TAC ATTACK

TAC Attack June 1975

JUNE 1975

TAC ATTACK JUNE 1975 VOLUME 15 NUMBER 6

JUN

FOR EFFICIENT TACTICAL AIR POWER

FEATURES

DEPARTMENTS

TACRP 127-1

Angle of ATTACK

Request Maintenance Assistance

COL J.D. MOORE
Chief of Safety

In recent years, TAC ATTACK has been primarily operations oriented. While some items of interest to maintenance folks are included in most issues, we do not have an appropriate balance. So, this plea for assistance is directed toward those of you who have the technical expertise and material that will contribute to our collective accident prevention efforts. Writng skill is not required. The TAC ATTACK staff can do wonders with little more than accurate informational outlines and our artists can add drawings and diagrams for emphasis. Help us orient more of your magazine toward the troops who keep the machines going. Send your suggestions and articles to TAC/SEPP.

On 17 May, the Order of Daedalians presented the Major General Benjamin D. Foulois Award to Tactical Air Command for having the best aircraft accident prevention program in 1974. This is no small honor. It recognizes the efforts of each and every member of TAC in striving to fulfill our mission in the safest possible way. We in TAC's Office of Safety wish to pass a "good on ya' " to every one of you. Keep it up and let's make 1975 TAC's safest year ever.

Have a good one!

A SECOND CHANCE

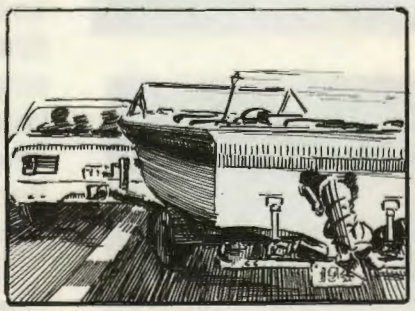
By Commander William H. Wilson, Jr., U. S. Coast Guard
Chief, National Boating Safety School
U. S. Coast Guard Reserve Training Center, Yorktown, Va.

The sun was just poking its head above the horizion and there was a delightfully warm breeze outside. From all indications, it was going to be a beautiful day.

Jim and Jeanette sat around the breakfast table with their two children, Tommy, ten, and Jennifer, eight, discussing the weekend boating trip they had been looking forward to for many weeks. Tommy and Jennifer, like many children, were so excited about going out in the new boat that they had spent most of the night awake and were finding it hard to keep their eyes open now that it was almost time to leave.

Jim went out to the carport to check the car and hook up their new eighteen-foot inboard/outboard, which he had just bought from a buddy being transferred overseas. Jeanette finished clearing away the breakfast dishes and told the children to collect their things and get ready to go.

About 8:30 A.M. they were all packed. Jim eased the car out of the carport, headed for the main gate and the open highway. As he increased speed to 40, 45, 50 then 55, he felt the car begin to pull to the left, then right. Looking out the rear view mirror, he noticed the boat trailer was beginning to "fishtail." Before he could slow down, he heard a loud bang, the trailer whipped violently and threw the car across the highway into the opposite lane.



Fortunately for Jim and his family, no traffic was coming and he was able to bring the car to a safe stop on the opposite shoulder. Hopping out, he found his bald right trailer tire had blown out.

OVERSIGHT NUMBER ONE—Jim took good care of his car, but completely forgot to check his trailer tires. Like some others, he also probably neglected to check the wheel bearings, brakes, hitch, safety chains, lights, tie downs, proper loading of the boat on the trailer, and license plate.

After changing the tire (thank goodness the trailer at least had a spare), Jim eased the car back on the road and headed toward the inlet and launching site.

Arriving at the launch site around 1030, Jim positioned the car at the top of the ramp and jockeyed the trailer into position for launching. Jeannett and the children got out and watched as Jim started down the ramp. About halfway down, he applied the brakes only to find that the car continued down the ramp at an alarming speed. He was sliding on the grass and seaweed that had grown on the ramp and he was out of control. Just as he was about to jump for safety, the tires found a clear area and dug in. Luckily, only the trailer got a dunking.

OVERSIGHT NUMBER TWO—Jim thought to get Jeanette and the children out of the car, but he forgot the other launch ramp procedures—checking the ramp's surface and general condition prior to heading down it; determining if there was a drop off at the end; water depth and direction of current. He also forgot to remove the boat tie downs, tilt the outdrive up, and make sure the boat plug was in.

After much fumbling around, he managed to get the boat off the trailer and secured to the finger pier. Moving the car up the ramp, he was surprised at the number of people waiting to launch their boats. He sank down in the seat in embarrassment as he passed the scowling boaters waiting to launch their boats. He looked at his watch—it was now 11:10 A.M. Had he really been blocking the ramp for forty minutes?

Jeannette, Tommy, and Jennifer were sitting in the boat when Jim returned. He was red-faced and wanted to clear the area fast as he was still getting uncomplimentary

stares. As he turned the key, the engine leaped to life. Jeanette threw off the lines and Jim eased the boat into the channel and headed out the inlet toward the bay. He spotted a red buoy and passed in down the right side of the boat. About ten seconds later, the engine started to labor, then cut out. The stern raised and the boat came to a sudden stop. Looking over the stern, Jim noticed a long trail of mud and sand leading from the channel to the stern of the boat. You guessed it, Jim had run aground. There was a hushed silence. No one said anything. Even the children, who had been jumping around, slumped into their seats. A lone seagull circled overhead and screamed incessantly. Jim sank down in his seat again. Could the seagull be laughing at him for his antics so far? Jim was sure he was.

He told Jeanette to climb over the side with him and help float the boat back to deep water.

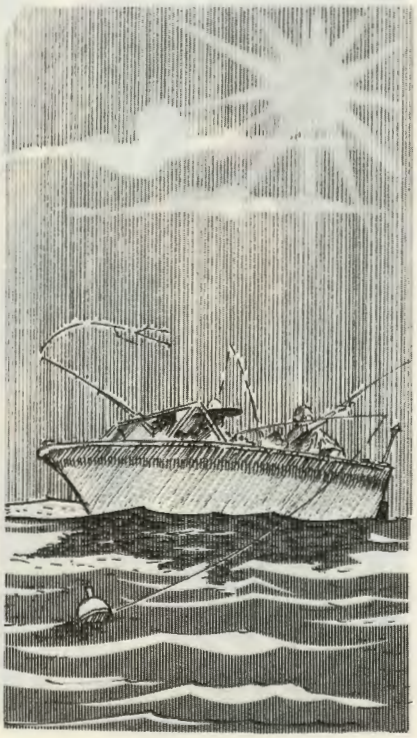
OVERSIGHT NUMBER THREE—Let's go back. Jim made a lot of mistakes, the first when he turned the key to get underway. Since he had a closed engine compartment, he should have lifted the engine box to check for leaks and fumes. He should have also run the blower for at least five minutes afterwards. Jim was lucky this time. No one had told him that one cup of gasoline has the explosive potential of fifteen sticks of dynamite when mixed with an appropriate amount of air and a source of ignition. It never entered his mind. His next mistake was passing the buoy on the wrong side. He had never heard of keeping the red buoy on the right when returning-**R**ED, **R**IGHT, **R**ETURNING. Since he was heading out he should have kept the red buoy on the left side of the boat. He should also have insisted that the children remain seated while underway. Could their jumping around have contributed to the confusion? Finally, he shouldn't have been so quick to go over the side with Jeanette to refloat the boat. Had he thought to raise the outdrive, and had he thought to bring a paddle or boat hook, he might have been able to relfoat the boat without climbing overboard. In any event, his first move should have been to have everyone put on their wearable personal flotation devices (PFDs) immediately. Jim should have seen to that and insisted that everyone had one on before going overboard.

Well, with Jeanette's help, they managed to get the boat back into the channel and continued out into the bay for an afternoon of fun and sun. It was fun, too—water skiing until they were ready to collapse, the fishing until the sun started setting, and finally capping off the day with a fish fry and marshmallow roast for the children on the island they had spotted about four miles offshore.

OVERSIGHT NUMBER FOUR—The family didn't realize just how tired they had become from water skiing and tried to crowd a whole weekend of skiing into several hours. If an emergen-

A SECOND CHANCE...

cy had come up, they more than likely would have been so fatigued, they would not have had enough energy to cope with it. Fishing for a while was a good way to relax, but they never gave a thought that Tommy and Jennifer had been roasting in the sun all day and had begun to look like lobsters. Also, both children felt unusually tired, complained of headaches, and had begun to feel sick—the basic signs of heat exhaustion went unnoticed by both Jim and Jeanette. Where was the first aid kit? Jim remembered seeing it last in the car trunk. The fish fry on the island could have been more fun, and would have,



had Jim known the way back to the launch site after dark and had he prepared for a night return. As he worried about this, a thought flashed through his mind as he sat by the fire. The buddy he bought the boat from had suggested he buy a compass for the boat. Why had he not taken advantage of that suggestion and also learned how to use it?

About 9:30, it started to rain and the wind picked up. Jim and Jeanette put out the fire, quickly policed their camp site, and herded the children into the boat. Jim used his head this time. He had everyone put on their PFDs. Pushing off the beach, he headed the boat in the general direction of the launch ramp. He pushed the throttle forward and the boat leaped up on the plane. Jeanette was having a hard time seeing with the rain and spray pelting her in the face and asked him to slow down. Jim, intent on only one thing, getting back as soon as possible, disregarded her caution. The rain tuned into a downpour and the bay became very rough. Still, Jim pressed on, holding the throttle hard forward to get every turn he could out of the propeller.

