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## Aviation Safety - A Way of Life

Instinctively and intuitively people do certain things which in a sense are safety motivated. These reactions are fundamentally self preservation--the strongest instinct in the make up of man. We need no teaching to guard against the close presence of a snake or to fend against adverse effects of gravity or to sense the limited future in trying to breathe under water. The connection with aviation safety? Read on.

As a fact of life in the United States Army of 1967 in Vietnam, we as soldiers, almost without exception, are associated with the use of aircraft. Helicopters are as fundamental as horses used to be or as ground vehicles are today. The advent of aviation has arrived with such rapidity, however, that our instincts of air safety unfortunately have not had time to mature at the same rate. So what can we do about it?

It is self evident that as intelligent, thinking human beings we must make ourselves react in a plausible way. We must "force" our instinct. This means that aviation safety consciousness must be a way of life--whether we are concerned in operating aircraft, maintaining them, riding in them, or in planning and controlling their use. This way of life also happens to be a way of living. Let's give it our best try and, in so doing, accomplish our mission just that much better.



F. K. MEARNES  
Major General, US Army  
Commanding General  
25th Infantry Division









### CHANGE OF COMMAND CEREMONY

LONG BINH, Vietnam (1st Avn Bde IO)---Major General Robert R. Williams assumed command of the Army's 1st Aviation Brigade in Change of Command ceremonies at brigade headquarters here recently.

General Williams received the brigade colors and the traditional green tabs of leadership from Major General G. P. Seneff, Jr., who is departing for assignment as Commanding General, 3d Infantry Division, Wuerzburg, Germany.

During the ceremony General W. C. Westmoreland, Commanding General, United States Army Vietnam, presented General Seneff the Distinguished Service Medal, the nation's highest award for meritorious service. Also making a presentation was Lieutenant General Chae, Commanding General, Republic of Korea Forces Vietnam, who presented General Seneff with the Order of Military Merit Chung Mu, Korea's second highest award for merit. Other guests included Lieutenant General Bruce Palmer, Jr., Deputy Commanding General, United States Army Vietnam, and other senior commanders in Vietnam.

The change of command ceremony marked the third time that General Williams has replaced General Seneff during their military careers. The first was in 1955, when he replaced then Colonel Seneff as Chief of the Airmobility Division, Office of the Chief of Research and Development, Washington, D.C. The second was in 1966, when he replaced Brigadier General Seneff as Director of Army Aviation upon General Seneff's assignment to Vietnam.

A 1940 graduate of West Point, General Williams has been with Army Aviation since its inception. He was the first Army aviator to receive the Master Aviator's Badge, and one of the first instructors of Army pilots from 1942-1944 in the Army Aviation Section of the Artillery School at Ft. Sill, Oklahoma. His previous flight training had been through civilian contractors, making him a graduate of what is now known as "The Class Before One".



## MAINTENANCE AND SAFETY

I have been working on many projects in the last three years not associated with active military programs and have just recently returned to the fold. When I was asked to write an article on the subject of maintenance and safety, it occurred to me that I should catch up on what new tricks maintenance people have developed in this time which could create unsafe aircraft conditions due to maintenance causes. I decided that one place to start would be to review recent issues of the United States Air Force publications, "Aerospace Maintenance Safety".

The main idea of this review was to find out "what's new?" After reading several issues, I sat back and asked again -- "What's new?" The answer came out - "Nothing". To check my reaction, I went all of the way back to May 1953 and started reading the old issues of "Aircraft Accident and Maintenance Review". Sure enough -- nothing new. This should come as no surprise when we stop and think about it. After all, people are still the same. We still use landing gears, electrical systems, and hydraulic systems, all of which require the same basic techniques, methods, knowledge, and types of people, whether the aircraft is an F-104 or a B-17. So -- instead of writing about the causes and cures of some new and exciting maintenance/safety problems, I decided to review the perennial problems of maintenance. All of them are important and the list may not truly reflect an order of rank. But then, can we really "rank" maintenance problems, each of which has resulted in very costly accidents, and unfortunately, in some cases, loss of life.

I. Most of us think of FOD in relation to jet engines ingesting things lying about engine run-up areas, on taxiways, and on runways. Although much damage is caused from the above reasons, and much money is consumed in repairing this damage, there is another type of FOD. This FOD is purely maintenance-generated, and it can only be eliminated by the maintenance technician himself. This is the extensive aircraft damage which can be caused when tools and parts are left inside the aircraft after a maintenance task is completed. In too many cases they are found jamming control sticks, in wheel wells preventing gear retraction, in fuel control areas preventing proper engine operations, and similar places. All of these are calculated to give a pilot gray hair while he makes the decision to fight the aircraft back to the ground or to bail out and leave the airplane to find its own way back to the ground. We have reviewed many stories which prove that many pilots must have considerable courage and detailed knowledge of their aircraft to even think of trying to get it back down. We certainly admire the pilot who, during an over-water flight, suddenly found himself with a stick "freeze-up". The stick would move neither fore nor aft. He managed to control the pitch attitude by cautious use of trim, speed-brake, gear, and flaps and made a



successful straight in approach at his destination. A small open end wrench was found embedded in the lead counterweight on the horizontal stabilizer control linkage. The wrench had jammed between the counterweight and an aft section bulkhead.

There is not much use in pointing out problems, if we can't suggest solutions. These problems are easy to solve -- GOOD HOUSEKEEPING! But how do we get good housekeeping on every aircraft, everyday, all year. Only YOU can do it -- and there are some well-known techniques for doing this job.

FIRST - Tool and part count. ALWAYS keep track of your tools. Know how many you have, and every time you leave an aircraft, count them and be sure they are all in your tool box. If you are going to Supply to pick up a part, going for a coffee break, lunch, or leaving the aircraft for any reason, take your tools with you. It may add a few minutes to the total maintenance task. It could save an airplane and a pilot's life. An old trick is not to take your whole tool box aboard the aircraft. Leave it outside on the ground and take only the tools you need to do the job. If you made a mistake, and took a wrong tool, don't lay it somewhere in the aircraft while you go to get the right tool. Bring it back out with you, and put it in the tool box.

SECOND - Don't bring that handfull of nuts and bolts and washers, etc. aboard the aircraft just because you think you will need them. Keep a space in your tool box, or carry a bag of some sort where you can keep these things on the ground until you are ready to use them. Then you can count accurately the number and types of hardware you need to do the job. When you take a unit apart don't put attaching hardware on the nearest handy shelf in the aircraft. The hardware you will reuse should go in one pocket, and that which can't be used in another pocket. If you drop a piece of hardware, don't shrug your shoulder and forget it, FIND IT. Even if you are forced to take some other unit apart. Better yet - don't drop it.

Now what about those little bits of wire that probably wound up in the airplane because the mechanic had a snip off the end of the wire, and the piece fell where it couldn't be retrieved? We would like to pass an idea suggested in an issue of the USAF Aerospace Safety Magazine. Start with a pair of standard 6-inch diagonal wirecutters. Close the jaws and fill the cavity with windshield sealing compound (or equivalent). Allow 24 hours for the compound to set, then split along the plier cutting edges with a razor blade or very sharp knife. The compound remains pliable and will hold the wire ends securely until they are picked off by the mechanic and properly disposed of.

II. Poor Maintenance Practices. This is a very broad heading - so what do we mean? We are talking about a lot of very little things which, just like the screwdriver that is jammed in the control stick, causes some aircraft to be lost every year. Some of these little things are: The cotter pin that was left out; the tab washer that was not correctly bent; the bolt installed backwards; the extra washer under the bolt head because the bolt



was too long. Another aspect of this problem is the control linkage that you have taken apart to gain access to another part. You have it all back together except for the insertion of the cotter pin when it is time to quit, or you are called away to do something else. The mechanic who finishes the job for you may not know that you took the linkage apart, so he just finishes the primary job. The result is an accident looking for a place to happen! And eventually it may. So again, what can you do about it?

Of course, the first obvious answer is to know your job thoroughly, and don't forget the little things. If you wind up with an "extra" piece of hardware, recheck the whole job and find out where it goes. If you wind up with not enough bits of hardware, check to see if you used two pieces of hardware where only one piece was called for.

If a unit is partially assembled and you can't finish the job, DON'T leave it that way. Completely disassemble it before you leave. In that way, the mechanic who has to finish the job can readily see what has to be done. Another way to handle this situation would be to locally manufacture a few red streamers with the word MAINTENANCE in one inch letters. This streamer would be at least fifteen (15) inches long. Now - everytime you leave the aircraft - no matter what the reason - hang this streamer on the parts of the aircraft that are not completely back together. It would be pretty hard for someone to miss the point! If the work to be completed is not obvious - like putting in a cotter pin, bending the ears on a tab washer, or setting the correct torque on a couple of bolts, leave a note attached to the streamer.

Also important to maintenance safety is the inspector. An inspector's function is to double check that a job is done correctly and completely. All of the hints I have mentioned also apply to inspectors - especially the tool counting. I have a picture of an inspector's mirror which was left unnoticed in a jet intake. When the engine was started, the handle was pulled off the mirror and went through the engine and inflicted considerable damage.

III. Incorrect Maintenance. Electrical/electronic mechanics still connect wrong wires to wrong terminals; pneumatic/hydraulic mechanics still cross connections; flight, controls are still being rigged backwards so that up is down and down is up.

