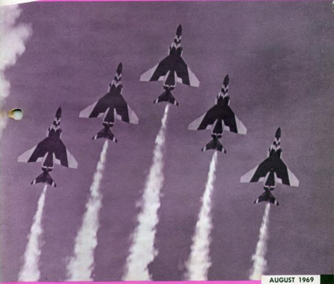
MME

Interceptor



AUGUST 1969

FOR THE MEN RESPONSIBLE FOR AEROSPACE DEFENSE

Interceptor

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Lt Gen Arthur C. Agan
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Col H. C. Gibson

Editor
Maj Philip A. Tague, III

Assistant Editor
Maj Richard P. Coulter

Managing Editor
Mary W. Conover

Art Director
Craig T. Schafer

Illustrator
SMSgt Kenneth L. Gray

Contributing Cartoonist
1/Lt James A. Kanters

spotlight

Words are the most powerful drugs used by mankind.
— Rudyard Kipling

departments

special features

OUR COVER

Demonstrating the precise teamwork that is required of fighter pilots, the USAF "Thunderbirds" are shown in a wedge formation flying their newly acquired McDonnell Douglas F-4E Phantom II aircraft.

memo
from the CHIEF OF SAFETY

GETTING INTO THE ACT

Just about every pilot in the fighter business will agree that Aerial Combat Tactics (or whatever else you want to call it) is a "meat and potatoes" mission, something he can sink his teeth into. An incomparable satisfaction comes from being able to convert a double-barreled whifferdill into a gun or missile pass on a worthy adversary. It does wonders for morale. It also builds in some additional hazards.

Whenever a group of fighters are sent up for a practice hassle, it involves an increase in calculated risk. An additional element for accident exposure is present if for no other reason than two or more aircraft are maneuvering in a limited piece of sky. When air discipline breaks down, the scene becomes a wild free-for-all in which canopy to canopy, nose to nose, and nose to ground confrontations are the rule rather than the exception. That sort of carrying-on costs lives and airplanes. Eventually, the point is reached where the risk is no longer calculated, it's unacceptable. Losses to enemy action are one thing. Wiping yourself out is another.

In the heyday of the P-51, a spin wasn't too unnerving. This is no longer the case. The present breed of fighter aircraft was not designed around spin considerations. Intentional spins are generally prohibited maneuvers. Translated into cold hard facts, this means that pilots must stay within the envelope: first, their own personal envelope, and then, as experience builds, the aircraft envelope.

A sound ACT program is also a safe one. Air-to-air combat training (and the emphasis here is on authorized training) polishes the rough edges off the yank and bank specialist who equates maximum Gs with maximum performance. There's a little more to it than that. It takes finesse, not muscle, to put the platform into a firing position. You can't milk another ounce of performance out of a machine which has quit flying any more than you can squeeze juice out of a dry lemon. It just isn't there, regardless of what the "World's Greatest" claims. Learning the basic maneuvers and, gradually, the limits of the aircraft envelope are essential to becoming a first rate fighter pilot. The payoff is a shrewd, self-disciplined expert who won't allow himself to get trapped into a disadvantage. He knows when to fight and when to disengage. Aggressiveness pays off, but so does good judgment.

A pilot who is qualified in ACT represents an additional training investment and therefore, is expected to measurably improve the combat effectiveness of his unit. Having accidents in no way contributes to that end. Let's not jeopardize a valuable program by allowing enthusiasm to decay into recklessness.

Let's conduct our training in a way that will permit us to come back and try again another day. Remember, there's no percentage in going out of control. If you spin and have to bail out, especially over enemy territory, you might just as well have been shot down. The result is the same and there's always the likelihood of either losing your life or getting captured.

COL H. C. GIBSON

HOT LINE

AEROSPACE DEFENSE COMMAND

T-33 EVIL SPIRITS. After three low approaches, the pilot reached down and checked the gear handle for a full stop landing. When he did, the gear warning horn and light activated momentarily and quit as the handle was released. In the parking lot, the nose gear pin was inserted only partially into the nose gear up-lock slot. As the pilot opened the canopy, the nose gear collapsed.

Investigation revealed that a gear-up signal was sent to the hydraulic system with the handle in the down position. Ground tests showed that gear handle microswitches, including horn and light, would reverse at the same time and go to gear-up position when the handle was bumped or pressed further down. This malfunction can be caused by fair wear and tear.

It was recommended, and sensibly so, that anytime this kind of malfunction occurs, the emergency gear lowering procedure should be used. It goes without saying, but we'll say it anyway, that gear pins should be installed properly at all times.