About halfway across the storm-tossed bay, the boat struck a submerged object. To this day, neither Jim nor Jeanette know what it was. But whatever it was, it instantly ripped a two-foot chunk out of the boat's bow. The boat rapidly filled, slowly settled to the top of the gunwale, rolled to starboard and capsized. Jim, Jeanette, Tommy, and Jennifer were thrown into the darkness of the bay.

Jim managed to get Jennifer back to the floating hull while Jeanette got Tommy. Thank God they were wearing their PFDs. For about two and one-half hours they clung to the overturned hull,

screaming for help and praying. It was the most frightening experience of their lives.

Around midnight, Jim saw a boat's lights heading toward them with its searchlight scanning back and forth. Soon they were staring directly into the beam and they began to wave frantically. The boat came toward them and, in a flash, was alongside. Ring buoys and helping hands reached toward them; one by one they were pulled aboard the boat and taken immediately to the cabin where they were treated for exposure. The boat was a Coast Guard Auxiliary Facility that had responded to search for them

when the owner of the launch ramp noticed a car and trailer were still there after all the others had left. It was sheer luck that the owner had seen the boat leave and remembered them as a result of their problems launching the boat and getting underway.

On the way in, with Jim's boat awash at the stern, the Coast Guard Auxiliarists told them all about **OVERSIGHT NUMBER FIVE**. They exceeded their capabilities by staying out so late. They also exceeded the boat's capabilities since they could not navigate it properly after dark, especially without a compass. When the storm started, they should have thought about postponing the trip across the open expanse of water. At least the island was solid ground, and they would have been safe there. Jim obviously never considered the possibility of striking a submerged object. It he had, he would not have been going at full speed. At least he had the common sense to keep everyone together. It is a lot easier to find a boat and survivors than a lone person bobbing around at night in a PFD. Finally, Jim and Jeanette both had forgotten to file a "Float Plan" with a reliable friend giving a description of their boat, number of people onboard, time of departure and return, intended route, destination, and other important information that would help them be located in case of an emergency. It was pure luck that the Coast Guard boat was able to locate them.

The story you have just read had a happy ending, even though the uninsured boat was a total loss. At least no one was injured or, worse yet, killed. Jim, Jeanette, and the children have recovered from their ordeal and have even bought another boat. I saw it sitting in their carport the other day, where it has been sitting unused for almost a month. I asked Jim when he planned to use it and he told me soon—just as soon as the entire family completes the boating course the Coast Guard Auxiliary is presenting at the local high school. He also mentioned that both he and Jeanette were considering joining the Coast Guard Auxiliary as soon as they finished the course. They do not want what happened to them to happen to others. After all, recreational boating should be fun. To keep it fun, boaters should not learn by accident.

If you own a boat or plan on buying one, why not contact the Coast Guard Auxiliary, US Power Squadron, Red Cross, or State Boating Agency for information on boating courses in your area? They're waiting to hear from you.

ABOUT THE AUTHOR—Commander Wilson, a frequent contributor to boating and safety magazines, joined the Coast Guard in 1954 and served seven years as an enlisted man, attaining the rate of Chief Damage Controlman. He was commissioned in January 1961 and has served in various assignments afloat, ashore, and overseas. In August 1969, he was assigned as Chief, Operator Compliance Branch, Office of Boating Safety in Washington, D.C., a position he held until September 1972 when he was ordered to the Coast Guard Reserve Training Center, Yorktown, Virginia to serve as the first Chief of the Coast Guard's National Boating Safety School. He is presently under orders to Alameda, California where he will serve as Executive Officer of the 378' High Endurance Cutter RUSH.

Comdr. Wilson's contribution makes him one of the

FLEAGLE T-SHIRT WINNERS

tell it all.

By General Robert J. Dixon
Commander TAC

Aircraft accidents are usually caused by a mistake or a combination of mistakes. People—design engineers, maintenance specialists, aircrews, or supervisors—make mistakes. Accident prevention is essentially a matter of eliminating these mistakes and guarding against other errors.

The reason for an accident investigation is accident prevention—not to place blame. Accident causes are identified in order to prevent the same mistake from happening again.

Accident investigations are totally dependent on accurate information. Information comes from physical evidence and statements of witnesses. Often, there are gaps in available data. Data can also lead investigators astray. Not much can be done about physical evidence—it is either there or it is not. Fortunately, trained specialists can get a lot of information from a very few pieces. Occasionally, this is enough. Usually gaps have to be filled in by witnesses—people.

This brings me to the point that I want to stress again—the need for *timely, accurate* and *complete* reporting by people with knowledge of any information that may have anything to do with an accident.

Let me cite a recent example. After an aircraft accident investigation board concluded and submitted its report, rumors about self-medication on the part of an involved crew member prompted the unit commander to conduct additional inquiries. Finding that the rumor did have some basis in fact, the accident board was reconvened. While the new facts did not change the accident cause factors, the board was able to dispel rumors and conjecture as to possible causes of the accident. In this instance, if people had come forward and volunteered the information at the beginning of the investigation, valuable time and manpower could have been saved. *For some reason,* they did not come forward initially and the pertinent facts were not learned until the board reconvened.

What we need to get at, is the *"for some reason."* Apprehension, fear of reprisal, fear of incrimination? To allay such fears, I emphasize one important facet of aircraft accident investigation—the area of "privileged information." In order to insure that people can provide truthful, accurate information to aircraft accident investigation boards, all information collected by the boards is treated—*by regulations*—as privileged.

Information so provided cannot be used as evidence for determining misconduct, disciplinary action or pecuniary liability. It cannot be used in a Flying Evaluation Board. Another indication of the importance of total candor is the fact that witnesses before an accident board do not testify under oath. No one should evaluate the significance of a particular piece of evidence to an accident investigation and decide to withhold it. Evaluation is the board's job. The board needs all the help we can give. Every bit of information contributes and the board needs all that is available. Fitting the pieces together is their business.

It is true that we can conduct *separate* investigations if facts indicate there may be cause for administrative or disciplinary action. However, witness

statements provided to an aircraft accident board *cannot* be used to *determine* these actions. Even so, there are some basic realities to face. The first is that we *have* to know what happened to protect ourselves and others from recurrence. We are professionals and we must treat accidents as professional—not fraternity—work. If people volunteer the truth to an accident board and there is concurrent or subsequent, separate reason to consider administrative or disciplinary action as a result of the admission, TAC is oriented *in favor* of the man who admitted his *mistake*—we can trust a man who made an honest mistake and admits it—he is, in fact, proven human *and* proven professional. He is *one of us.* An undisclosed mistake or willful violation is *an action against* our profession—against our effort to save lives and preserve resources. TAC's resulting orientation is very different.

Back to my point—we need timely, accurate, and totally truthful reporting—to withhold information or disguise facts could lead an accident board to reach erroneous conclusions. Inadequate corrective action based on misinformation could result in more—and perhaps avoidable—accidents. Do not wait to be called for information. Volunteer it—and tell it all—the way it is. This includes your knowledge of an individual's personal traits or faults—even if he is your fellow airman. Remember—you could save his life—that of another—an airplane—or your own life.

MILAP and

Captain Robert M. Carnes
Hq TAC/LGMMP
Maintenance Procedures Officer

In the ancient days of Greek mythology, the collection of maintenance data was first begun (1100 BC). A good mechanic named Daedalus built himself and his son, Icarus, a set of wings from wax and feathers to enable them to escape the Island of Crete. Daedalus instructed Icarus not to fly too close to the sun or the wax would melt and the wings would fall apart (first Technical Order). Being a bright young lad, who was sure his abilities and

Maintenance Through the Ages

knowledge were superior to that of any tech data, Icarus quickly jumped from the island cliff and soared toward the noonday sun. Alas, the wax melted and Icarus, with an incredulous look, spun-in. That bit of maintenance data has never been forgotten, for no other place in recorded history has man made the same mistake with wax and feather wings. In fact, this information is still so strong in the minds of present day Air Force leaders that the Benjamin D. Foulois Memorial Award is presented annually by the Order of Daedalians.Those commanders who have done the best job of keeping their wings from falling apart are eligible for consideration.

Then there is the story of 1st Lieutenant Benjamin D. Foulois, who in 1910 at Fort Sam Houston, Texas, was given one Wright Flyer airplane, eight self-designated aircraft mechanics, $150.00 for six months maintenance expenses, a handwritten booklet on "How to Teach Yourself to Fly" and a set of orders for a one year flying test. The Lieutenant kept a detailed diary of all maintenance problems, corrective actions, flight characteristics and crashes. Necessity being the mother-of-invention, the young officer developed the first documented Maintenance Data Collection (MDC) system. One day during a routine crash, the entire front elevator of his Wright Flyer was destroyed. No money was left in the kitty to build another (austerity program). Being brave and also bucking for a good OER, the Lieutenant took to the blue minus a front elevator (Functional Check Flight). Upon an uneventful landing, he talked with his maintenance men (aircrew maintenance debriefing) and said the aircraft flew 100 percent better with only the rear elevator. Quickly, Lt Foulois wrote a letter explaining the news (Emergency Unsatisfactory Materiel Report, EUMR) to the Wright Aircraft Company (Depot). Like all good depots, Orville and Wilbur had already discovered the problem and were eliminating the front elevators on all new Wright Fliers (Time Compliance Technical Order, TCTO). Now the MDC and reporting systems were firmly established.