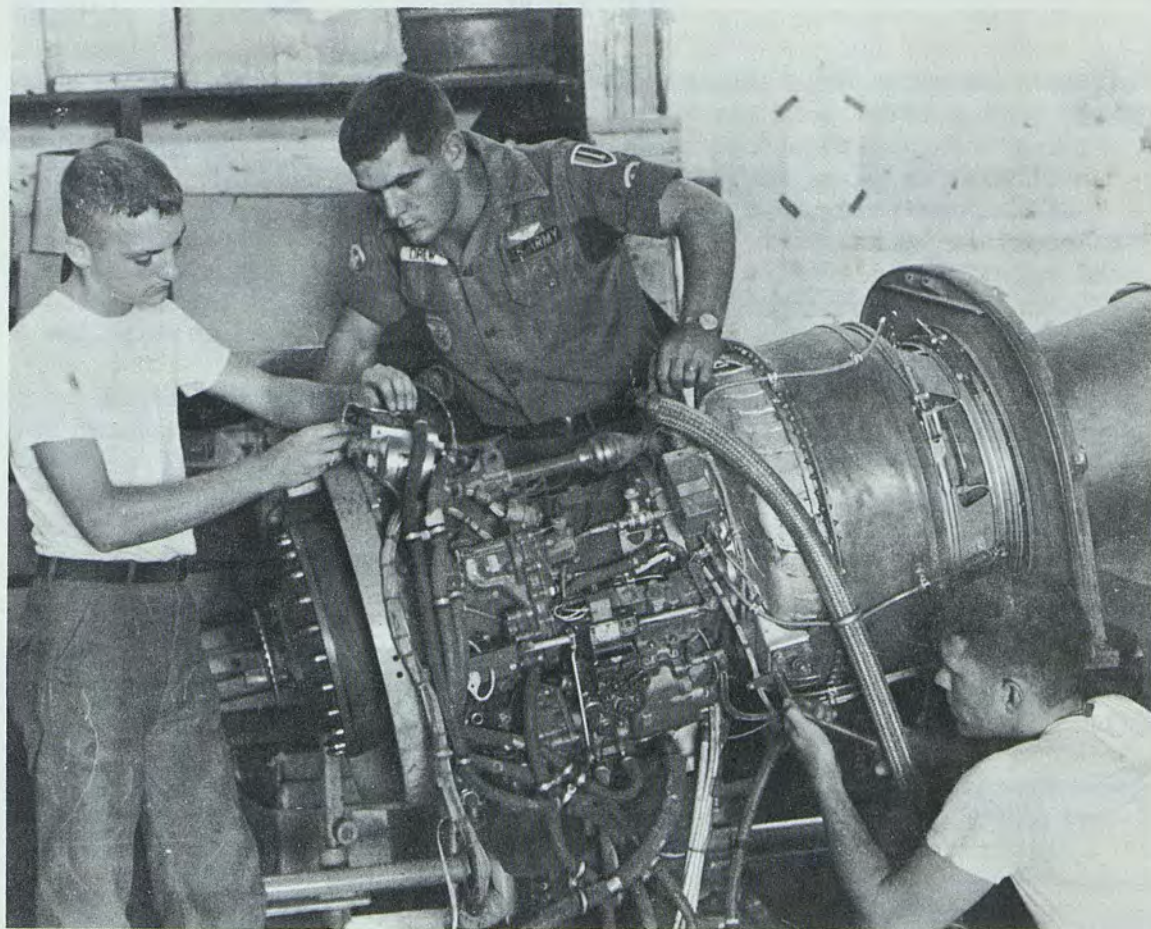
Although aircraft designers put considerable effort into designing equipment so you can't cross connect things, so help me, mechanics still do it. And sometimes they go to great extremes to do it. Case on record. In connecting some cables together a mechanic found that the cables were too long. He cut one cable, swaged a new terminal on, and made his connection. He soon found a pair of cables that were too short. So he took one off, got a longer cable and made his connection. That is a lot of work to go through just to do a job wrong! When things don't fit correctly find out why! You may find you are trying to mate the wrong pieces together.



About the only solution we can offer for this one is to suggest that more care be exercised. When electrical connectors don't fit together easily, maybe a pin is bent, or the locating key isn't mated. Don't grab those extra big pilers and wrench it together. Be your own inspector. Check your work and be sure it is right. In control systems, or in any system with mechanically moving parts, get some help. Have someone move the control stick and check that the movements are in the right direction. Look very carefully at bolt areas. Too much damage has been caused by bolts being inserted into a control rod backwards. See that no part of a bolt scrapes against adjacent parts or structure. You can be sure it was not designed to do so. If it does, you can be equally certain that the bolt is in backwards or that you used the wrong bolt.

Are you willing to bet your life on the quality and correctness of your work? If not, then you better do that job over again until you are satisfied that you could be your life on your workmanship and win.

John E. Kennedy  
Lockheed-California Company





SNOOPY  
DOES



D O Y O U?

\_\_\_\_\_ Check final approach before taxiing onto or across an active runway?

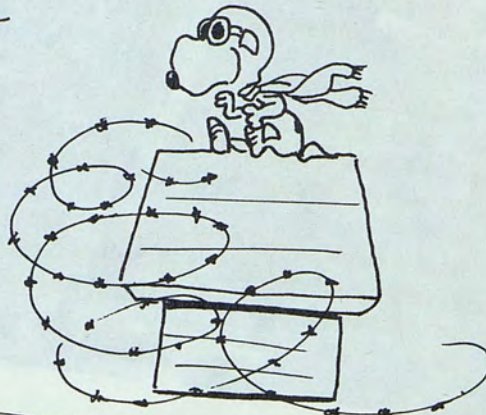
\_\_\_\_\_ Check the runway for obstructions during final or before rolling?

\_\_\_\_\_ Refuse immediate takeoff clearance if not ready for immediate?

\_\_\_\_\_ Complete runway lineup checks as soon as practicable?

If you don't, you've been lucky.....So far.

WELL...  
USUALLY



"ARMY AVIATOR SNOOPY"



SNOOPY FROM PEANUTS ©

United Features Syndicate, Inc. 1966



SELF-MEDICATION---  
DON'T

A recent Medical Officer's Report on a fatal aircraft accident stated that muscle relaxant pills were found among the pilot's personal effects. It has been reported that one type of muscle relaxing medication reduces G-tolerance to very low levels. The possibility that such an occurrence may have incapacitated the pilot points out again the inadvisability of self-medication or using, during flying, medicines which should be given only a grounded pilot.

Investigation of another fatal accident some months after the one above led a similar findings with the added twist that in this instance, self-medication apparently had masked a serious medical condition demanding immediate treatment. The deceased pilot's roommate stated that a new packet of 10 commercial cold capsules containing antihistamine had been on the pilot's dresser as late as Friday night before the accident on Tuesday. During the weekend the pilot had complained of coming down with a cold but flew on Saturday and Monday. After the accident there were only four of the capsules remaining in the packet; the other six had presumably been taken by the pilot between Friday night and Tuesday.

Autopsy in this case revealed that the pilot had advanced tuberculosis of the lungs, liver and spleen. An x-ray made seven months prior to the accident was read as negative. His annual physical three days after the x-ray had revealed no clinical evidence of TB at that time. The only entry on his medical record since, was for treatment of an unrelated ailment. The cause of this accident is recorded as "undetermined" with a possible cause, "the physical condition of the pilot (advanced case of miliary TB) in combination with the adverse effects from a self-prescribed drug".

If you are taking medication and you are a pilot or an aircrewman, you should be under the medical supervision of a flight surgeon. Here, based on the FAA's "Guide to Drug Hazards in Aviation Medicine" is a brief discussion of some of the undesirable effects in aviation of only a few of the more commonly used drugs. Your Squadron flight surgeon can answer your specific questions.

**Antihistamines:** Drowsiness, dizziness, dry mouth, headaches, nausea and muscular twitching. The drowsiness can be a paticular hazard because it may not be recognized by the patient and because it may recur after seeming alertness.

**Barbiturates:** Often initial excitement, then sleepiness, sedation, impairment of mental and physical activity; minor sedation during recovery often not fully recognized by the patient.



Anti-spasmodics: Dry mouth, dilated pupils and paralyzed accommodation, difficulty in urination, precipitation of glaucoma.

Tranquilizers: Various tranquilizers can cause, among other symptoms, weakness, chilliness, stuffy nose, blurred vision, dry mouth, hypotension (lowered blood pressure), drowsiness, nausea, vomiting, diarrhea, depression, impaired thinking, confusion and vertigo.

It's bad enough to fly with a cold or a case of the GIs, for instance, but it is much more dangerous to fly with these plus the effects of self-medication. When you don't feel up to par, the man for you to see is your flight surgeon. Civilian physicians are excellent and well-trained but few of them are aware of all of the medical problems peculiar to aviation. And under no circumstances should you ever take a medicine originally prescribed for a member of your family or a friend. Prescriptions are written by physicians for particular patients in particular situations and no one has any business taking another person's medicine.

Self-medication is a potentially hazardous undertaking at best. With flying personnel, in particular, it can endanger others as well as yourself.

Commands should conduct a vigorous and continuing education program in support of sound health practices.

Flight surgeons must monitor and supervise the administering of drugs to pilots and aircrewmembers.

Flying personnel must be aware that taking self-prescribed medicine can impair flying performance with possible tragic consequences.

Flying and medication -- especially medication not controlled by a flight surgeon -- do not mix!

US Naval Aviation Safety Center



## GUNSHIPS HIT ENEMY POSITION

During a recent patrolling mission of the province northwest of Saigon, a gunship team from the Army's 155th Assault Helicopter Company engaged five enemy troops on an open ridge line. The fight that followed was "unbelievable" according to Warrant Officer Albert W. Fitzgerald, Orlando, Fla., leader of the "Falcon" Gunship Team.

