the Mobile Control Officer reviewed approach end engagement procedures and told the pilot to review his checklist procedures. The possibility of not catching the barrier was discussed and the pilot decided he would attempt a go-around and

ject if engagement was not achieved.

The pilot flew over the field and requested another twenty foot strip of foam. Asked his fuel state, he replied 2600 pounds. The pilot asked how long it would take to lay the strip and was told about fifteen minutes. It was decided to lay the strip and if it was not finished when he wanted to land, the Fire Trucks would be cleared off the runway without completing the foam strip.

The Mobile Officer reviewed the hook procedures with the pilot and they divided Number Two would drop the hook just as he crossed the overman. Mobile reminded the pilot it would be hanging down requiring a little steeper approach to insure not snagging anything on the approach. The Mobile Officer then told the pilot to fly the aircraft all the way through the engagement attempting to get the nose wheel down and hold the left wing off the ground. He was also told to attempt to land so that the wing tip would be in the foam when it was put down. The pilot was again asked his fuel state and replied 1800 pounds. He was then told to set up his final approach at 1500 pounds and the runway would be cleared. Mobile again advised the pilot to think, if he missed the barrier, of ground level ejection. Number Two then called and said he was putting the hook out on final and it was confirmed to be down.

The pilot flew a normal approach, landing on the first few feet of the runway. The left wing started down and struck the runway approximately 50 feet past the end of the runway — some sparks were noted, but were immediately extinguished in the foam.

The aircraft appeared to make a normal barrier engagement. The

pilot was advised his hook had engaged the cable and he stop-cooked the engine. The aircraft veered slightly to the right. The barrier cable failed on the right side and the cable whipped around the left wing tearing the leading edge of the wing approximately four feet from the wing root. The aircraft then began to veer left. The nose wheel was cocked approximately ninety degrees to the runway heading and according to the film of the accident, never did center to the aircraft path. The aircraft continued veering to the left and went off the runway approximately 2,250 feet from the approach end on a heading of three three zero degrees. The nose gear sheared almost immediately after leaving the runway causing the aircraft to turn more than ninety degrees from the runway heading. The right main gear then sheared and the interceptor returned to a heading of three three zero degrees approximately forty degrees left of the runway. The aircraft came to rest 500 feet to the west of the runway.

The primary cause was maintenance factor. Control circuitry wiring to the left main gear up switch was separated internally and caused the left gear door and fairing to sequence improperly. Two defective splines were found in the forward left hand gear door closed warning circuit preventing a gear unsafe warning light from appearing in the cockpit. Lack of warning signal prevented the pilot from taking immediate corrective action and resulted in the subsequent loss of a major portion of the left gear fairing door and the jamming of the left aft main gear door bell crank assembly.

While the investigation board did not consider the BAE-8 barrier cable failure a factor in the accident, it did contribute to the severity of aircraft damage. The aircraft engaged the barrier close to the airspeed design capability. However, the gross weight of the aircraft was only about half of the design weight capability. The cable should have withstood the engagement force.



1 ✓ POINTS

We would sincerely appreciate your inputs mailed directly to:
The Editor, INTERCEPTOR, Box 44, Fort AFB, Colorado 80912.

✓ Now that cold dry weather is upon us it's a good time to assure that only approved **nospark** producing jackets are worn in areas where static electricity is a hazard, e.g., munitions storage and loading areas, POL areas, etc. T.A. 016 lists approved nospark jackets authorized for hazardous work areas. (ADCSA)

✓ Highest temperature ever recorded in the United States was 134°F, 10 July 1913 at Greenland Ranch, Death Valley, California. The highest temperature ever recorded in the world was 136.4° at San Luis Potosi, Mexico, 11 August 1933. (4WW)

✓ **INTERSECTION TAKEOFFS . . .** A recent ALMAJCOM message from the Chief of Staff regarding new Air Traffic Control procedures is quoted for your information and guidance: "Subject: Intersection Takeoffs. 1. Air traffic controllers have recently been authorized to initiate intersection takeoffs without a pilot request in order to provide more efficient movement of air traffic, minimize departure delays and reduce taxiing distances. 2. Pilots are reminded that it is their responsibility to determine that suf-

ficient runway length is available to permit a safe takeoff. The pilot still retains the prerogative to use the full runway length or select a different intersection for any reason, provided he informs the tower of his intentions. Tower controllers will provide the distance between the intersection and the end of the runway on request. 3. This information should be included in all pilot information files (PIFs) and given widest dissemination." (Italics added.) (ADCSA)