Along came the early 1950s and a system was devised so that large quantities of maintenance data could be written in codes on special forms. The forms were sent to a key punch operator who converted the codes to little holes in cards. The cards were inserted into a computer and the little holes turned to information on magnetic tape. The cards could now be donated to the annual Boy Scout paper drive; the little holes punched from the cards could be used for confetti in case the wing commander made BG. A major breakthrough had been made in maintenance data collection. Happiness prevailed for a while, then someone wanted the information back out of the computer. Sadness was upon the land until a method was devised. Quickly true BLIS (Base Level Inquiry System) was enjoyed by all maintenance managers. In fact, there was so much BLIS that the trash cans and desk tops were overloaded. The annual Boy Scout paper drive was again a whopping success. By then supervisors had learned to decipher the numerous pages of machine run codes and it was discovered the data going into the computer was false. Proper use of codes was lacking! Why were the workers filling out their forms incorrectly? Did not the personnel with the pencils and code books know the computer wanted good information? No! -- for no one had taken the time to explain the reasons behind accurate maintenance data collection.

For almost 20 years, maintenance personnel fed garbage to their computers and it always returned the same. The Alchemists' hope of gold from garbage once again failed. Why? Because the MDC system was not responsive to the needs of maintenance managers. It did not provide data necessary for comprehensive maintenance analysis. The old system did not kick out the type of information necessary for good management decisions. It required the submission of numerous punch cards in

Maintenance Through the Ages

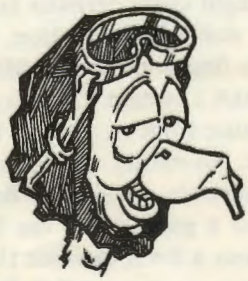
order to retrieve data. Finally, the MDC system became a mysterious system that was used only by "data smashers" and people who had a degree in code deciphering.

The Tactical Air Command Deputy Chief of Staff for Logistics decided to do something to improve the maintenance data collection system. It was too late to help Icarus and Lt Foulois, but not for present day maintenance managers. A new maintenance data collection, retrieval, and analysis system called MILAP (Maintenance Information Logically Analyzed and Presented) was implemented TAC-wide on 1 August 1973.

This system communicates with the manager. Most machine products of MILAP contain narrative, not just columns of codes. You get the information you want when you want it, for there are no automatic monthly or daily reports. MILAP provides useful information to managers that can aid in the decision making process. MILAP has edits which prevent maintenance personnel from entering false work unit codes. MILAP products will show when crew sizes and time to perform a specific job are padded. These products will show when work is documented on an aircraft that is flying, when non-compatible maintenance is being performed, and when work is documented against a NORS-G aircraft. Other MILAP products identify debriefing discrepancies that show no corrective action within the computer. The MILAP system makes false reporting more difficult and accurate reporting easier. It is forcing the documenter to provide accurate data. A shop chief can see all maintenance actions documented by his personnel for each 24-hour period, the crew size, workload, and how many people from the shop are performing work for every 20-minute increment of the day. He is able to determine how many people are needed on each shift to insure adequate coverage. Inadequate checklist inspections have become easier to detect -- a quick retrieval product will show all pilot discovered discrepancies that should have been discovered by the crew chief. Flight Chiefs can see when their aircraft were scheduled to fly, when they actually became airborne, and the exact reason for deviations. Supervisors can see what systems and components of the aircraft are consuming the most manhours to repair and at what frequency they are breaking. They can also see what shop and which shift performed the repair action.

Supervisors continually need answers to questions to aid them in their jobs. Are remove and replace actions with no repair too high? What discrepancies have the highest "cannot duplicate" corrective action? What major system on the aircraft is the limiting factor for effective mission accomplishment? What are the reasons for flying schedule deviations? Which aircraft are consuming the most unscheduled maintenance and why? How well are Plans and Scheduling and Job Control maintaining an orderly flow of work on broken aircraft? Are pre-flights being accomplished too rapidly? Do the phase docks maintain a smooth and continuous flow of work? These are just a few of the management questions that MILAP products can answer.

Exactly what is MILAP? It is a computer merge of an Automated Weekly/Daily Flying Schedule and all deviations, an automated Aircrew/ Maintenance Debriefing System, AFM 65-110 data, and the MDC system with added work unit code and work center edits. MILAP is a maintenance management system for maintenance managers and a tool to enhance the decision making process. It is an automated system with edits to help eliminate false data from entering the system. MILAP is a time oriented system that shows work accomplished by 20-minute increment for all work centers. MILAP is the epoxy glue that can substitute for the frailties of wax. It can prevent wings from falling apart. Try MILAP, you'll like it. It works.



Captain Carne's contribution makes him one of the

FLEAGLE T-SHIRT WINNERS

DOWN TO EARTH

GROUND SAFETY
Quotes and Notes

SAFETY 76

Always try to drive so that your license will expire before you do.

ELECTROCUTION... it may be the shock of your life

By TSgt Barry D. Shelton
HQ TAC/SEG

In the past four months, seven members of the Air Force died by electrocution. TAC has lost an average of *one* person per year over the last five years due to electrocutions. This may seem to be a small number, but any loss of life is tragic—especially if it could have been prevented. TAC's victims died not as a result of freak accidents, but because of a failure to follow commonsense practices when working with *or around* electrical apparatus.

All of TAC's fatalities occurred during off-duty time and involved different activities. One man was laying on damp ground while working on makeshift wiring that he had installed under his rented home. He was using common pliers and had *not* turned the current off. Another electrocution occurred *while* a man and his son were taking down a television antenna; it struck a 7200-volt powerline. The boy was holding the antenna at the time and when his father attempted to free him from the antenna, he was also electrocuted—both died. During off-duty employment at a sports field, *another* member of TAC attempted *to* change a bulb in a lighting bank. The man was a qualified electrician, yet he failed to turn the power off and died when he touched the filament of a broken bulb. The list goes on—all tragic.

Because electrical devices have become such an integral part of our day-to-day living, it is easy for complacency to set in. When this happens, it can easily cost your life.

How do you stay out of danger? Here are a few hints to help you:

- Leave electrical work to qualified *people*.
- Beware of overhead powerlines, frayed cords, *and* loose connections.
- Beware that even low voltage can be dangerous due to high amperage.
- De-energize the circuit before you begin repairs when there is the slightest chance of contact.
- Keep your distance from overhead powerlines.
- Install safety *plugs* in outlets that are not in use—especially when children are in the home.

In cases of electric shock, immediately turn off the current. If the current cannot be turned off, thick rubber or dry clothes should be used to detach the person from the current. The rescuer should never touch the victim until separated from the electrical current *source*. A person may stop breathing after suffering electrical shock. Artificial respiration must be started within a matter of seconds or irreparable damage to the brain and other vital organs may occur. This respiration must continue until the victim starts breathing normally.

As you can see, *there are* no specific patterns or trends in electrocution accidents. An electrocution can occur anytime, anywhere, to anyone who fails to use common sense safety rules while working or playing around sources of electrical power.

CHOCK TALK

...incidents and incidentals with a maintenance slant.

T-39 JUMPS CHOCKS

The Sabreliner was on the trim pad being run up after an engine change. Power on the left engine was at 100 percent and the right engine was being advanced from 90 to 100 percent. When the operator in the left seat leaned over to read the PT-5 gauges, his foot released some brake pressure. The aircraft started to move and then jumped the chocks.

Suspecting brake failure, the left-seat operator pulled the emergency brake handle, but the trainee in the right seat held pressure on the brakes, preventing the operator from "pumping up" the brakes as required during emergency brake operation. During this time, the aircraft careened straight ahead. Power was reduced to idle just as the aircraft's left wing tip struck a portable sound deflector unit.

Investigation revealed that the unit's training directives were inadequate. They did not stress aircraft brake effectiveness versus gross weight and stopping procedures/capability when the aircraft starts moving under high power settings.

The unit's training procedures have been revised to include proper use of throttles and brakes during normal and emergency situations. Special chocks are being designed locally to preclude the aircraft from pushing or jumping a chock. Engine runs at high power settings will be made only when the aircraft is at high gross fuel weights (3,500 lbs. or more), in order to reduce effective thrust. A study is also being conducted by Systems Command to determine feasibility of installing tie down rings on the main gear to use when conducting engine runs.

Although this incident involved a T-39, all TAC units can learn from this unfortunate episode. Review your own procedures for training personnel on engine runups. Use proper equipment to keep the aircraft secure while at high power settings. Keep the clear area in front and to the side of the aircraft free of obstructions and equipment.

All units should review their training programs for engine run crews, paying particular attention to emergency situations. Thorough training is a must for everyone working around aircraft and can prevent similar occurrences. If you do not think you are getting adequate training, or have adequate equipment, let someone who can rectify the situation know about it.

SUPER SABRE GREMLINS

Gremlins recently got an F-100. After landing, the pilot pulled the drag chute handle but felt no "tug" on the aircraft to indicate a good chute. The jock then engaged the BAK-12 successfully, but the cable contacted the tail skid, causing minor damage. The investigators not only found that the drag bag failed to deploy... it was missing. A ground witness later reported he had seen the chute depart the aircraft shortly after take off.

The chute had been installed by an inexperienced crew chief under the supervision of two experienced 'chiefs whose job it was to insure the chute was installed properly. The investigation showed, however, that the drag chute control cable was not properly installed in the drag chute control box sector. Safety wire is required through the end behind the swedged ball following cable installation and this was not done. After previous deployment, the slack in the cable allowed the swedged ball to back out of the sector groove. When this happened, it disconnected the drag chute control handle and made drag chute deployment impossible.