"As soon as we opened up on the five enemy," Fitzgerald continued, "the whole hill mass became alive with 'Charlie'. Every time we hit a bush or treeline with our rockets and machine guns, several V.C. would pop out and fall."

Warrant Officer Riel K. McQuinn, Russell, N.Y., flying the other aircraft said, "The enemy lost their fire discipline and didn't have time to react while the two gunships swept the hill with fire."

On his third pass, his ammunition almost expended, Fitzgerald's aircraft was crippled by an intense burst of automatic weapons fire. He managed to land the ship about 800 meters from the center of the activity. Seconds later a third aircraft commanded by Warrant Officer Lawrence K. Hanna, Minerva, Ohio, swooped down from his control orbit above the battle to rescue the crew.

"A solid stream of lead followed Hanna's aircraft into the crash site," reported McQuinn. "He was on the ground only fifteen seconds while the downed crew scrambled on board his ship, but as I watched, rounds hit on all sides of him and I didn't think he'd make it out."

The second Falcon ship was also severely damaged while covering the rescue, but McQuinn managed to limp back to the secure airfield. With the gun team gone, Warrant Officer Hanna remained on station directing VNAF and Air Force strikes on the enemy's position.

Warrant Officer Fitzgerald attributes his action to luck, but one American advisor with the 23rd ARVN Division in Lam Dong said, "Luck or no luck, in destroying this enemy force before it had a chance to strike, these men have achieved a victory that neither the fortunate people of Lam Dong Province nor the Viet Cong will soon forget."

155th AH Co IO



## CHINOOK ASSETS: A TIME SAVING PLAN

By

S. Steigelfest  
Customer Requirements & Support  
Boeing Company. Vertol Div  
Morton, Penna, #19070

You as maintenance men can help add to the useful time of Chinook components. Experience tells us that lost or incomplete records are detrimental to CH-47 (Chinook) operations. Yet more and more components show up with inadequate information. This leads to the following situation:

- (1) Unavailability of aircraft
- (2) Excessive maintenance manpower expenditures
- (3) Ties up components needlessly
- (4) Takes up much needed space in shipment to and from overhaul facilities, and while stored
- (5) Cost the government money whenever "High-time" has to be assumed on components. It is estimated that each component hour is worth \$1.79.

Whenever a component is removed early for T.B.O. (Time Between Overhaul), valuable operating time is lost. This is not readily visible by looking at one component, or even several components, on one aircraft, and 33 major components, the figures begin to skyrocket. As an example, if every aircraft major component were to be removed 10 hours prior to maximum T.B.O. Time, the following fleet costs would occur:

$$\frac{200}{A/C} \times 33 \times 10 \times 1.79 = \underline{\$118.140} \text{ Total Cost}$$

Records have revealed that many components are being removed even earlier than 10 hours resulting in a greater cost impact.

Another example deals with assuming maximum overhaul time on a part which actually has really been in operation for a short time. This occurs when component records are lost. Let us assume a T.B.O. of 1200 hours, and an actual component time of 400 hours. Cost of lost time  $1200 - 400 = 800 \text{ hours} @ \$1.79/\text{hour} = \underline{\$1432}$  for a single component.



The point is, missing information is available and should be provided where it can do the most good. The Vertol Division having recognized this problem has developed a program to monitor and up-date, on a monthly basis, vital information for all Chinook major components. This is being done by the most modern Electronic Data Processing methods available.

What does this mean to you as a Chinook user and how can you benefit by this program? When Chinook components are found to have inadequate records, don't despair. For gosh sake, don't send the component back unless you are sure it requires working on before reuse. Make an effort to contact your nearest Boeing-Vertol Representative. Work can also be sent back directly to:

Boeing Company/Vertol Division  
100 Woodland Ave.  
Morton, Penna. 19070  
Attention: CR&S - CH-47 T.B.O./Overhaul Group  
M/S P14-50

Write us giving component serial number, part number and problem. Your problem will be researched and information will be passed onto you immediately.

The next time you have major Chinook components tied up for lack of proper information, give us a try. Within a few days you may find another usable asset for your ASL.

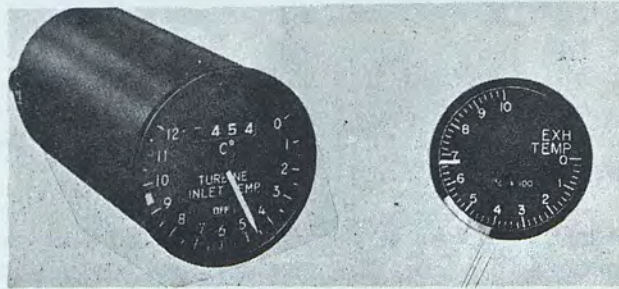
Components in Question Will be Researched Thoroughly

Component  
Jacket  
S/N XXXX

Electronic Data  
Processing Tab Run  
S/N XXXX

DD250's  
2410's  
Receiving Inspection Records  
Field Service Reports (FSR)  
Condition Reports (CR)  
Monthly Status Reports  
TCMAC Form 676 (Component Disassembly  
Summary Report)  
Oil Analysis  
Material & Processing Report  
Crash Reports  
EIR's (Equipment Improvement Recommendations)  
Overhaul Inspection Reports



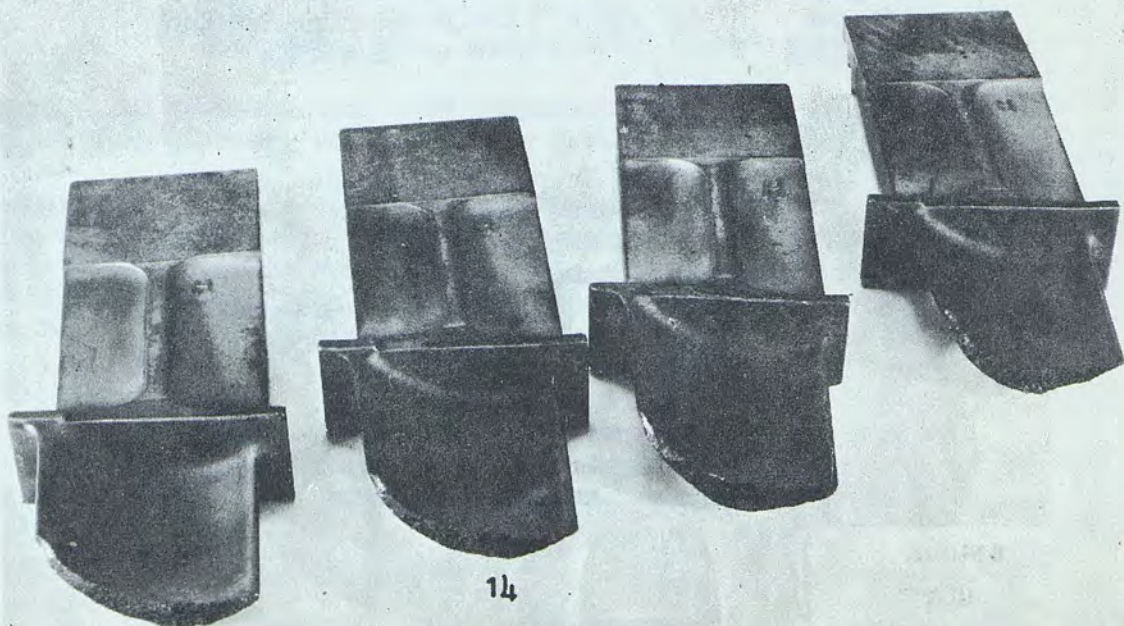


### JET ENGINE OVERTEMPS/JET ENGINE OR YOUR LIFE

Most "old" pilots and crewmen know by now that one of the most important engine instruments is the exhaust gas temperature (EGT) indicator or (TIT) turbine inlet temperature indicator. The importance of an accurate indicating system is amplified by the fact that a definite relationship exists between operating at excessive exhaust gas temperatures and premature engine removals or catastrophic failures.

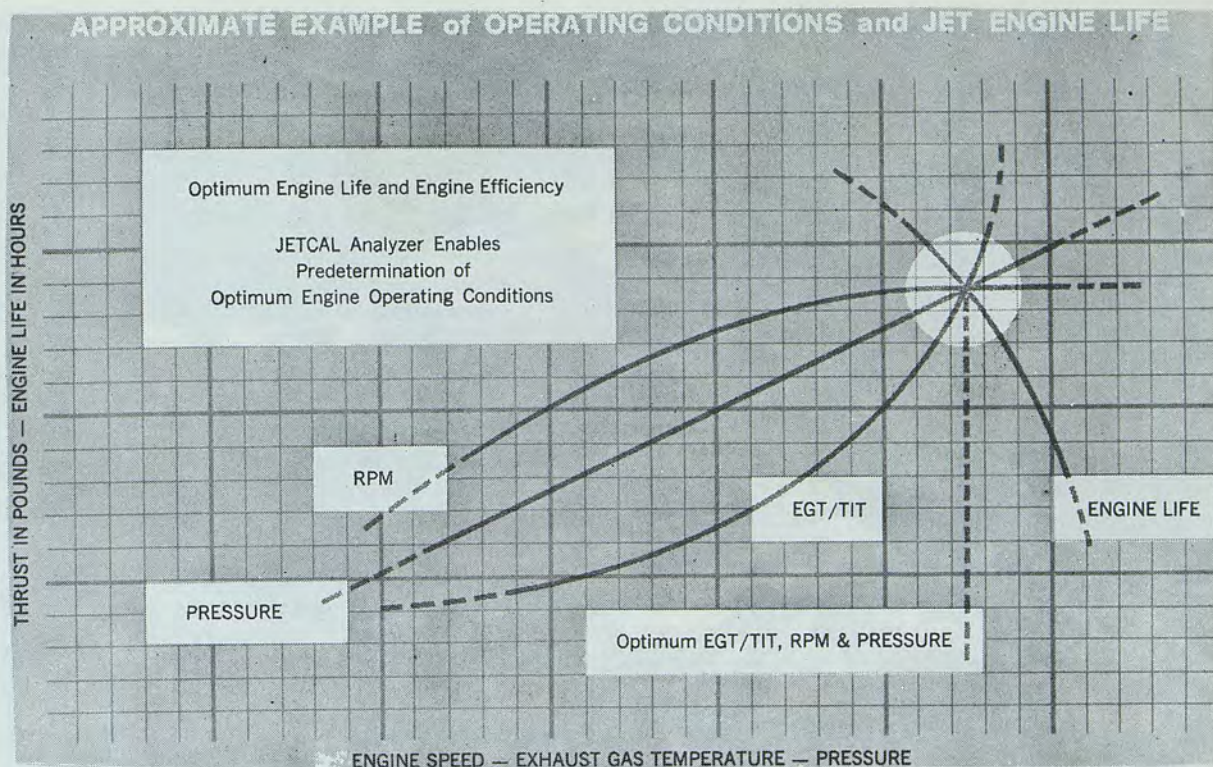
But the indication system is only as good as the maintenance gang that maintains it. While the JETCAL Analyzer is one of the most valuable pieces of equipment that can be used in maintaining your engines, its use is often neglected by maintenance personnel.