✓ One command has recently taken note of the success of the airline industry in the use of polyurethane paint. Extensive visits and discussions with airlines and industry confirm distinct advantages and quality of polyurethane coatings, i.e.,

- Polyurethane paint is less volatile as applied by the airless spray technique, therefore industry's practice is to apply the paint concurrently with other aircraft maintenance. The saving in downtime is evident.
- Special venting systems or equipment are not required to accomplish routine touchup using airless spray concept.
- Industry experience indicates the exterior polyurethane finish lasts for

one major overhaul to the next with no loss in functional value or appearance. Minimum touchup is required between major overhauls.

Polyurethane paints are being tested for USAF use with final evaluation scheduled for June 1970.

✓ "... Responsibility for winter flight safety falls heavily on the commander, his operations officer, and flight safety officers. In working out their flight schedules, plans, and procedures, they must keep the special problems of winter flight always in mind. No effort must be spared to assure winter flight safety!" (TIG Brief)

✓ Paragraph 3c, ACDR 301-7, 8 July 1966, spells out the minimum flying clothing required for aircrews flying ADC ejection seat equipped aircraft. . . .

- Intermediate Seasonal Clothing:
 - a. Summer-weight flying coveralls (K-2B or equivalent)
 - b. Boots (combat or equivalent)
 - c. Summer-weight flying jacket (L-2B or equivalent) (optional)
 - d. Lightweight leather gloves
- Winter Clothing:
 - a. Lightweight woolen or thermal long underwear
 - b. Intermediate flying coveralls (CWU-1/P or equivalent)
 - c. Boots (combat or equivalent)
 - d. Intermediate flying jacket (MA-1 or equivalent)
 - e. Intermediate leather gloves with woolen inserts
 - f. Heavy woolen cap with ear flaps (or equivalent)
- Winter Clothing (Arctic):
 - a. Medium-weight woolen or thermal long underwear

b. Intermediate flying coveralls (CWU-1/P or equivalent)

c. Boots (mukluks, N-1B, or white vapor barrier thermal boots. Quick donning insulated leather boots (FWU-3P) may be worn provided mukluks and two pairs of heavy socks are carried in the survival kit)

d. Winter-weight flying trousers (P-1B or equivalent). This item of clothing is extremely bulky and may be waived if cockpit space is limited.

e. Winter-weight flying jacket (M-2B or equivalent)

f. Heavy woolen cap with ear flaps (or equivalent)

g. Intermediate leather gloves with woolen inserts

(ADCSA)

Fox
BLUE ZOO



THE ACCIDENT INVESTIGATION BOARD

FIELD REPORTS

T-33, STUCK GEAR HANDLE. Landing gear handle would not move to the "Up" position after takeoff. Landing gear remained down and locked. Cause was a defective landing gear lever unlock solenoid.

F-101B, SENSITIVE FLIGHT CONTROLS. Basic flight controls became extremely sensitive in pitch. No artificial feel was available in manual flight mode. A successful landing was accomplished in APC mode. The viscous damper was found to be leaking.

F-101B, UNSAFE GEAR. During approach to landing when the gear was lowered, the three gear downlocks did not illuminate. The gear horn and warning light functioned normally and was off. Hydraulic pressures were normal. It was noted that several other warning lights were inoperative. A precautionary landing was accomplished and downlocks inserted on the runway. A fuse in the warning light circuit was blown. The fuse was replaced and lights functioned normally.

F-102A, ATTITUDE INDICATOR FAILURE. During the escape maneuver from a snap up attack, the attitude indicator froze 30° left bank 23° nose low with no off flag visible. A wing recovery was accomplished. Attitude indicator was replaced.