Why did the drag chute doors open inflight? There are two possibilities: the doors were not properly closed or the door latch assembly malfunctioned for an unknown reason.

Drag chutes play an important part in helping to stop many fighter aircraft.

Installation procedures must be very carefully followed. This time the gremlins were man-made—but whatever the cause, keep in mind you may have to take the barrier if the drag bag does not grab.

TACTICAL AIR COMMAND

AIRCREWMEN of DISTINCTION

Capt Jerry D. Woods
426 TFTSq
Luke AFB, AZ

2LT Gary H. Chapman
426 TFTSq
Luke AFB, AZ

After leading a basic flight maneuver (BFM) training mission, Captain Jerry D. Woods, IP, and Second Lieutenant Gary H. Chapman, Student WSO, were preparing to land their F-4C when they noted an unsafe right main landing gear indication. The wingman confirmed that the nose and left main gear were down, but the right main gear remained up.

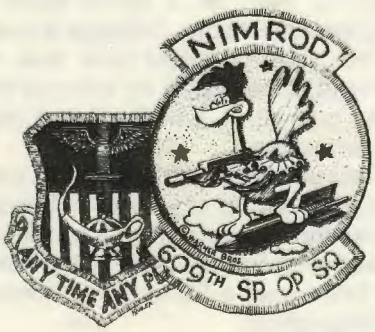
Numerous unsuccessful attempts were made to attain a fully down and locked indication using normal and emergency extension procedures. An attempt to retract the left main and nose gears so that an emergency landing could be made using the external wing tanks also proved unsuccessful. Captain Woods then requested that the runway be foamed and prepared for an approach end arrested landing.

Captain Woods established a flatter than normal half-flap approach. In spite of considerable yawing from the asymmetric configuration, he made a perfect touchdown 300 feet short of the BAK-12. He held the right wing up long enough to clear the BAK-12, then let it touch down as the tailhook engaged the cable. Damage was minor and limited to the right external tank and right aileron. Investigation revealed an internal failure of the right main gear strut, which caused the gear to bind in the wheel well.

The professional judgment, crew coordination, and airmanship of Captain Woods and Lieutenant Chapman prevented serious aircraft damage and possible personal injury. They have been selected for this month's Tactical Air Command Aircrewmen of Distinction. >

A-26

A Legacy to the A-10 Was Given by This Battle-Scarred Veteran of Three Wars.



Quiet now . . . relegated to museums and parks . . . finally at rest . . . bathed in the deserved awe by children whose fathers she took to battle. WWII . . . Korea . . . Southeast Asia. Modified, updated and back to fight one more time . . . Can Do. Age and logistics defeated her, the enemy never did. Interdiction? . . . Close Air Support? . . . Armed Recce? . . . Her crews wrote the book. Who else could carry 9000 lbs plus, fly for over four hours, make over a dozen passes on target . . . and survive? With twin R-2800s pounding the air out of synch to confuse the gunners . . . bomb bay loaded, eight wing stations full and eight .50 cals in the nose, she went out night after night stalking the enemy alone. Her last show was possibly her finest hour . . . On The Trail meeting Uncle Ho's trucks and guns nose to nose . . . and coming out ahead . . . "What did you fly in SEA?" "The A-26, I was a Nimrod!" . . . 'nuff said.

Major Jay Norton,
HQ TAC/DRPS

. . . another beautiful drawing contributed by our friend in Tempe, Dennis Kahler. We receive so many inquiries about Denny's work we're providing his address so you can contact him directly:

DENNIS KAHLER
3307 S. Terrace Rd
Tempe AZ 85282

radar contact and pilot responsibilities

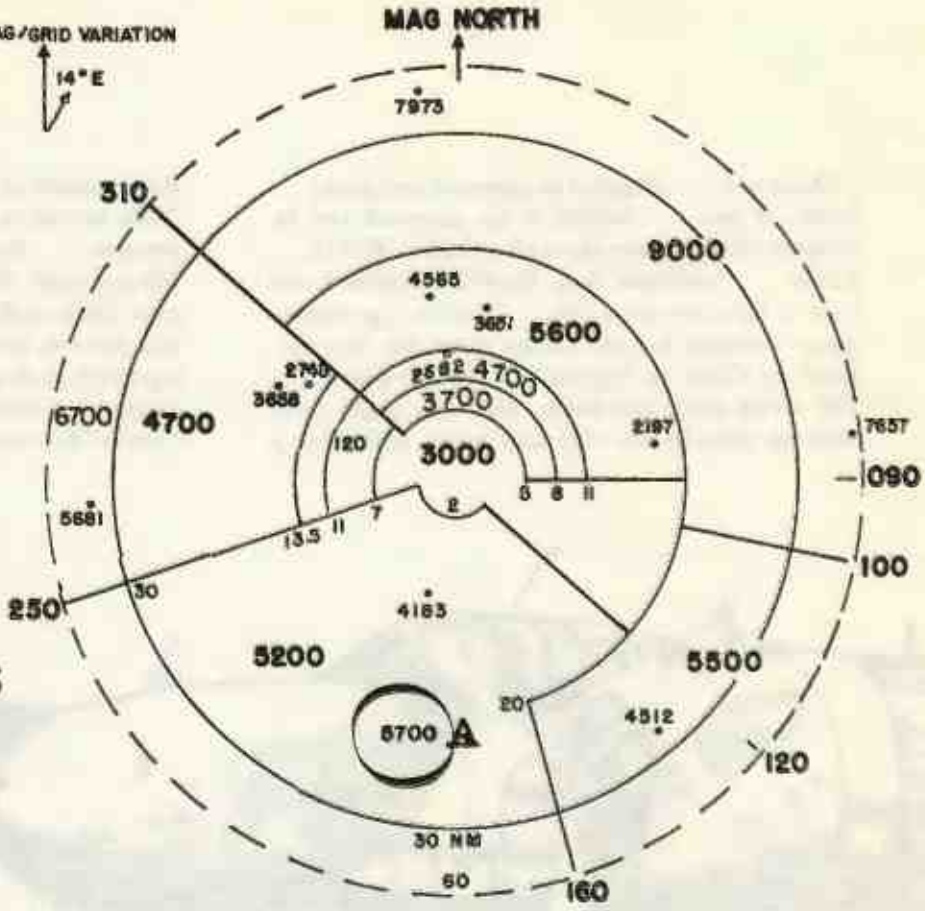


FIGURE 1

By Capt Marty Steere,
HQ TAC/SEPP

Two recent Air Force accidents pointed out deficiencies in the terminal airspace management system. As a result, there is high visibility on problems associated with radar and non-radar operation at minimum altitudes in the approach phase of a flight. Both controllers and aircrews have been jarred out of complacency. Air traffic control rules and procedures have been tightened and pilots and navigators have reassessed their responsibilities for terrain clearance when accepting air traffic control clearances.

This article attempts to clarify for aircrews the significant differences between the minimum vectoring altitudes used by controllers in enroute and terminal areas, and the minimum sector or minimum safe altitudes the pilot sees on most instrument approach procedure plates in the FLIP.

Did you ever notice that you are sometimes vectored for the approach at an altitude lower than the minimum sector altitude or minimum safe altitude? The reason is that radar controllers use segmented charts which are either displayed on the scope or located on the console (Figure 1). These minimum vector altitude charts provide 1,000 feet vertical and 3 miles horizontal obstruction clearance. There are exceptions. In mountainous terrain, 2,000 feet vertical clearance is provided; and beyond 40 miles from the radar antenna, 5 miles horizontal clearance is required. The minimum safe altitude sectors are basically a quarter of the pie, but as you can see from Figure 1, the vector altitude chart can be segmented in more detail to provide greater flexibility for movement in air traffic terminal areas. There may be isolated obstructions with exceptionally high vertical clearance requirements located in otherwise flat terrain. In these cases, a

buffer can be set up around the obstacle allowing radar controlled flight beyond the three or five-mile radius at lower altitudes which provide adequate clearance from terrain and obstructions in the remaining segments of the area involved (see "A", Figure 1).

Another important factor to remember is that the obstruction-clear radius of minimum vectoring altitudes is determined by the *distance from the radar antenna site, not the distance from a navaid.* Therefore, there may be a difference between the altitude you are being vectored at and the minimum sector altitude listed in the low altitude terminal approach procedure booklets.

The minimum sector altitudes shown on low altitude approach plates are established within 25 nautical miles of a navaid. Outside this radius, that altitude may not be safe. Also, *minimum sector altitudes are not required on localizer approaches without a NDB*—so be careful.

As for the newly defined rules and procedures, if you are being radar vectored and receive clearance for a non-radar approach, you are required to maintain your last assigned altitude unless: (1) a different altitude is assigned by ATC; or (2) until the aircraft is established on a segment of the published instrument approach procedure.

So what can you expect from ATC? When being vectored, you should be assigned an altitude consistent with approved minimum en route altitudes, minimum vectoring altitudes or the altitudes appropriate to the segment of the published instrument approach procedure. Once you are established on the segment of the approach procedure, the published altitudes apply to descent within each succeeding approach segment.