With the analyzer, you can find malfunctioning individual thermocouples, bad harnesses and "lying" indicators. You can make EGT and engine speed adjustments with the assurance that they're right. (Based on the premise that the JETCAL Analyzer is calibrated periodically as required.) Two most important factors affecting jet engine life, efficiency, and safe operation are temperature and engine speed. Excess heat will reduce "bucket life" as much as 50% and low EGT materially reduces efficiency and thrust. A combination of excess EGT and RPM will make the operation of the aircraft both costly and extremely dangerous. To assure that a jet engine is operating efficiently and safely both the EGT and RPM systems must be accurate and be indicating correctly.



ENG HOT SECTION BLADE, TURBINE, STAGE 1. LEADING





Illustrated is a group of typical engine performance curves. The three curves (EGT, RPM and pressure) show that increasing thrust is dependent on increasing engine temperature, RPM and pressure. These curves intersect at a point that can be considered the optimum engine operating conditions. At these conditions the engine will have its best efficiency and fuel economy, with the greatest practical thrust. The engine life curve illustrates that engine life drops seriously and abruptly with excess exhaust gas temperature, or engine speed or pressure. Not only is engine life affected but continued service under these conditions is extremely dangerous. These limitations are real and are placed on engine designers by the physical properties of currently available metals and alloys. Engines must be operated at their critical design conditions of specific optimum temperature, speed and pressure. This is particularly true during combat maneuvers.

R.T. Schoonover, LCDR, USN from Crossfeed





### "What's In Your Aircraft"

The above photo shows the internal cargo that was removed from a UH-1B rocket ship after an accident. The pilot attempted to hover the aircraft, but it settled back on the ground. The pilot then made several attempts to takeoff. On the last try the helicopter crashed. The gear in the picture weighed about 718 pounds. The mission was a 20 minute administrative flight.

ED: If at first you don't succeed - try, try again.



# NOVEMBER CLIMATIC SUMMARY FOR THE REPUBLIC OF VIETNAM

BY

HQ USARV STAFF WEATHER OFFICE

By November, all of Southeast Asia is under the influence of the northeast monsoon. As the cold dry air from the Siberian high flows south it is gradually heated by contact with the warmer China coast and the waters of the South China Sea. This air then merges with the warm air from the Western Pacific and arrives over Southeast Asia much warmer and more moist than when it left the continent. But, compared with the May to October Southwest monsoon, the Northeast monsoon is relatively cool and dry.

Most cloudiness and rainfall occur on the windward slopes of the Annam Range, and along the east coast of the Republic of Vietnam. By the time the flow crosses the mountain range and enters central and southwestern portions of the Republic of Vietnam, most of the cloud and rain producing moisture has been removed, and these areas enjoy relatively clear skies and little rainfall during November.

The east coast of the Republic of Vietnam has generally poor over-all weather. "Crachin" spells, with their low stratify overcast, are responsible for most of the cloud increase. The "crachins", which are associated with surges of the northeast monsoon, cause long periods of overcast skies, drizzle or rain, and poor visibility over the eastern delta regions and coastal plains. Elsewhere, the normal diurnal sequence begins with fair skies from 2300 to 0400 LST, at which time stratus (low clouds) and fog form over rivers and valleys at most locations, while mountain and plateau areas remain relatively clear. The stratus and fog tend to break up as the morning progresses, but scattered cumulus clouds develop as normal daytime heating continues. These clouds seldom form ceilings, and afternoons or evenings with broken or overcast conditions are relatively few.

Visibilities are generally good, but fog in northern valleys and "crachin" conditions along the Vietnam coast increase the occurrences of low visibility in these areas. Afternoon visibilities are good except when restricted in precipitation.

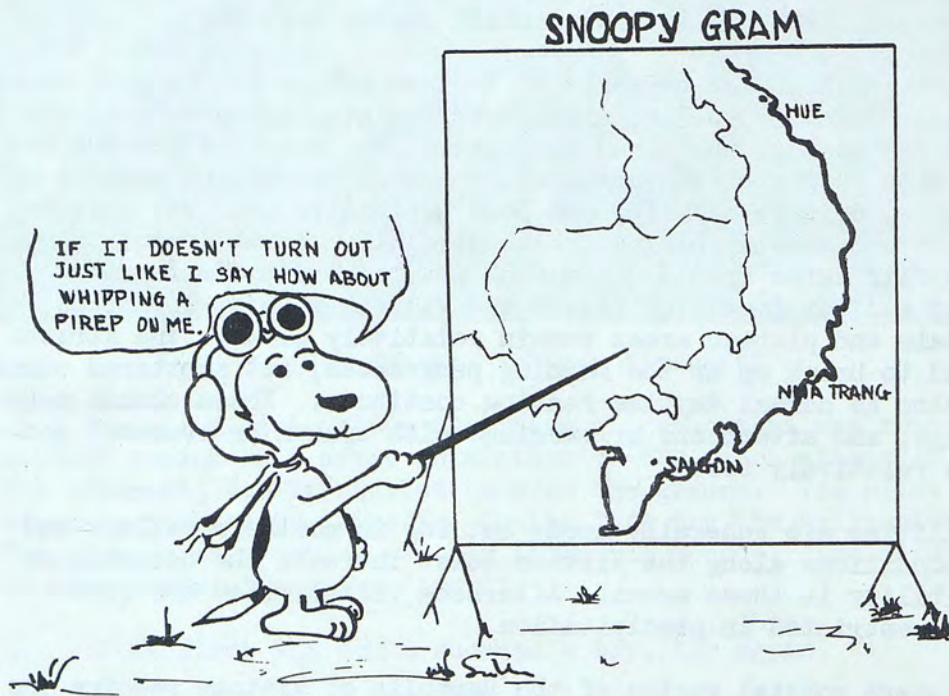
The eastern coastal region of the Republic of Vietnam receive the majority of the total rainfall for Southeast Asia. Locations average more than 20 inches of precipitation on 15 to 20 days; and, as much as 70 inches in one month and 15 inches in one day have been recorded. Amounts over the remainder of Southeast Asia are generally less than 8 inches.



Mean daily maximum temperatures in the highlands and along the northeast coast are between 74 and 80°F. Along the east coast and in the central and southern lowlands, maximums are 82 to 89°F. Mean daily minimum temperatures range from the high 50's in the southern and northern highlands to the mid 70's in the southern lowlands.

Tropical storm activity in the area of the Republic of Vietnam is only slightly less in November than during October. The probability of a typhoon forming or moving into the South China Sea is once every two years, while the incidence of tropical storms is one per year.