F-101B, SMOKE IN COCKPIT. Cockpit filled with smoke and fumes after approximately 30 minutes of flight. An immediate landing was made. #2 primary hydraulic pump pressure fitting blew a seal at the pump. This introduced hydraulic fluid through the engine into the cockpit pressurization and air conditioning system. An interesting note to this was the reduced pilot's vision caused by the fresh air vent located on the right forward portion of the instrument panel directing hot hydraulic fluid on his face. This reduced vision was not noted until the pilot was out of the aircraft and walked into the pilot boom. A vision check, after the eye was cleaned, was 30/40. This was approximately two hours after the incident.

F-101B, FIRE WARNING. The right forward fire warning light illuminated during flight. Right engine was shut down, however the light remained on. There were no other indications of fire and an emergency landing was accomplished. The fire light remained on until all power was removed from the aircraft. Right engine was removed and an oil line was found to be chaffing against the fire warning loop. Oil line was rerouted and the fire warning loop replaced.

F-101B, ENGINE MALFUNCTION. Right A/B was initiated at 11,000 feet, IAS 370. EPR rose to 3.35 and EGT to 830 degrees. A/B was immediately terminated. Moderate vibrations were experienced during the brief period of A/B operation and three to four seconds after termination. Cause was failure of the nozzle to open due to air leakage in nozzle actuating cylinders.

F-106, HYDRAULIC FAILURE. During pitchout for landing the primary hydraulic system failed. Cause was a ruptured hydraulic line from the primary filter caused by chaffing due to primary hydraulic pump case drain line being routed improperly.

F-102A, FUEL LOSS. Aircraft had fuel siphoning from the left wing with a resultant loss of 4500 lbs of fuel in 50 minutes of flying time. Landing was uneventful and investigation revealed that the left fuel system was overpressurizing when the external tanks were turned on. The air pressure regulator to the main fuel system in the left wing was adjusted. On the next flight the discrepancy reappeared and at this time no solution has been found.

F-102 NOISES. Loud grinding vibrations were detected at 15,000 below 90% rpm. Seemed to be accompanied by cabin heat change. Air cycle machine failed internally (turbine cooler) and was removed and replaced.

T-33A, FLAMEOUT. After flight through heavy precipitation at 25,000 feet, the engine flamed out. The throttle was retarded and gang start initiated. An airstart was achieved before the engine could decelerate below sixty percent rpm. Some evidence of fibrous fuel contamination (8.94 mg/gal) was discovered after landing. SMOAA feels that ice, rather than a collection of foreign materials on the filter, was responsible for the flameout.

THE WAY THE BALL

Bounces

ACCIDENT RATE

1 JAN THRU 31 DECEMBER 1968

ADC ANG

Thru December 1968

5.5

4.6

MAJOR — ALL AIRCRAFT

ON TOP OF THE HEAP

MO	ADC	MO	ADC	MO	ANG
59	414 Pfr Gp	26	5 Pfr	71	163 Pfr Gp
56	48 Pfr	25	1 Pfr Wg	69	112 Pfr Gp
44	4677 DMS	23	75 Pfr	59	141 Pfr Gp
31	4603 AB Gp	21	4758 DMS	52	114 Pfr Gp

ACCIDENT FREE

BOX SCORE

ACCIDENTS FOR Desc	CON 70146				
	1st AF	4th AF	10th AF	ADWAC	4660

CONV	2					
T-33	1	1	1			
F-100						
F-101	1	4	2	1		
F TF-102	1					1
F-104	1					
F-106	1			2		
B-57						
F-89						1
EC-121						1

ADC AT LARGE — 3 MAJOR ACCIDENTS
MINOR ACCIDENTS THIS PERIOD — 3
MINOR ACCIDENTS CUMULATIVE — 11

CUMULATIVE RATE

1 JAN THRU 31 DECEMBER 1968 ADC ANG

JET	7.0	5.0
CONVENTIONAL	1.7	0

BY AIRCRAFT	T-33	5.8	0
	F-89		10.1
	F-100	0	
	F-101	15.1	
	F TF-102	6.1	
	F-104	17.8	
	F-106	5.3	
	B-57	0	
	EC-121	0	

RATE — MAJOR ACCIDENTS PER 100,000 FLYING HOURS

we point with



Lt. Gary F. Worth
MSG AEWAC Sq
Otis AFB, Mass.