Now comes the biggy: *If the pilot is uncertain of his clearance, he should immediately request clarification from AIR TRAFFIC CONTROL.*

During all portions of flight, you, the pilot, are ultimately responsible for knowing where you are and for terrain clearance. Radar controllers are responsible for giving you traffic separation and terrain clearance when providing you radar vectors, true. But you are *ultimately* responsible. According to AFR 60-16, you must not accept a clearance if safety considerations prove acceptance impracticable. When advised by air traffic control that they have you in "radar contact," you should not stop navigating. Do not become complacent and overrely on air traffic control. When preparing to fly an approach, you should be aware of the minimum and emergency safe altitudes of the airfield to which you are going. If you are going to execute a low altitude approach, check out the minimum sector altitudes. Look at a VFR map and see what type of terrain you will be flying over during your approach. This type of planning takes place *before* you strap the aircraft on, not when the controller starts to descend you to an approach altitude. Use all the navaids you have on board. If you have airborne radar, INS, LORAN, radar altimeter, etc., use them. If you fly with a navigator, use him. The approach phase of the mission is not the time for him to clean up his cockpit. He should be monitoring your approach to insure you don't find a granite-lined cloud. Use your 'gator's talents; he can do a lot more for you than read the checklist.

There you have it. Now you know what radar controllers use to keep you clear of obstructions when they are vectoring you around the sky. You also know that their minimum vectoring altitudes may differ from those minimum altitudes you find on an approach plate. The secret is preplanning all phases of your flight, preparation for the unexpected, and coordination with your GIB/WSO/navigator, if you have one aboard. →

Photo Courtesy Sperry Rand Co.

FLEAGLEGRAM

RESPONSES FROM THE FRONT

Dear Fleagle:

Night flying is for you birds! Last night it was so dark that even you would have hung it up and gone to the bar. But us Aardvark types were up there practicing bleeding; i.e. night formation -- and without a moon (the scheduler forgot to check the phase of the moon). Fleagle, it was really dark!!! While I, the IP, had a death grip on the glare shield, my fledgling AC tried his best to hang in there. Although lead's exterior lights were all operating, he was damn hard to see. It seems that our wings were overlapped most of the time. (The F-111 has these long wings, unlike real fighters). So how about a favor? Could you talk to some of your buddies up there in headquarters nest about getting the Aardvarks some formation lights like those F-4s -- before we lose more Aardvarks during night formation?

Aardvark Aviator

Dear Double A:

I can sympathize with your problems. I nearly had a midair just last week trying to hang onto the wing of a bat.

My friends at TAC ATTACK ran an article on this Aardvark aggravation last September (SPO Corner, pp 24-25) that mentioned several proposals in the mill. Luminescent lighting for the F-111 received Tri-command (TAC, PACAF, USAFE) approval on 29 April 75. Since it is a 4-A mod (Safety), it will be funded but we are still waiting for a firm date.

In addition to luminescent lighting, two other ideas are being considered. There is a proposal to modify wingtip lighting so that both shoulder and tip lights remain on regardless of wing sweep. This mod is on hold since some people feel it won't be necessary if luminescent paneling is installed. Another proposal to add a vertical stabilizer spotlight is still under study.

A final decision considering all three proposals will be made soon by the users and we will publicize these mods in a future issue of the mag. Until then, do your best to keep your practice bleeding just that. . . practice.

Fleag

Dear Fleagle:

Here is something that might prove to be as instructive to someone else as it was to me. Being fairly new to the air-to-air refueling business, I have never considered the importance of maintaining the proper observation position. Recently, at night, I strayed (mistake #1) way out from the tanker's wing in order to better observe the "thrash" that was going on at the contact point. When, oops, the tanker took us smack into a very thick and icy cloud deck. Now what? The tanker was barely visible, but that didn't stop this intrepid aviator from attempting a rejoin (mistake #2). A midair was narrowly averted by some panicky yanking and banking.

This is one pilot who will stay close to "mama" tanker from now on.

Phrantic Phlyer

Dear Double P:

Maintaining a good observation position is important when getting gas -- especially if someone else is on your wing. It could have been more of a harrowing experience for your wingman. Thanks . . .

Fleag

WHY EGRESS MISHAPS?

Two qualified, experienced egress technicians responded to the red-ball work order to facilitate other maintenance. They had all the necessary tools and equipment available. Safety devices were installed when they arrived at the aircraft. Demand and response technique was used in completing the work. A no-sweat job -- one they had accomplished many times. A safe operation, right? Not necessarily. All these procedures were followed in 8 out of 14 egress mishaps that have occurred this year, and in 21 out of 30 in 1974.

What went wrong? How could trained specialists, using required safety devices, and following authorized procedures, cause explosives mishaps? The complete answers to these questions may never be known. However, we do know some causes for these mishaps.

Ironically, the first and most frequent cause for egress mishaps is familiarity with the work which apparently results in overconfidence. Egress systems are complicated, but they do not change too frequently and mods are generally minor. Work on the systems can become a matter of repetition. Intricate and difficult, yes, but repetitive . . . like driving a car. This comparison makes a lot of sense -- many automobile accidents, like egress mishaps, result from complacency. When you no longer concentrate on what you are doing, disaster is just around the corner.

A second frequent cause of egress mishaps is improper use of tech data. AFR 66-51 requires demand and response in use of checklists. Each step must be called out, accomplished, and acknowledged. So where's the rub? Well, a checklist is only as good as the person using it. If difficult procedures are not verified as having been accomplished correctly, what good is the checklist? If continuity of the work is interrupted and proper sequence is not resumed, what good is the checklist? If steps are omitted or overlooked, what good is the checklist?

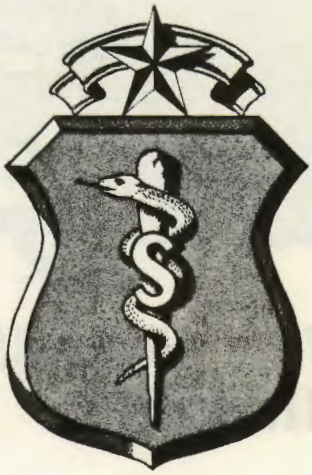
The third frequent cause of egress mishaps is a sore subject to most egress tehcnicians. Mention supervision and you are liable to draw hostile fire. Any egress supervisor will tell you that egress maintenance is the most supervised, inspected, and quality-controlled work accomplished at Square Deal Air Patch . . . and he may be right! It is designed to be that way. A shortage of adequately qualified supervisors is sometimes used as an excuse. Especially when most of the work orders received by the Egress Shop seem to be red-ball items. Even good supervision, when improperly managed, will spread too thin. But really good management and supervision, undermanned or not, will eliminate most egress mishaps.

A fourth, and perhaps most important, cause of egress mishaps is that many people do not seem to exercise proper caution when working on or around egress systems. This is the most difficult cause to understand. Egress systems are designed to save lives, and they generally serve their purpose well -- but they can maim or kill if not treated with respect. Inherently dangerous, egress systems employ controlled explosive power to hasten a safe exit from a rapidly deteriorating situation. In laymen's terms, they are designed to separate the crew from the aircraft when no other choice looks better. The individual components may be small, but separately or together they carry a helluva punch. An intelligent man does not play Russian Roulette. Why play the game by disregarding the hazards of egress systems? Either way, you are just as dead.

Complacency, inadequate supervision, improper use of tech data and overconfidence are not new problems and we do not have new solutions. The answer is simple. Supervisors need to get more involved. If you have personnel problems, let the proper people know about it. Get your troops' attention and keep them on the ball. Explain the hazards to them and keep them aware. A new forum for egress was recently established -- the Egress Safety Council. Use it as a platform to let us know your problems and solicit help. Tell us your good ideas as well -- we will spread the wealth to all who can use it.If you are not privy to the Council, do not be afraid to speak up. Let your immediate supervisor know. Send us a Fleaglegram. Submit a Hazard Report. Get involved!

One last note. A new Command Special Interest Item, 75-7, will be used by the TAC IG to evaluate egress maintenance. Check AFR 66-51 and AFM 127-100. If you have your stuff together, OK. If you need some work, best get on it!

PHYZ-BIZ



DECOMPRESSION SICKNESS : Conclusion

By Lt Col Harold Andersen
HQ TAC Physiological Training Coordinator

"An ounce of prevention is worth a pound of cure"; so goes the old saying. It is certainly true when applied to Decompression Sickness, and is the philosophy of Physiological Training Officers and Flight Surgeons who deal with clinical aspects of this disease. Our objective is to eliminate, or at least reduce, the incidence of the disease, rather than treat it after it appears.

One logical approach assumes that if factors which make individuals susceptible are known and controlled, then the disease can be controlled or eliminated.A common reaction of aircrews to this approach is a negative one: "Why me? Why should I learn a list of symptoms and/or conditions?" Well, the individual aircrew must realize that he is going to make the initial diagnosis of his own symptoms! Failure to recognize them will delay application of corrective procedures. In many cases, the outcome might be less desirable if recognition is delayed -- a normal recovery might be impossible.

We could entitle the following paragraphs "What Every Aircrew Should Know About Decompression Sickness" since they can provide a basis for understanding preventive measures and proper medical management of D. S.

Let's try to pull all the loose ends together into a neat package consisting of warning symptoms, cause factors, proper "First Aid" procedures and finally, medical treatment of severe cases.

1. Symptoms:

a. Bends - pain in the joints or muscles.

b. Chokes - burning, stabbing pain in the center of the chest (under breastbone), accompanied by difficult breathing, feelings of air-starvation, and a dry cough.

c. CNS disturbances - possible weakness in arms or legs (paralysis), visual problems (loss of vision or spots or lines in the field of vision), headache, vertigo, fainting, shock, etc.

d. Skin symptoms - itching or "creepy" sensations, diffused rash or mottling of the skin.