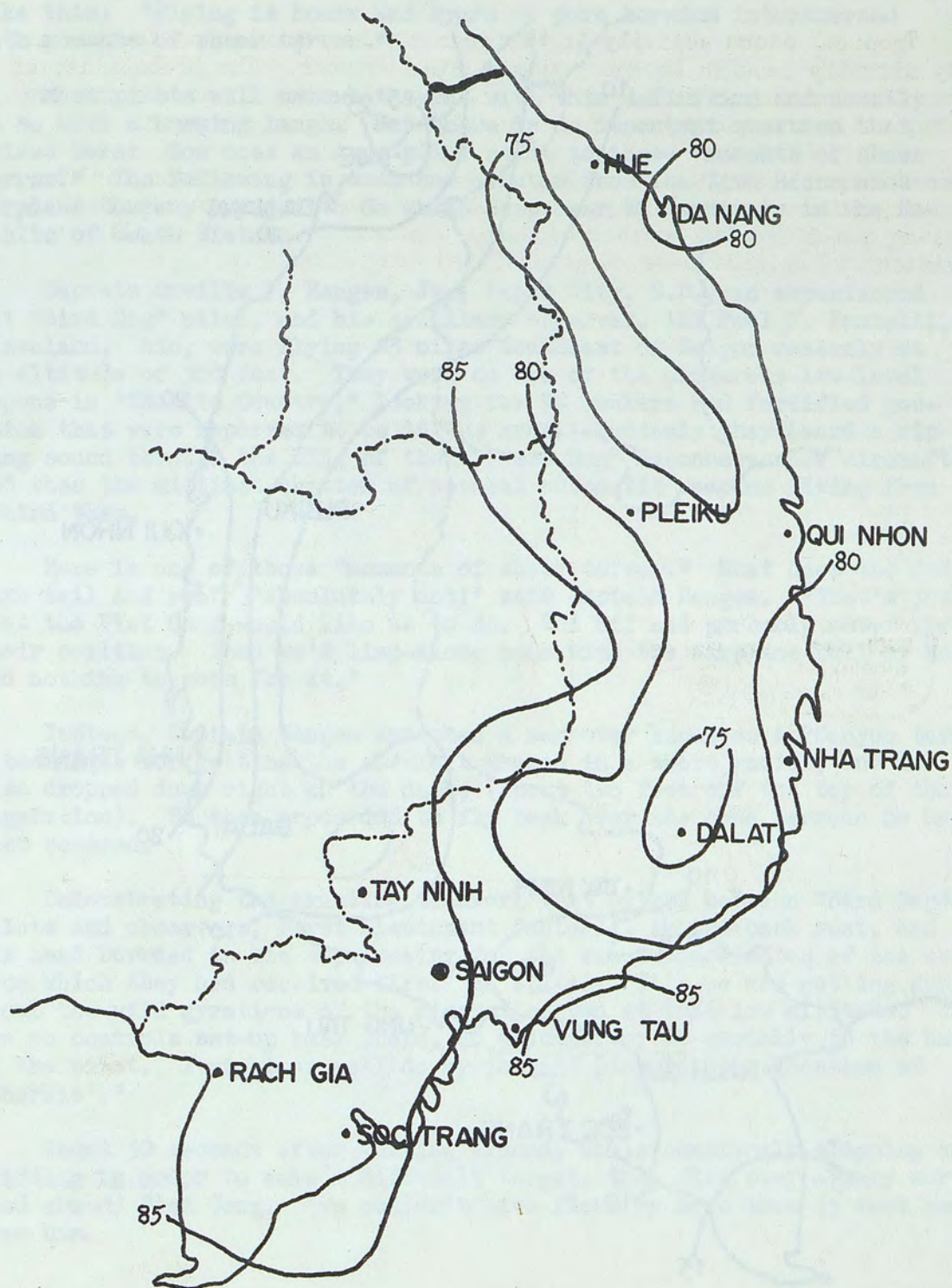
Detailed observations of actual weather and/or forecasts for flight planning to any location in the Republic of Vietnam can be obtained by calling qualified 5th Weather Squadron weathermen located at all Army Division and Brigade base camps or fixed Army Airfields.



Snoopy From PEANUTS © United Features Syndicate, Inc., 1966

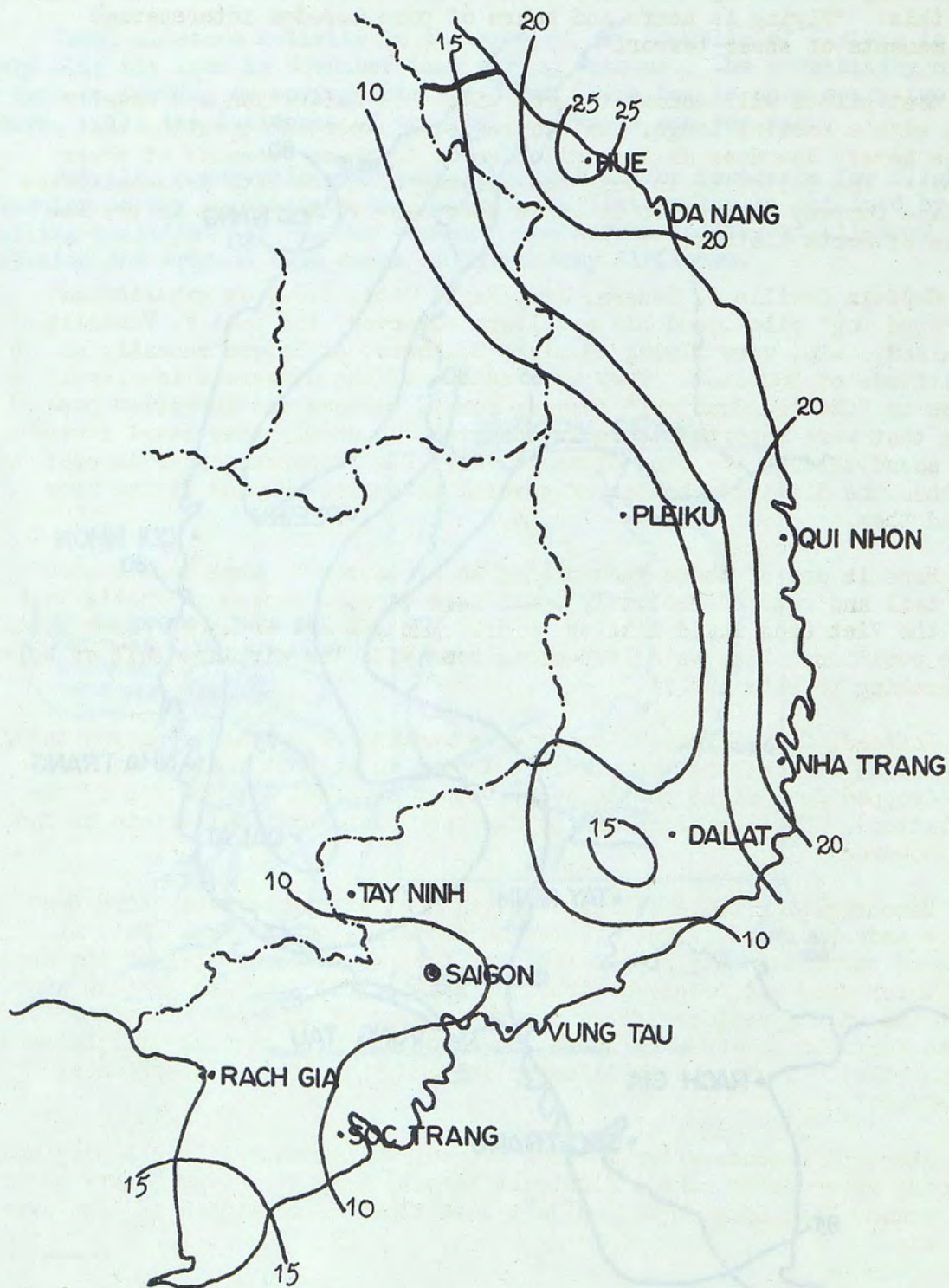


# NOVEMBER MEAN TEMPERATURES





# MEAN MONTHLY RAINFALL





## HOURS OF BOREDOM ?

-- There exists a definition of flying which every wet-behind-the-ears, young aviator-to-be hears during his first few weeks at the Army's Flight Training Center, Ft. Rucker, Alabama. It runs something like this: "Flying is hours and hours of pure boredom interspersed with moments of sheer terror."

Most pilots will somewhat agree with this definition and usually do so with a knowing laugh. But there is an important question that arises here: How does an Army pilot react to these "moments of sheer terror?" The following is what one aviator from the 74th Reconnaissance Airplane Company managed to do while deep over VC territory in the Republic of South Vietnam.

Captain Orville J. Hengen, Jr., Rapid City, S.D., an experienced O-1 "Bird Dog" pilot, and his artillery observer, 1LT Paul F. Fantelli, Cleveland, Ohio, were flying 25 miles Southeast of Saigon recently at an altitude of 300 feet. They were on one of the dangerous low-level recons in "Charlie Country," looking for VC bunkers and fortified position that were reported to be in the area. Suddenly they heard a ripping sound through the wing of their "Bird Dog" Reconnaissance Aircraft and then the distinct chatter of several automatic weapons firing from behind them.

Here is one of those "moments of sheer terror." What does one do? Turn tail and run? "Absolutely not!" said Captain Hengen. "That's just what the Viet Cong would like us to do. Run off and probably never spot their position. Then we'd limp-along home with the airplane full of holes and nothing to show for it."

Instead, Captain Hengen executed a maneuver known as a "Canyon turn," a technique for getting the aircraft around in a short radius, and he also dropped down right on the deck, (about two feet off the top of the vegetation). He then proceeded to fly back over the same terrain he had just covered.

Demonstrating the exacting teamwork that exists between "Bird Dog" pilots and observers, First Lieutenant Fantelli, in the back seat, had his head buried in his map looking for the exact coordinates of the area from which they had received fire. He stated, "It's no use getting scared about the wild gyrations of the aircraft, even at that low altitude. There are no controls set-up back there, so an observer is strickly in the hands of the pilot. I might as well do my job and pinpoint the location of 'Charlie'."

About 50 seconds after turning around, while constantly slipping and skidding in order to make a difficult target, they flew over a very surprised (and armed) Viet Cong. "We couldn't have flown by more than 15 feet away from him."



He just stood there, naked to the waist and very vicious-looking, but so stunned that he never even got off a shot. We spotted several other Viet Cong and some bunkers and trench lines, but the effect was the same. They didn't shoot until we were well past their position, and then, it was too late for them to hit anything.

Captain Hengen and Lieutenant Fantelli did just what is required to stop the Viet Cong in the "Delta" area. Make them hide in an area known to you. That's exactly what the Viet Cong did by taking cover in the trench lines and bunkers that had just been spotted.

"We now had them locked into a specific location," said Captain Hengen. But just to be sure, he started making runs on their position with his target-marking smoke-rockets. Once the Viet Cong knew they were pinned down, they started shooting again. One of their bullets amazingly entered the top of the "Bird Dog's" wing and came out the bottom. Captain Hengen stated that it probably happened while he was doing a "Wingover" in preparation for another rocket run. This is a maneuver in which the aircraft becomes partially inverted and then falls off into a steep dive. An observer on the ground actually sees the tops of the wings, and this is probably what "Charlie" had in his "Sight-picture" when he fired.