PRIDE

AID IN AN EMERGENCY

Lieutenant Worth was aboard an EC-121H radar picket aircraft manning one of the primary surveillance stations off the east coast of the United States. At 1815, the radar crew chief received a message that a C-97 had declared an emergency; one engine feathered, complete loss of UHF communications and no IFF/SIF.

Since the reported position of the stricken aircraft was not within radar coverage of the EC-121, Lt. Worth requested and was granted a diversion from his assigned surveillance track in order to bring

the radar platform within range to render assistance. He then manned his control scope and began a concentrated search for the C-97.

Approximately 25 minutes after the emergency was declared, Lt. Worth established radio and radar contact with a Coast Guard HU-16 which had been dispatched from Quonset Point NAS to intercept the stricken aircraft. At 1705, Lt. Worth made radar contact with the C-97, tracking 50 miles north of his original position report. Radio contact with the disabled aircraft could not be established by either the EC-121 nor the HU-16. He then advised the HU-16 aircree of the C-97's

new position and that he would direct them in for a visual intercept. At 1747, Lt. Worth successfully positioned the rescue aircraft within visual range of the C-97, and immediately began giving vectors to the Falmouth, Massachusetts, VOR. Both aircraft made a successful recovery at Otis AFB, home station for the EC-121s.

Although Lt. Worth had only 130 hours of flying experience in the EC-121H, he exhibited skill, judgment, and confidence in himself and his equipment. His professionalism as an airborne intercept director makes him worthy of the ADC "We Point with Pride" award.



AFTER BURNING

Address your letters to the Editor, INTERCEPTOR, 442 AFB (APOAA-4) for AFB CO 89913
To be published, your letters must be signed,
but names will be withheld upon request.

T.O. CHANGES

As an old AOC type, I will still take the time to cast out what may be a helpful word for the information and benefit of all concerned who may not be familiar with it. Most people are familiar with the US system and the provisions of T.O. 00-150-34. However, at SMARA we have received OROs or recommendations changed to flight manuals, whereas the proper way to effect such actions is through the provisions of AFI 60-2 and the utilization of an AF Form 147 to the prime AFA.

The Checkpoint item in the November '68 INTERCEPTOR relative to checking idle fuel flow on F-105s sounded good and it was to get the word out to all. However, the procedure is good for one engine it should be good for all and probably should also be included in the Dash One and other appropriate T.O.s through administrative action.

Frequently, changes and additions to Dash One and other directives are included in accident and incident reports, but the additional action of submitting an AF Form 147 should also be effected in the interest of further ensuring appropriate action by the prime AFA, and effecting mishap prevention.

George E. Koenig
Aviation Safety Specialist
SMARA/SMIT
McClellan AFB, California

*Thanks, George — we miss your smiling face around these parts.

REMARKS

Reference your December issue, AFTER-BURNING, letter titled FOOD PROCUREMENT.

I am not writing this for myself, but for the many dedicated (Survival Types) Survival Instructors whose teaching techniques and skills have saved the lives of many of our downed aircrews. But for you personally. You impressed me as the type individual who couldn't survive in a supermarket with a gun opener. And in a survival situation I'd be the one to go without lunch.

I didn't realize that I took so much for granted in my article. I had to imagine that

even you knew that fish could be caught with a fishing. However, I doubt if you would catch any limit of fish if you were stuck out around a berry bush. (Malberry, if you like.) An old scale of mine once told a bird in the hand is worth 1,000 fish in a week. Especially if you aren't near a creek.

Without the use of my son, dog, or a 12-gauge shotgun, I've caught enough rabbits so that I didn't have to rely on any picnic lunch. And surely with the aid of these tools I would have touched much fair on some here (you). You probably would have had no much luck had you used the fishing. Or stayed home and went out to lunch. (You.)

On the Penmanship, now that was really cute. How is it you can not burn wood and nails, but you can't not make or Penmanship? To you, your wife and his ropes, regardless of their humor, your taste is out in left field. Now you considered the man who didn't have the Penmanship, and doesn't have today? They might have enjoyed it now. And our man today that are exhibiting an idea and fish heads, think they would like the Penmanship? Remember, in order to cook anything, you must first be able to start a fire, so enjoy your raw boards and nails, and for dessert try a portion of the White Corns.