2. Cause factors: The most likely candidates for a case of D.S., as indicated by the symptoms above, are old and/or fat aircrews who ascend to high altitudes rapidly, stay a long time and are physically active at those altitudes. Remember that no one is immune if the conditions are right (i.e. if they go rapidly to a high enough altitude, stay there long enough and exercise while they are there). With the exception of aging, all factors are under your con-

trol: your body weight (amount of fatty tissue you are carrying), and the flight conditions (unpressurized flight above 18,000 feet; rapid rate of ascent; level of activity; long exposure time). There are some other factors which are significant, at least from the statistical viewpoint: temperature, time of day, season of the year, etc, but these are not well understood and for the most part are not under your control. Individual susceptibility may be the most important factor of all. It may be this factor which causes the reaction of most aircrews to be so unpredictable for any given exposure -- in extreme cases.

3. First-aid procedures: When symptoms appear and you suspect decompression sickness, you should immediately go to a 100 percent oxygen setting on your regulator, declare an emergency, descend as soon as possible to as low an altitude as can safely be permitted (considering terrain, air traffic, etc), and head for the nearest AFB. AFR 60-16 states "Consultation with a Flight Surgeon/Flight Medical Officer or a civilian aeromedical examiner will be obtained before the person affected may continue flight." Request a Flight Surgeon and ambulance. The 100 percent oxygen should be continued during your trip to the hospital and for as long as the Flight Surgeon deems necessary. You should be transported from the aircraft to the ambulance, and from the ambulance to the hospital emergency room (or ward, or wherever) on a litter. Do not walk, even if you feel capable, avoid exercise or exertion (climbing steps, etc). This is a very conservative approach -- but it is important and may make the difference between complete recovery and having some residual disability. Remember, you may have the responsibility of not only recognizing your own symptoms, but also in providing some guidance in the initial handling of your case.

4. Medical management:

The trend in recent years has been toward early treatment of D.S. In February 1975, the USAF Surgeon ordered "compression therapy without delay" for virtually all forms of decompression sickness, including bends' pain which occurs, persists or recurs at ground level.

Highlights of this new policy, developed at the USAF School of Aerospace Medicine Hyperbaric Center,Brooks AFB, are:

Elimination of the ground level observation period.

Immediate compression treatment of all decompression sickness cases persisting at ground level (if there is an on-site compression chamber).

If no compression chamber is located on site, immediate arrangements are to be made to transport the patient in aircraft with sea level or near sea-level pressurization capability.

4. The USAF School of Aerospace Medicine Hyperbaric Center must be notified as quickly as possible for all known or suspected cases of decompression sickness, regardless of whether or not they are to be treated.With increased emphasis on compression therapy, one might assume that it is a pretty good form of treatment. It is.

Next month, we will take a look at compression therapy -- what it is and how it is accomplished. →

TAC TIPS

...interest items, mishaps with morals, for the TAC aircrewman

LIFE IS JUST ONE
DAMN THING AFTER ANOTHER
Frank Ward O'Malley

CHANGE IS A COMIN' !

That's right! There's going to be a change in (or rather an addition to) the service provided by the Kansas City Air Route Traffic Control Center (ARTCC) to pilots passing through its area of responsibility. Beginning on 2 Jun 75, six Air Force Air Weather ervice (AWS) forecasters and one civilian National Weather Service (NWS) forecaster will take up new jobs in the Kansas City ARTCC. These forecasters will join forces with the Kansas City ARTCC controllers to provide better en route service (in this case—weather service) to you, the military pilot, while you are in the Kansas City center area.

The new concept of operations, which will be on a test basis for the first year, will be threefold:

The ARTCC forecaster will monitor and interpret weather data available from radar and from pilot reports in order to provide controllers with current hazardous weather advisories for relay to en route pilots.

The forecaster will solicit additional pilot reports for his use from all airborne pilots; in particular, those near hazardous or potentially hazardous weather areas in in the Kansas City sector.

The ARTCC forecasters will assume nighttime flight weather briefing and pilot-to-metro service (PMSV) functions for the AWS weather stations in the Kansas City sector. These are Fort Riley KS; McConnell AFB KS; Richards-Gebaur AFB MO; Whiteman AFB MO; and Scott AFB IL.

The PMSV support will be available on frequency 369.9 from UHF transceivers at St Louis, Kirksville, Joplin & Hutchinson. Consult FLIP Planning, Section II and the Enroute Supplement for the call sign, frequency, and hours of operation.

This new concept of operations will be monitored continuously and revisions to service and procedures will be made as necessary. However, your help is needed. Only pilots affected by this new service can tell us if we rate in the "top ten" or if we hatched a dud. So please let us know via your local AWS unit what you think of our new service. They will pass the word along.

If this test is successful, we envision weather service at all ARTCCs in the future. We will keep you posted as the test progresses. Meanwhile, mark 2 Jun 75 on your calendar for the inauguration of the new concept in weather support. We hope you like it.

TRUTH IS STRANGER THAN FICTION

A recent message reported an unusual physiological incident in which a student pilot experienced a severe degradation in "G" tolerance, apparently as a result of multiple physiological stresses.

The story goes like this: Mission briefing, preflight taxi and takeoff were uneventful. However, during acrobatic work, the student felt nauseous. Concluding the acrobatics, the return flight, penetration and approach were normal. Because of another aircraft with an emergency, the student elected a "closed traffic pattern," which involved a 2 to 2-1/2 "G", 60-degree climbing turn. When the student missed the assigned altitude, the IP noted the student's head "flopping" backwards and from side-to-side. The IP assumed control of the aircraft, declared an emergency and prepared for landing. He also noted an unresponsive period of about 15 seconds by the student, but finally got him on 100% oxygen.

After landing, a flight surgeon met the aircraft. The student pilot was retching, weak (he required assistance getting out), and had an unsteady gait. Medical evaluation at the base hospital indicated lethargy and mental confusion; his recent memory

was seriously impaired. A subsequent 3-day battery of tests disclosed no significant abnormalities.

The report noted a few "soft" areas: the student had been socializing the night before and admitted to three scotches with friends and the equivalent of 5 hours of sleep (whatever *that* means). Breakfast was the final insult: a doughnut prior to flight.

Evidently the combination of late hours, alcohol, insufficient sleep and poor preflight nutrition, made the 2 - 2-1/2 Gs intolerable for this man.

Mark Twain's familiar quote seems appropriate in this case: "Truth is stranger than fiction, but it is because fiction is obliged to stick to possibilities; truth isn't."

KICK THE TIRE AND....

A T-38 recently experienced a tire failure on landing. This is not unusual, but the reason for the failure was strange—the tire was the wrong size and had a different ply and speed rating. The Tech Order calls for a 20X4/12PR 195 knot tubeless for the Talon. That means the tire is 20 inches in diameter and has a cross-section width of 4 inches. The 12PR, of course, indicates a 12 ply rating and 195 kts is the max tire rotation speed.

The improperly mounted tire on this T-38 was a 20X4.4/10PR 139 knot tubeless (a Navy T-2 nose tire). Factors that ruined this roller were not so much the difference in size as the lower ply and speed ratings. The T-38 landing simply overstressed the tire.

As a result of this incident, the unit conducted an inspection of its fleet to determine if other aircraft had wrong tires installed. Unit aircrews were also briefed to check not only the condition of the tires during preflight, but also the size. This is most important if you have a tire changed at a cross-country base.

Even though this incident involved a T-38, it can (and has) happened on other aircraft. As a pilot, you already have many numbers to memorize, but it might be a good idea to add a couple more—the size and rating of your nose and main gear tires. If you don't, you may not have a good year.

A-7 PULLOFF

During the pulloff from a dive bomb pass, the Sluf driver received stall warning indications from the pedal shaker and noted the AOA indicator pegged at 30 units. Suspecting a stuck AOA vane, the pilot attempted to free it by abrupt forward stick movements, but his efforts were unsuccessful. The leader joined on him and noticed the AOA vane was missing. The aircraft was recovered without further incident.

Screws that attached the AOA vane to the drip shield had come out, which allowed the AOA vane to fall off. A local inspection turned up another AOA vane with loose screws and several aircraft were found with incorrect screws that did not have a crushable Teflon tip to insure locking. The improper ones appeared to be shipping mount screws. Oklahoma City ALC has established a Materiel Improvement Project to provide an in-depth analysis of the problem.

Remember, vane security must be verified during maintenance preflight and the pilot should closely eyeball this item during his preflight. TAC has directed a one-time inspection of all A-7s to identify those with faulty screws. Luckily, the jock in this incident knew his stall indications were faulty. It might have been different if he had been in the weather on GCA final where a faulty indication and a response to correct it could have led to disaster.

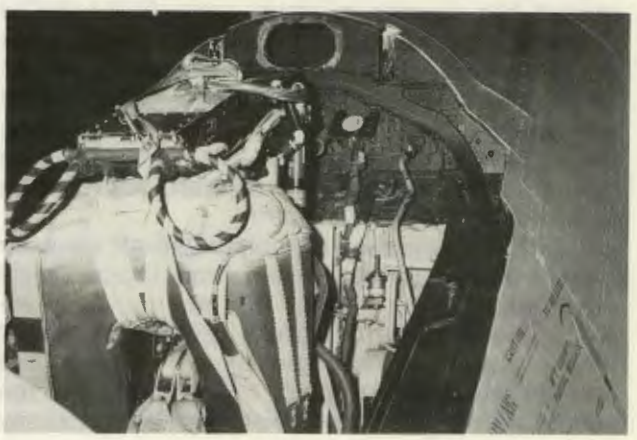
PHANTOM BLOWS TOP

When the F-4's gear was retracted, the WSO heard a loud, continuous noise. He then noticed the rear canopy was one-half to three-quarters of an inch open. At the same time, the AC noticed the Canopy Unlocked Light illuminated. Even though airspeed was maintained between 230 and 250 knots, the canopy raised further and departed the aircraft.