Meanwhile, Lt. Fantelli's quick work with the maps (and his back-seat FM transceiver) brought in artillery fire from the 8 inch guns of "A" Battery, 7th Battllion, 8th Artillery. "From that point on, it was just a matter of adjusting the artillery fire onto their defensive positions.," he stated.

The total results of this aerial-ground encounter were three Viet Cong killed, six bunkers destroyed, and several others damaged.

74th Recon Airplane Company IO





FY 1968  
JULY THRU AUGUST  
AIRCRAFT HOURS FLOWN BY MODEL AIRCRAFT

FIXED WING

<u>MODEL A/C</u>	<u>AUGUST</u>	<u>CUMULATIVE HOURS FLOWN</u>
O-1	23,362	41,690
U-1	2,666	5,304
U-6	1,459	3,027
U-8	1,528	2,942
OV-1	3,172	6,125
U-21	<u>21</u>	<u>21</u>
TOTAL	32,208	59,109

ROTARY WING

<u>MODEL A/C</u>	<u>AUGUST</u>	<u>CUMULATIVE HOURS FLOWN</u>
OH-13	10,193	19,299
OH-23	7,705	15,501
UH-1B/C	32,066	62,121
UH-1D	70,126	146,501
UH-1H	20,917	33,754
CH-47	12,351	22,826
CH-54	<u>287</u>	<u>436</u>
TOTAL	153,645	300,438



USARV  
AVIATION FATALITIES

<u>MONTH</u>	<u>ACCIDENTS</u>	<u>COMBAT</u>	<u>TOTAL</u>
AUG 66	19	5	24
SEP	14	8	22
OCT	23	9	32
NOV	24	16	40
DEC	<u>9</u>	<u>6</u>	<u>15</u>
TOTAL 66	199	110	309
JAN 67	36	7	43
FEB	18	14	32
MAR	18	19	37
APR	20	13	33
MAY	60	7	67
JUN	21	10	31
JUL	23	3	26
AUG	<u>34</u>	<u>6</u>	<u>40</u>
TOTAL	230	79	309

These totals include individuals reported missing.

AVIATION MISHAPS

<u>MONTH</u>	<u>ACCIDENTS</u>	<u>COMBAT DAMAGE</u>	<u>TOTAL</u>
AUG 66	38	14	52
SEP	31	10	41
OCT	52	11	63
NOV	48	16	64
DEC	<u>47</u>	<u>10</u>	<u>57</u>
TOTAL 66	412	161	573
JAN 67	48	13	61
FEB	63	34	97
MAR	62	33	95
APR	47	20	67
MAY	67	24	91
JUN	56	23	79
JUL	62	13	75
AUG	<u>59</u>	<u>31</u>	<u>90</u>
TOTAL 67	464	191	655



USARV  
COST BY TYPE OF ACCIDENT  
AND PERCENTAGE OF TOTAL  
1 JAN THRU 30 JUNE  
1967

<u>CAUSE OF ACCIDENT</u>	<u>NUMBER</u>	<u>%</u>	<u>TOTAL COST</u>
MATERIAL FAILURE	98	28.5	\$8,326,508.92
LOST RPM, HIGH DENSITY ALTITUDE, OVERGROSS	73	21.2	7,593,447.13
LANDING ERRORS	25	7.3	354,030.67
STRUCK OBSTACLE	71	20.6	7,669,672.05
INADVERTANT IFR	13	3.8	1,623,545.83
UNSUCCESSFUL AUTOROTATION	15	4.4	1,414,937.55
FUEL EXHAUSTION	7	2.0	360,544.52
MAINTENANCE ERROR	11	3.2	583,180.00
LOST DIRECTIONAL CONTROL	7	2.0	67,232.87
TAXI ACCIDENTS	1	0.3	2,281,349.00
MID AIR AND MESHER ROTOR BLADES	9	2.6	843,478.58
OTHER	4	1.2	748,797.75
UNKNOWN	<u>10</u>	<u>2.9</u>	<u>1,214,419.13</u>
	344	100.0%	\$33,083,144.00



## INVESTIGATION PROCEDURES

Some weeks ago two officers, each intimately concerned with flight safety, asked me for my idea about accident investigation procedures. One specific question was directed at how much I used the various "handbooks for investigators" that are currently available. The answer to that question developed into a story telling session which culminated in their request that I "put some of it in writing." Hence, the following article.

I think the investigator's handbooks are fine tools, and desirable guides, especially for those who have not had years of investigation experience. I have found, however, that these documents are not by themselves always enough and that careful thinking and extreme curiosity and imagination frequently are important additional factors leading to the determination of true cause.

Generally speaking, careful thinking is usually thought of as being slow and time consuming. However, careful thinking must sometimes be rapid. Careful thinking should start immediately after the accident to determine, first of all, if you should take a rapid or slow route. The right decision here can lead to success instead of failure. For example, we had a specially instrumented, twin-engine test aircraft fail to recover from a high-mach dive. Remembering that the aircraft was specially instrumented prompted a decision to immediately man-sweep the wreckage area for the undeveloped film records before the sunlight ruined the film in case the film magazines were broken.

Sure enough, the records were found, although one would hardly recognize that the broken and mutilated remains were once film in film magazines and sunlight had been beating on the torn and loosened film already. Once the film remains were stowed in black boxes in a dark room the investigation process was intentionally changed to a slow pace. Days were spent in consultations with the best film developing experts in the country as to how to develop the already exposed records with maximum chance of success. Success finally was achieved and the results led directly to valuable information on some high-mach aerodynamic characteristics and the need for changes to the aircraft's longitudinal control system.

As another example of the occasional need for rapid action, I know of more than one case where ice caused an accident or an "icedent," such as ice in the fuel system, the airspeed system, of the aircraft control system. If your initial information coupled with your imagination does not cause you to think of these possibilities, it's a matter of time until the ice melts, and the water subsequently drains away or evaporates (unless the water is trapped). Then your direct evidence is gone.

I remember a case of simultaneous loss of engine thrust on a prototype twin-engine jet, with the result that the aircraft had to be landed in a field (not to be confused with an airport). The fact that ample fuel was aboard the aircraft, yet both jets lost power at the same time, made fuel system icing a suspect item.



Therefore, fuel samples were taken immediately from strategic points, and various fuel line sections were capped to trap all fluid before the aircraft was disassembled and moved to a building for further investigation. This capture of fuel and water by location led to a most interesting and time consuming solution of the accident cause, even though the content of dissolved water in the fuel was within normal limits each time the aircraft was fueled. Laboratory tests confirmed fuel system icing as the cause of the accident.

On the matter of moving too fast, I have a strong emotional feeling about those early bird characters who arrive at the wreckage scene and turn parts upside down, move parts, move the wing flap control handle, move the fuel shut-off valve switch, rotate the radio frequency selector, and pull one or more circuit breakers. Some of these individuals have in one second set an investigation back a month, or forever. Actually, this is not so much a matter of moving too fast as it is ignorance and/or lack of security and investigation controls.

Now that I've mentioned fuel shut-off valves, if you want a real puzzler take a circuit malfunction that runs the valve closed, then back to the open position prior to aircraft impact. This is a situation where in you must have the imagination to think, "Could this happen?" Then you work on that challenge and finally show that, under certain conditions, it could happen or it could not. The point is, if you don't "worry and fret" and ask yourself these hypothetical questions, you will miss arriving at the probable cause factors for certain accidents.

A casual, less-than-careful evaluation of certain available evidence can easily throw you off completely in certain accidents. I recall a downward ejection from one of our test birds at 15,000 feet. Observation of the ground location of the bottom hatch, seat and pilot-landing-point were all about as to be expected. However, rough calculations of the separation distances indicated that the hatch location was a little bit wrong for a trajectory from 15,000 feet. Flight drop-tests of the hatch and seat from a cargo aircraft confirmed the discrepancy. Taking into account that the trouble started initially while firing the aircraft gun at FL 470, and that high winds at altitude were such that the hatch could have drifted from FL 470 to its location as found, this possibility was explored. Sure enough, chemical analysis of the pilot's boots revealed gunpowder residue on the boots proving that the gun was still firing after the hatch had left the aircraft. Therefore, the hatch left the bird at FL 470 and not 15,000 feet.

Careful developing of approximately 500 bits and pieces of 16mm film from a test camera, which was aimed at the bottom of the bird, further proved loss of the hatch at that altitude and time (one tiny 16mm x 10mm scrap of film provided the clincher). Even so the pilot honestly couldn't believe the hatch had left while at high altitude, so he requested to relive the entire flight by the sodium pentathol procedure. You have never heard a pilot complain about severe cold temperature like this one did while lying on a couch at plus 72° F. Establishing that the hatch came off at FL 470 led to a complete explanation of the accident.



Failure to use and fit certain available evidence can also throw you a curve. Some investigators are prone to say "I can't explain that item, but I don't need it for my theory." This was the case when a single-engine fighter took off, flew low for about nine miles from the airport boundary, and crashed. A ground sweep of the flight path by more than 100 troops turned up a small part from the fuselage fuel cell area on a hill quite some distance upstream from the point of impact. This brought about an interesting theory of an inflight explosion which was pursued for many days. This theory, however, didn't account for the unusual high-pitch noise made by the engine during and after takeoff, nor the excessive takeoff ground roll. Subsequently, a psychologist met with the troop who had found the part on the hill, and determined during the course of his interview that the part actually was picked up at the impact site. The entire investigation immediately changed course - and subsequent tests showed what made the unusual noise and caused the excessive takeoff run, and the eventual crash. Determination of the true cause factor brought about corrective action as in the previous cases.