An old scale once told me that anything you can't sign your name to isn't worth the paper it is written on. It is suggested that you eat your next reply and leave the Penmanship to the other 90%.

When your Rainbow quit on you
SMARA NUFF SAID.

Majr Gordon B. Duvlis
4000 Operations Squadron
MCCDC, Survival Training Section
44 AFB Colorado

*There are always two sides to a discussion.

WATCH OUT FOR KINGS!

It astonishes me to see a Mark from TIG listed on page 27 of your October 1968 issue in which the danger of wearing rings while on duty was discussed, yet on page 28 of the very same issue you printed a picture

of a smiling young on-duty staff sergeant wearing not only a ring, but a watch!

Majr Paul R. L. McClellan
CNR #1, Box 389
APO Seattle 96310

*The smiling young staff sergeant occurs in the doesn't wear rings and watches when working, only when posing for pictures.

DISAPPEARING MAGAZINES!

Some time ago I requested more copies of INTERCEPTOR be mailed to me and you promptly fulfilled my request. I now need even more copies of this outstanding publication.

I-28 crew members actually think they are four-engine fighter pilots and being a I-28 pilot myself, I can't let that pass. There is so much diggins good information in your magazine that the copy I keep for myself disappears before I have a chance to read it. One of the other I-28's can't do with it. Now in order for me to have a copy of it myself, I need 75 copies. Can you help me?

1st Col Richard D. Snyder
Chief, Safety Division
Hq 43 Bombardment Wing
Little Rock AFB
Arkansas, Arkansas

*We're happy to do so.

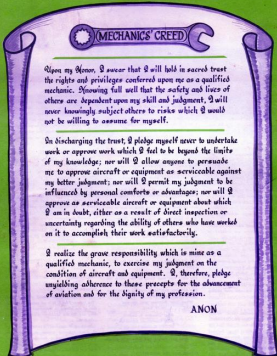
POWER PILOT SCHOOLS

Please send me two copies of your recent "The Fighter Pilot." It is an accurate description of the otherwise balustrous fighter pilot. They are for the squadron pilots — I'm not telling the world!

Speaking of accurate it is only one word of many meaning precise or authoritative which must be used to describe your magazine, starting with the first page — spotlight, then Col Gibson's effective exposition on one main point per month.

Maj B. F. Elmore
1848 PCS, CNR Box 194
APO New York 09332

*We will have a supply of copies just for you now.



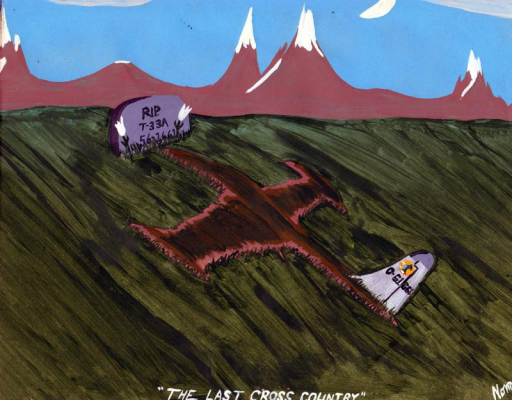
MECHANICS' CREED

Upon my Honor, I swear that I will hold in sacred trust the rights and privileges conferred upon me as a qualified mechanic. Knowing full well that the safety and lives of others are dependent upon my skill and judgment, I will never knowingly subject others to risks which I would not be willing to assume for myself.

In discharging the trust, I pledge myself never to undertake work or approve work which I feel to be beyond the limits of my knowledge; nor will I allow anyone to persuade me to approve aircraft or equipment as serviceable against my better judgment; nor will I permit my judgment to be influenced by personal comforts or advantages; nor will I approve as serviceable aircraft or equipment about which I am in doubt, either as a result of direct inspection or uncertainty regarding the ability of others who have worked on it to accomplish their work satisfactorily.

I realize the grave responsibility which is mine as a qualified mechanic, to exercise my judgment on the condition of aircraft and equipment. I, therefore, pledge unyielding adherence to these precepts for the advancement of aviation and for the dignity of my profession.

ANON



"THE LAST CROSS COUNTRY"

Norm