Investigation revealed that the canopy had stalled when being closed, the forward locking roller had stuck in the open position and the stripes would not align. Although the WSO could not specifically remember checking the stripes, the AC remembers the Canopy Unlocked Light was out prior to takeoff.

It was also noticed that the canopy locking roller assembly was defective and would stick open in such a way that it couldn't be moved to the closed position. Because of this, an EUMR was submitted.

Proper crew coordination and the use of the challenge and response system could have prevented this incident. Visually check each item called for in the checklist prior to responding to checklist commands. It can prevent an embarrassing situation and a cold, windy ride—maybe even an accident.



F-4 manual seat separation

By Mr. Michael R. Grost
Martin-Baker FSR-PACAF

Amidst the green jungle slopes of the hills below, most of the local inhabitants were unaware of the airborne exercise going on high above them in the clear blue sky. Now and then some flickers of white contrails would be seen or the distant roar of the engines heard. For the two F-4 crews above, their flights seemed to be progressing normally, with both aircraft completing assigned training maneuvers. Yet, within the space of a few seconds, things were to drastically change—because all four crewmembers were about to make their first ever emergency ejections, and parachute descents. One of the group was to perform a very unusual action, that of completing an "airborne manual seat separation."

Wheeling through the sky, both front-seaters scanned for their opponent to the accompaniment of the usual sensory stimulations provided by engine power changes or "G" effects. The green landscape smoothly rolled above both sets of canopies, and the aircraft began to converge. Sighting the other aircraft, one of the pilots corrected his course slightly and—COLLISION COURSE—the realization flickered horrifyingly! Rapidly rolling upright, a climb was initiated in an attempt to avoid collision. There was a hard wrenching impact, rear view mirrors crowding flames into their reflections, the curt shouts to "Eject," seats leaving both aircraft, and blazing wreckage tumbling downward.

"...Upon impact with the other aircraft, I saw an orange fireball in the mirror of my aircraft. I immediately told the WSO to get out and simultaneously pulled the lower ejection handle. I wasn't aware of my back-seater ejecting and thought the seat had failed. I looked down at the handle and saw, at about the same time, my canopy separate. I immediately attempted to get my head back up, but the reaction of my head to the leg restraints and shoulder harness retracting, forced my head even lower. The initial jolt of the seat was extremely painful on my neck, but I was conscious throughout, as I fought the G-forces to get my head up. The seat oscillated slightly during the ascent, but not uncomfortably so. I heard the drogue fire and looked up to see the chute fully deployed. Descent in the seat was extremely comfortable and the sight of three good chutes beneath me was, at first, a welcome sight and then a matter of concern. I sat in the seat looking at the other three chutes, wondering why I had not separated from the seat. I was becoming convinced that I wasn't going to get an automatic separation. I reviewed my manual chute deployment procedures, looked back down on the three chutes and made the decision that I wasn't going to wait until I was at their altitude before I initiated manual separation...I pulled the outer handle and was thrown clear of the seat. The parachute (pack) flew over my head and my helmet was pulled off and flew over my shoulder, but remained attached to my harness via the oxygen hose. As I was tumbling, I reached up and grabbed the risers and even though I knew the 'D' ring was on my left riser, I was initially unable to find it. I had erred and pulled in too much riser, and I found the 'D' ring below my left wrist. I grabbed the 'D' ring and pulled. The opening shock was not severe, but was noticeable. I retrieved my helmet and deployed my seat kit manually. I then accomplished the four line jettison. The chute was easily controllable and the subsequent landing was uneventful..."

In this violent midair collision, all four crewmembers acted promptly and survived without injury. Instead of relegating the numerous interesting facts

from this accident to the historical files, let's take a closer look at this ejection and focus on the subject of *manual seat separation.* Additionlly, to make various points clearer, we'll take some areas of interest and discuss them with a question/answer period, of the form normally encountered during aircrew F-4 egress procedural briefings:

After ejection, the crewmember became alarmed over what he perceived to be the considerable time which the seat was taking to achieve its automatic seat/man separation. Did later examination of the equipment reveal any problems? Although this question can be answered simply, let's consider some associated facts which have not been mentioned. Being the front-seater of the aircraft which rolled upright and climbed, this ejectee went the highest with regard to the crew's ejection trajectories. This was a result of his seat's upward boost vector being combined with the aircraft's own climb vector. It is calculated that his trajectory apogee approximated to 18,500 feet MSL. If this figure is used as a guide when we take the barostat aneroid capsule's operating limits (11,500 - 14,500 feet), it would have taken the seat approximately *20 seconds* to descend into the automatic man / seat separation altitude zone. Twenty seconds could certainly produce some anxiety, if one were not expecting this to occur. If fact, by using hindsight over previous USAF escapes (over 750 F-4 ejections) only 10 men, to the knowledge of this writer, are known to have performed a manual seat separation following ejection. Later Evidence also showed in this group that *anxiety* was the sole cause in at least six of the cases, one of whom died because of this action—from failing to subsequently operate his parachute "D" ring correctly! Consequently, anxiety can be a killer and all crewmembers are encouraged to review the "ejection seat descent time chart" which is included in the Dash 1. Some of the times listed might surprise you. Let's get back to the main part of the question. Upon seat retrieval, the equipment was checked out repeatedly and the time release mechanism checked out within its tolerances. (Note: It could be argued that the landing shock may have displaced some minor obstruction within the mechanism, but all evidence indicates that the drogue parachutes did release from the seat after the man had separated, and "well before" ground impact occurred.)

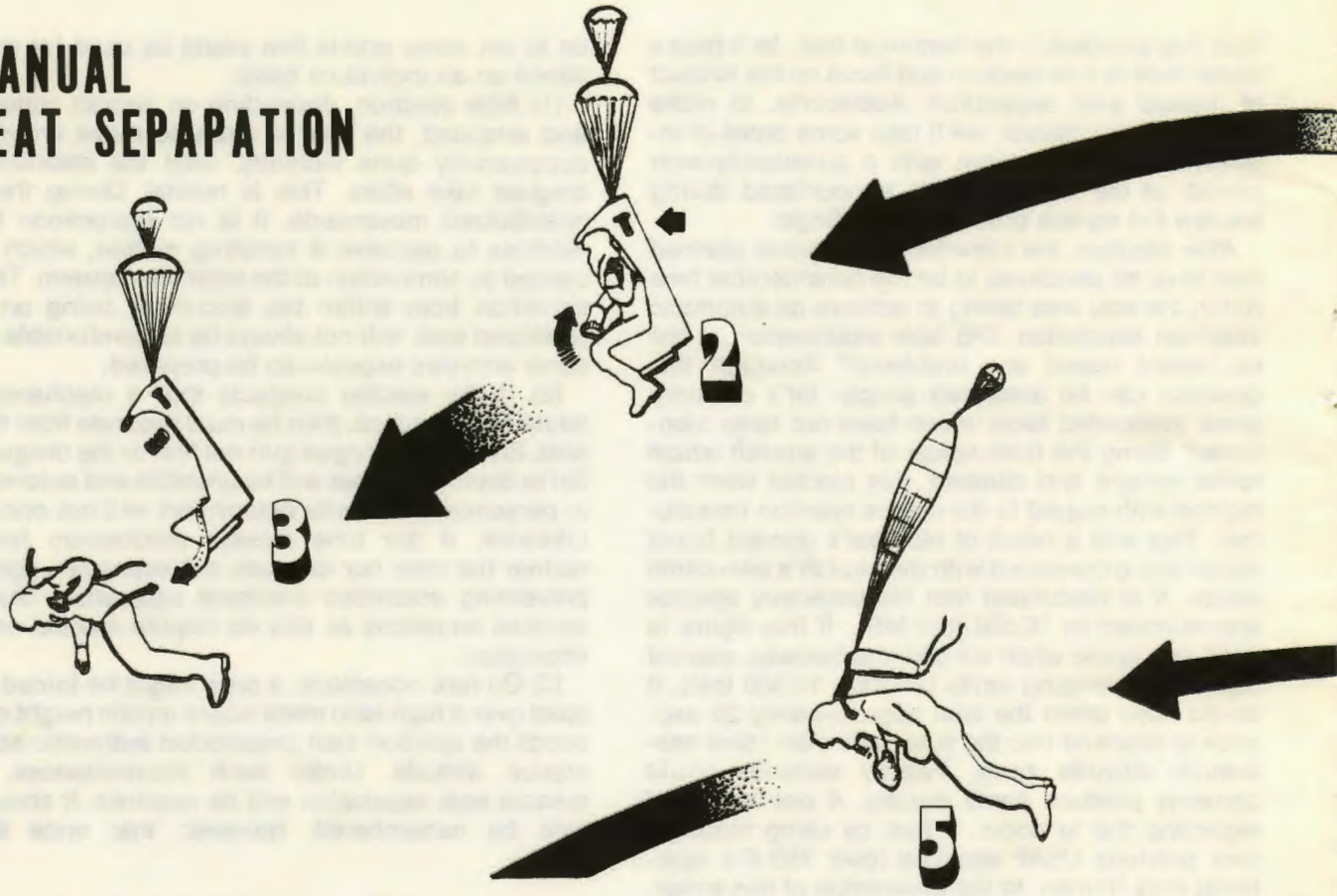
It was just stated that anxiety is the main reason why crewmembers generally decide to opt for a manual separation. When *should* an ejectee go manual? In many ways, this is difficult to answer because while it is easy to fan out "catch-alls" (like, when the time release unit fails to operate), such an answer does not take into consideration anxiety elements or an initial ejection experience. Probably the best approach to this question would be to list some points that could be used for guidance on an individual basis:

(1) After ejection, depending on aircraft attitude and airspeed, the seat is likely to move around, occasionally quite violently, until the stabilizing drogues take effect. This is normal. During these unstabilized movements, it is not uncommon for ejectees to perceive a tumbling motion, which is caused by stimulation of the vestibular system. This transition from within the aircraft to being on a stabilized seat, will not always be as comfortable as some aircrews expect—so be prepared.