Many times I ask myself "What is it that I would like to know about this accident?" Then I try to find some way to get it. For example, one test bird on final approach for no apparent reason landed short of the runway. We had our routine ways of telling that engine RPM was relatively high, but we couldn't tell if it was high enough to sustain flight. Although we were receiving telemetered data at the time, the data did not include thrust or engine speed. One of our technicians suggested that a special analysis of the telemetering records for first order engine unbalance, first order alternator frequencies and harmonics of both might permit determination of engine speed. As it turned out, the determination of engine speed was not successful because the filtering in the telemetry system for the removal of spurious noise was too good. The point, however, is that the idea of trying was good. Other investigation efforts brought about a solution to this accident, and corrective action.

When do you believe or not believe a pilot's story? I am not going into this but it reminds me of a single-engine, two-seater which lost all engine thrust on final approach. Both of these gents soon found themselves parked in somebody's bedroom - and quite okay. One of the most thorough investigations followed because the engine and its fuel system were fortunately undamaged. After many days we were stumped because we had been through every inch of fuel system, fuel controls, and the engine, and had conducted a great number of test runs with the engine installed in another aircraft. No trouble could be found and I think each pilot wondered if the other had accidentally actuated the fuel shut-off valve switch and subsequently returned it to normal. Because we had run out of ideas to investigate, I had a mechanic-supervisor make a pickling run for temporary storage of the engine. Guess what happened? After several minutes of running, the engine suddenly quit cold with the mechanic's feet flat on the floor and his hands on the canopy sill.



Further investigation defied a repeat or explanation. I have my own idea of the cause but the probability of occurrence is so low that I would never be able to prove it.

More than once, a remark is overheard, and subsequently mentioned, with the result that it leads to, or supports, the solution of accident cause. One pilot made a comment to a non-technical friend during a dinner party about what he was going to try with the bird the next day. Too bad his dinner friend wasn't an aeronautical engineer because the tail parted company with the airplane. In an other case, the two pilots of a multi-engine job had been overheard to say that they would change seats prior to landing. This comment, together with other evidence, supported inadvertent actuation of a specially installed test system switch as the cause of the accident.

Witness information can be good or bad but it always pays to weigh it and consider it carefully. Once we allow ourselves to develop preconceived notions we tend to hear and put weight on only those parts that fit our theory. As a rule, I value witness information more than many investigators. It had been my experience that much can be learned if the investigator is careful to avoid leading the witness into stating what the investigator wants to hear. If the investigator is experienced, he usually can tell which witnesses are providing valid information. However, except for triangulation, witness estimates of distance and time frequently are off quite a bit.

As an example, I had a problem develop after becoming airborne following takeoff and I had to chop power. The terrain ahead was rough and I ended up inverted with a broken seat belt and sore skull. Of approximately 20 witnesses, all familiar with observing aircraft takeoff and land, some estimated my maximum altitude at 50 feet and some said I never got off the ground. I figured I reached a maximum altitude of approximately 10 feet. As another example, we made two overhead test passes with a transport one night. The group of people on the ground consisted of laymen and accident investigators. No one in the group was aware that the two passes were at different altitudes - one being at 9500 feet and the other at 15,000 feet. A point related to a particular accident was proved.

Supervisory error can take many forms, including aircraft maintenance, an on-the-job boss and the wife. Take the young pilot who was tagged with pilot error and pleaded for supervisory error on the basis that he never should have been graduated from flying school. Maybe he was right. Emotional stresses also have caused many accidents. I personally know of an excellent pilot who spun out on base-to-final because of an unjustified chewing-out he had received an hour before. Yet the report probably reads pilot error. Never forget the amazing things that can be determined by the aeromedical profession. It is possible for them to determine after a fatality the presence before death of certain drugs, carbon monoxide, smoke from fire, the bends, heart condition, and so forth.



Hazards of the language can cause some real dillies. Most everyone knows the story of the pilot's command to the copilot on a slow final — "takeoff power." The copilot took off power. In another one the pilot wanted to ground-loop a four engine job to avoid going down the side of a hill at the end of his landing roll. He called "full power on four." He got full power on all four. Then there was the case during takeoff when the pilot said to his down-in-the-dumps copilot, "Cheer up." The gear came up, all to soon. Voice recorders in the cockpit will help investigators a great deal in many accidents. Most of all I like the story of the commercial airline captain who had just completed a difficult instrument approach, and said to his copilot "What I wouldn't do for a cold beer and a hot woman." One alert hostess quickly realized that the captain was unaware he was connected to the cabin P.A. and took off full speed for the cockpit — when a passenger hollered "Don't forget the beer."

In conclusion, I think the Investigator's Handbooks are fine — but I also think the investigator should add a lot of good thinking and ingenuity, and beware of becoming too mechanical. Another very important quality is to be objective and without prejudice. If the investigator is prejudiced, knowingly or unknowingly, another accident may occur before the next investigation is conducted in a completely objective manner.

BY J.A. MARGWARTH APPROACH/JUNE 1967

### THE SPIRIT

Warrant Officer Harold W. Stitt of Altoona, Pa., a pilot with the 214th Combat Aviation Battalion's 191st "Boomerangs" Assault Helicopter Company, received the Distinguished Flying Cross and Purple Heart in a Ceremony at the 214th's Bear Cat base camp yesterday.

Stitt received the medals for his heroic efforts during a recent combat mission. At approximately 7 p.m. on September 20 Warrant Officer Stitt was commanding a UH-1D troop-carrying slick helicopter during a helilift of infantry troops into a landing zone (LZ) under heavy enemy fire. As he took his chopper into the LZ, one of the enemy rounds crashed through the chin bubble of his aircraft and lodged in his leg.

"I knew I was hit," Stitt recalled later, "but I didn't know how badly." With complete disregard for his own safety, he continued his mission making yet another insertion of infantry troops into the same "hot" LZ. Only upon completion of his mission was Warrant Officer Stitt evacuated to medical facilities for treatment of his wounds.

"I felt I did what any of the other "Boomerang" pilots would have done to complete the job," Warrant Officer Stitt added.

Presenting the awards to Stitt yesterday was the new commanding general of the 1st Aviation Brigade, Major General Robert R. Williams.



### SET A GOOD EXAMPLE

Two letters recently received by the Safety Center stress the same subject: leadership and the wearing of required personal survival equipment.

The first letter - on an "Anymouse" form - came from an anonymous correspondent who stated, "I have observed some senior officers not abiding by the rules that they, themselves, make all other aviators and crew members stick to. The importance of wearing this gear cannot be over-emphasized. How can this be impressed upon young crew members if our fearless leaders do not follow what has been taught from the beginning?"

The second letter was from the commanding officer of an attack squadron preparing for its third combat deployment.

"The matter of appropriate flying and flight attire both for appearance, function and safety has long been a thorn in this writer's side," he begins. "We are furnished the finest materials, the best professional assistance and finely engineered equipment for personal carriage, but close command attention to the utilization of this gear and working appearance is frequently missing . . . It has been long recognized that men respond to safety and personal appearance in proportion to the interest shown by their leaders."

This particular squadron CO has instituted monthly squadron personnel inspections in flight deck clothing, dungarees and flight gear. His policy is proving to be "more than successful." The inspection stresses adherence to prescribed safety regulations in clothing and shoes depending on the job assigned. It focuses the attention of each individual pilot and crewman on his personal equipment. It accomplishes an accurate sight inventory of clothing and safety equipment. (He requires that the division officer have a list of his equipment shortages ready at inspection time. This, coupled with the CO's sighting of men and equipment, gives him the ammunition needed to push a concerted supply effort.) Pilots are asked to place their hands on emergency equipment and state if they feel it would be accessible if they were in the water with life preserver inflated or if they were hung up a tree. Some are surprised at the potential inaccessibility discovered. The final and most beneficial result was the interest in personal survival shown by flying personnel as manifested by post-inspection ready room discussion.

"In summary," the CO states, "the whole evolution proved to be extremely worthwhile and educational both from a command position and from the position of the individuals within the command."



This is one constructive approach to the problem. Like all constructive thinking, it requires ability and effort. When commanding officers and other squadron leaders make it clear that they personally accept safety equipment and procedures, safety is promoted as a group value. It is human nature to emulate those whom we admire and respect. If the best pilots in the squadron wear their personal survival equipment, see that it is kept in good working order and manifest respect for the entire safety program, others will soon follow their example.

PREPARED BY U. S. NAVAL AVIATION SAFETY CENTER

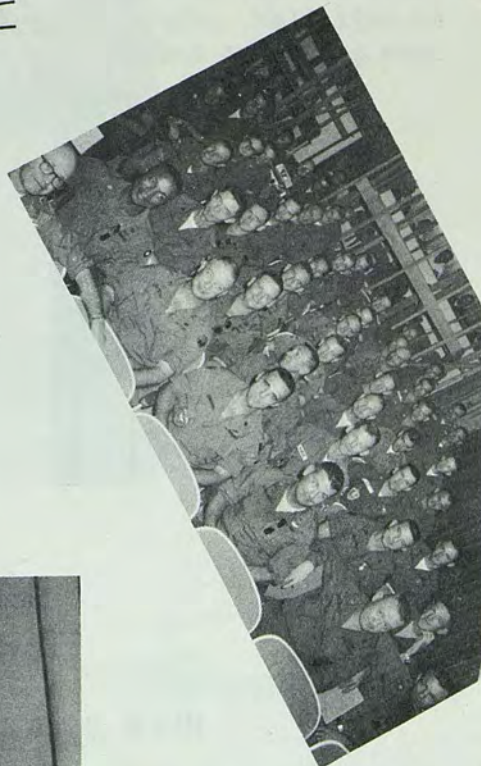




SEPT SAFETY



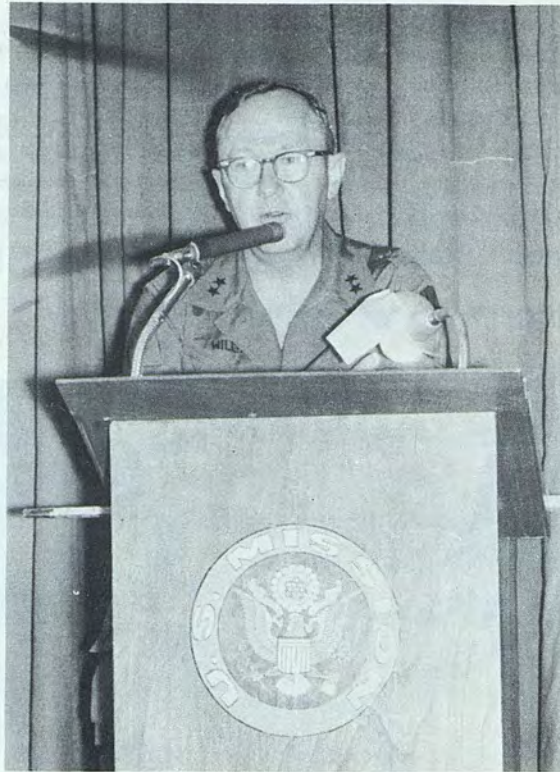
CONFERENCE



Lieutenant Colonel C. Smith, USAF, Aviation Section Master of Ceremonies, and attendees.

The attendance shows a continuing increase interest in Aviation Safety matters in USAF. There were 117 attendees, safety officers, flight surgeons, and aircraft maintenance personnel. Thanks for coming, now let's show our weight by reducing the accident rate.





#### OPENING REMARKS

BY

MAJOR GENERAL ROBERT R. WILLIAMS

Gentlemen, Safety Officers in a combat zone have a most important and most difficult job. In combat operations there is a tendency to cast safety aside. It is difficult, in combat, to preach safety but you have the statistics, you know that more than twice as many aviators are killed and injured in accidents than in combat. More than twice as many aircraft are lost to accidents than to the enemy. There is a tendency in a combat environment to take chances, to ignore safe practices, and to disregard protective equipment. Not doing this makes the individual feel that he is evidencing cowardice, a lack of guts.

Right now our limitation is pilots. Very shortly, as our pilot training program increases, this situation will reverse. The production rate of all aircraft is being reduced. Henceforth everytime we loose an aircraft, in combat or to an accident, we have lost an irreplaceable asset. We have lost that much of our combat potential. This makes your jobs as safety officers of the utmost importance. We must reduce these losses, we must conserve the helicopter fleet. This is our mobility advantage.



I have read aircraft accident reports, I've talked to Colonel Williams about the safety program here in Vietnam and I've observed operations. Time after time it is apparent to me that there are two ways of performing a mission. There is the quick and the bold approach. Jump in and hack it. Then there is the second way, use a little planning, a little professional thought, and a little preparation. Study the operational area, prepare your loading zones and pick up zones to the extent the situation will allow, plan your routes, your approaches and your departures, study the weather, and preflight your aircraft. This takes a little more time but one time in a hundred it saves an aircraft. We need these aircraft. We'd like to keep the pilots around but it's hard to convince them that something can happen to them.

--- THANK YOU ---







#### OPENING REMARKS

by

Colonel Van T. Barfoot  
Deputy Aviation Officer

Gentlemen, I have been shocked the last few months by the number of aircraft accidents and the number of fatalities caused by aircraft accidents. I know that you safety officers are doing your best out in the field, but we are losing over two aircraft to accidents for every one lost in combat. Last week we killed eleven people. Only two of these were as a result of enemy action. This is a startling revelation.

About fifty percent of these accidents are a result of exceeding the capabilities of the aircraft or the pilot. This is a result of doing things too quickly, without adequate preparation. There is only one way to stop this. Commanders must be convinced that aircraft operations must be planned, they must be conducted with the utmost regard for safety.

Several new units will arrive in country during the next two months. They will have only twenty percent experienced pilots. Before the next safety conference you are going to receive a lot of new, inexperienced pilots in the field. They will need all the guidance you can give them. You aviation safety officers and your commanders must provide this guidance. Proficient pilots and crews are the best assurance of a safe operation. The only way to insure proficiency is through training and practice. Along with your commander and S-3 you must assure that there is an effective training program.



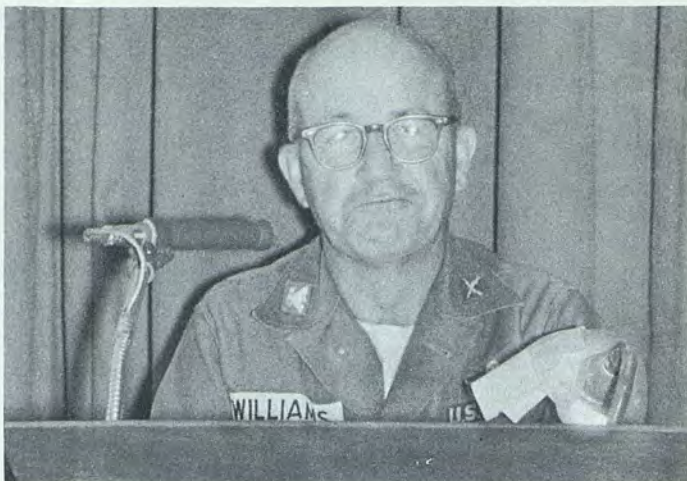
We experienced an accident recently because a pilot decided to impress his passengers. He made a practice autorotation. At termination he intended to make a power recovery but he forgot to add power. We lost an aircraft and three people. The cause of this accident is either lack of experience or stupidity. In either case, we can't afford it.

General Westmoreland has stated that one of our most precious assets in Vietnam is the helicopter. Without it we couldn't possibly win this war. When I fly I see the operational pilots performing magnificently. Unfortunately I also see some doing things that one day will catch up with them. We must convince these few who cause our accidents that there is a better way. A way that gets the job done professionally, rapidly, with the minimum exposure consonant with the tactical situation. A way that preserves assets, to enhance our battlefield mobility, the helicopter.

--- THANK YOU ---







#### EXCERPTS FROM COLONEL WILLIAMS ADDRESS

Gentlemen, I'm Colonel Williams, the Director of USABAAR. We are presently completing a survey to improve the safety record in Vietnam and to increase the efficiency of aviation operations. Accident prevention is the same as efficiency. If you have an efficient unit, it will be a safe unit. If you don't have a safe unit I can assure you, you don't have an efficient one. You are paying too much in resources to accomplish your job.

To develop a safe and an efficient aviation operation you must survey your units and facilities and review the causes of the accidents you have experienced. You must then determine the improvements that can be made in maintenance, operations, supervision and training. You must develop an optimum educational program to disseminate the results of operational and safety surveys and accident research.

Since USABAAR was established our accident rate has continually decreased. That isn't just because of USABAAR. You in the field applied the information we compiled and disseminated. The rate now is almost respectable, in 1967 it was 20.2 per 100,000 flying hours, including Vietnam. Excluding Vietnam it was 11.5 per 100,000 flying hours. Don't think you have all the Army aircraft over here, there are 5,700 flying elsewhere. Your rate is almost 30 per 100,000 flying hours. The rate in Vietnam will never equal the rate elsewhere. Everyone is well aware of the special operating conditions here, weather, mountains, high density altitude and fatigue. You can get below your present rate. These accidents cost 99 million dollars. This would buy a lot of UH-1's. I'd be remiss if I didn't state right now that every man over here in Army Aviation is doing an outstanding job, the pilots, the mechanics, the gunners and all. I have the highest admiration for everyone of you. However we can do the job more efficiently, more safely and with less cost.

--- THANK YOU ---





Major Costino, Hq USARV Avn Sec, presented accident rates and trends. If not checked, our costs for FY 68 will exceed \$72,000,000.00.



Lieutenant Colonel Meehan, Hq USARV Avn Sec, discussed escape and evasion in SE Asia. He stated that 7500 individual survival kits have been issued.



Major Crouch, USAF, presented the organization and operation of the Joint Search and Rescue Program in SE Asia.

Major Beczkalo, USAF, who eluded our photographer, presented the aviation weather quarterly summary.





Major Sanders, USABAAR Aviation Safety Survey Team, discussed R&D of aviator protective equipment in the system and under development.



Major Baird, Hq USARV Avn Sec, discussed the when and the why of collateral investigations in Vietnam.



Lieutenant Colonel Brown, Avn Safety Officer 1st Cav Div, was the surprise(d?) guest speaker of the afternoon.



Lieutenant Colonel Goulding, Chief of the USARV Avn Safety Division, presented the closing remarks.



HEADQUARTERS  
UNITED STATES ARMY VIETNAM  
APO San Francisco 96375

30 September 1967

PAMPHLET  
NUMBER 95-6

AVIATION

Volume II Number 10

1. PURPOSE: To supply information and assistance to Army aviation units in RVN.

2. GENERAL: This headquarters does not necessarily endorse the professional views or opinions that may be expressed in this pamphlet apart from official notices.

(AVHAV)

FOR THE COMMANDER:



ROBERT C. TABER  
Brigadier General, US Army  
Chief of Staff

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6 CINCUSARPAC  
1 USARPAC Hist Unit



POWER IN TIME PREVENTS HARD LANDINGS