(2) If the ejectee suspects that a mechanical falure has occurred, then he *must* separate from the seat. Should the drogue gun not fire, or the drogues fail to deploy, the seat will be unstable and automatic personnel parachute deployment will not occur. Likewise, if the time release mechanism fails, neither the man nor drogues will separate—again preventing automatic man/seat separation. Such unusual situations as this do require manual seat separation.

(3) On rare occasions, a crew might be forced to eject over a high land mass where terrain height exceeds the ejection seat preselected automatic separation altitude. Under such circumstances, a manual seat separation will be required. It should also be remembered, however, that once the

MANUAL SEAT SEPAPATION



SEQUENCE OF CREWMEMBER ACTIONS

1. Normal man/seat separation occurs between 14,000-11,500 feet. Should the drogue stabilizing system or time release mechanism fail, manual seat separation must be performed.

2. Firmly grasp left parachute riser with left hand around the ripcord handle housing before actuating the emergency harness release handle to full aft position. (The latter action will fire guillotine, thereby severing the drogue parachute withdrawal line and release occupant from seat.)

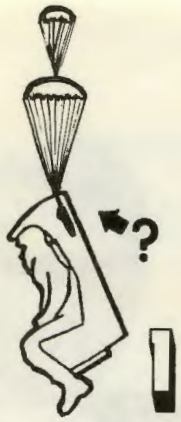
3. The parachute ejector springs and seat suspension angle beneath drogues will normally act to pitch occupant clear of seat. However, if separation difficulty is experienced occupant should push free of sticker clips and bail away from seat.

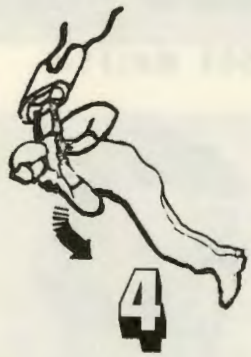
4. Once clear of the seat the parachute pack holddown straps are inoperative and pack assembly can mill around in the air. Consequently, if occupant has left hand grasping the ripcord handle housing, handle location is obvious and direction of pull more simplified.

5. The ripcord handle should be sharply pulled out from its housing with right hand to deploy parachute.

6. Upon deployment, parachute pack will fall away clear. Crewmember can then operate four line release or complete other actions to effect a controlled descent.

NOTES: A. Do not pull survival kit release handle before man/seat separation since this causes the kit to be lost.
B. There is no emergency oxygen available after man/seat separation.





ejectee separates from the seat, there will be *no* emergency oxygen supply available since the oxygen bottle is mounted to the seat bucket.

Just how easy is it to manually separate from the ejection seat, assuming that the seat has stabilized its descent rate? Again, using evidence derived from discussions with the few crewmembers who have discussed their experiences with this writer, going manual does not appear to present any separation difficulties. If one can imagine an ejection seat hanging suspended beneath a set of drogue parachutes with the attachment point between both assemblies located at the rear top mouted scissors, the seat will understandably hang at an angle with the headbox forward and the bucket aft. Since the crewmember is tilted, upon releasing himself from the seat, there will be a tendency for him to "fall out." Now if this is further combined with the knowledge that behind the parachute assembly are two fairly powerful compressed springs waiting to hurl the parachute pack (and crewmember) forward—clearing the seat does not usually present difficulties. There is one complexity that might inhibit such a clean separation. If the survival kit attachment straps were very loose allowing the crewmember to move forward, this could drag the straps at an unusual angle and cause the kit to bind against the seat bucket. To allay some concern, though, kit strap buckles are usually adjusted tight and no ejectee to date has reported difficulty in clearing from the seat. In fact, the opposite is true! Pulling the emergency harness release handle will usually get you out quickly, faster than most ejectees would prefer. Unfortunately, once clear of the seat, the body can assume a tumbling motion. With the parachute pack assembly no longer restrained by the pack retention (hold down) straps. It is easy to envision the two major problems which can then occur—the problem of where the pack will go in relation to the body and how to rapidly locate the parachute "D" ring. Consequently, in all the aircrew briefings that I conduct, I emphasize "prelocating the 'D' ring assembly" by taking a firm grip of its housing with the left hand—prior to EMRH activation. In this way, the ejectee can always locate the "D" ring and determine which way the handle has to be pulled. In at least one premeditated manual separation, the crewmember involved died because he failed to pull the "D" ring handle correctly—either as a result of incapacitation through body disorientation, or through lack of effective training.

There are some additional general warning reminders—descriptions of operating procedures in TO 1F-4C-1 concerning manual seat separation that should be reviewed periodically to ensure you "know your seat."

What do I think of the cremember's decision to go manual? In the incident related, the crewmember felt doubts about whether or not the seat was going to operate. He waited, became concerned, and correctly completed manual seat separation. Whatever reason a crewmember has for completing a manual separation, that's justification enough. If he completes the procedures correctly, he is merely using a system which has been placed there for his use. The crewmember should be aware of the reasons for accomplishing a manual seat separation. When to use manual is only half of the story—the other half is knowing *how* to perform the operation *correctly*. All we ask is that you, as a crewmember, know what to expect and how to do it right—when and if the time comes.

Ed. Note: While Mr. Grost's article deals specifically with the Martin-Baker seat installed in all USAF F-4s, it emphasizes the need for all aircrews to be intimately familiar with all facets of operation of emergency egress equipment used in their various types of aircraft.

TACTICAL AIR COMMAND

Maintenance Man Safety Award

Staff Sergeant Robert R. Malesic, 4500 Consolidated Aircraft Maintenance Squadron, 4500 Air Base Wing, Langley Air Force Base, Virginia, has been selected to receive the Tactical Air Command Maintenance Safety Award for this month. Staff Sergeant Malesic will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.

SSGT MALESIC

TACTICAL AIR COMMAND

Crew Chief Safety Award

Staff Sergeant Thomas Hensley, 1st Organizational Maintenance Squadron, 1st Tactical Fighter Wing, MacDill Air Force Base, Florida, has been selected to receive the Tactical Air Command Crew Chief Award for this month. Staff Sergeant Hensley will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.

SSGT HENSLEY

TACTICAL AIR COMMAND

Ground Safety Man of the Month

Captain Guy D. Griswold, 4500 Civil Engineering Squadron, 4500 Air Base Wing, Langley Air Force Base, Virginia, has been selected to receive the Tactical Air Command Ground Safety Award for the first quarter 1975. Captain Griswold will receive a certificate and letter of appreciation from the Vice Commander, Tactical Air Command.

CAPT GRISWOLD

☆ U.S. GOVERNMENT PRINTING OFFICE: 1975. 635.215/11

TAC TALLY

	TAC			ANG			AFRES		
	APR	Thru APR		APR	Thru APR		APR	Thru APR	
		1975	1974		1975	1974		1975	1974
TOTAL ACFT. ACCIDENTS ►	0	4	9	2	3	5	0	0	3
MAJOR ACFT. ACCIDENTS ►	0	4	9	2	3	5	0	0	2
AIRCREW FATALITIES ►	0	12	5	3	3	4	0	0	1
TOTAL EJECTIONS ►	0	2	10	0	0	3	0	0	1
SUCCESSFUL EJECTIONS ►	0	0	9	0	0	1	0	0	1

FIGHTER/RECCE WINGS		
ACCIDENT-FREE MONTHS		
85	33 TFW	TAC
52	4 TFW	TAC
37	127 TFW	ANG
34	31 TFW	TAC
32	121 TFW	ANG

OTHER UNITS		
ACCIDENT-FREE MONTHS		
148	130 SOG	ANG
128	2 ADGP	TAC
117	136 ARW	ANG
109	143 SOG	ANG
97	DET 1, D.C.	ANG

MAJOR ACCIDENT COMPARISON RATE 74-75

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	74	4.5	5.4	5.6	4.5								
	75	7.9	5.4	3.6	2.6								
ANG	74	7.2	8.6	8.2	5.7								
	75	5.7	2.8	5.9	4.0								
AFRES	74	0	16.4	8.9	8.8								
	75	0	0	0	0								


FLEAGLE
SURE IS A LOT OF WATER ON THE RUNWAY.
YEP.
THE REST OF THE GUYS DIVERTED...GOOD CHANCE TO PRACTICE MY WET-RUNWAY TECHNIQUES.
HARDISON
OH NO !! HYDROPLANING !
PERFECT THREE POINT LANDING.
YEAH, TOES AND NOSE.
© Stan Hardison, 1975