RADIO PHRASEOLOGY. A message from the Air Force Chief of Staff states: "A recent examination of aircraft incident and/or accident final reports indicates that there is a general lack of knowledge and understanding of correct radio phraseology which may be contributing to these incidents and/or accidents. Specifically the term 'Roger' is being both misused and misinterpreted by aircrews and controllers alike. All aircrews and controllers will be rebriefed on the proper use of 'Roger' as opposed to 'Wilco' and 'Affirmative,' when responding to specific instructions or questions, as defined in appropriate publications: Section III FLIP Planning, Communication Procedures for Aircrews, and FAA Terminal Air Traffic Control Handbook 7110.8 for Controllers."

PARACHUTE HOOK BLADE KNIFE. SAAMA has granted approval to retain the riser cutter knife on the parachute riser when approved by Major Air Command. This will be published in a forthcoming change to all parachute Technical Orders. In order to provide a crew member the capability to free himself from the parachute in the event of shroud line entanglement, the riser cutter will be mandatory on all parachutes of this command.

ADCPIs. Examination of the circumstances surrounding a recent landing accident indicated that the pilot created an accident for himself because he didn't have the straight skinny on how to handle a heavyweight condition. Too often flight and ground accidents occur because of a lack of knowledge. So, we'd like to bring to the attention of all of our units the availability of an excellent series of programmed learning pamphlets, the ADCPIs. The full series consists of 23 volumes covering subjects such as ejection, sink rate, approach and landing, drugs, fatigue, etc. They are "must" reading for the guy who thinks he knows everything.

The INTERCEPTOR has a healthy supply of these pamplets on hand. Write or call the INTERCEPTOR office to obtain your set. Don't wait, it may be too late.

PICTURES NEEDED

The 8th TAC Ftr Wing plans to publish a book covering the period December 1965 to March 1968. Pictures are needed from all who served during that time — group, individual, action shots — identified, please. If pictures are to be returned, so indicate. Use pencil for inscriptions on pictures. Send to: Colonel Earl J. Archer, AFCSAGR, Hq USAF, Washington, DC 20330.

the KEY
MAINTENANCE INTEGRITY

We are proud of the safety accomplishments of the 162nd Fighter Group. Six years of accident-free operations with jet fighter aircraft are no accident. The key to this unit's success is strong emphasis on their maintenance function.

by **LT COL G. I. MCCULLOCH**
ADCSA

The key to an accident-free program comes in various shapes and sizes. We hear of pilot integrity, *maintenance integrity*, commander integrity . . . in short, integrity. According to Colonel Donald Morris, Commander of the 162nd Fighter Group at Tucson, Arizona, and his Chief of Maintenance, Lt Colonel "C.L." Coward, Jr., the personnel integrity of their maintenance personnel is the real key to six years of accident-free flying.

Let's look at the record and see what kind of activity supports this admirable claim. Since 1963 in the F-100, T-33, and F-102 aircraft, the 162nd Fighter Group has recorded a total of 34,823 accident-free hours. In a multi-engine environment this wouldn't be too impressive, but with only one stovepipe going for you, it means somebody has been bending an educated wrench. That is exactly what has been happening at the 162nd Fighter Group.

A sampling of the "beyond the call . . ." type of maintenance that Colonel Morris's jocks enjoy is worthy of note. As everyone knows, the aircraft you receive from another unit are the "worst" available. Usually a unit lets down a little when they know an aircraft is shipping out.

The arrival of the F-102 in February 1966 carried this age-old enigma for the 162nd. The condition ranged from Unsafe to Good. The first 55 flying hours cost the 162nd maintenance troops 19,511.3 manhours. This figures out to about 354 manhours per flying hour. With personnel limitations what they are, that kind of expenditure will run you out of business in a hurry. By April of 1966, the time expended was cut to 319.2 manhours per flying hour. Still a heavy load but at least the trend was better. One year later, April 1967, the 162nd was enjoying every flying hour at the price of only 14.3 maintenance manhours.

From that point on, the 162nd

Just 27 of the many reasons for reliable maintenance

A modern model engine shop — a showcase for efficient engine maintenance

The 162nd Fighter Group's facility at Tucson International Airport

maintenance troops kept the momentum going to further improve the F-102, not only for themselves, but for the entire fleet. To improve themselves, cross-training has been the watchword. This cross-training extends from supervisors down. The flight-line chief, periodic maintenance chief, and maintenance control NCOIC have all been alternated to give each a personal appreciation of the entire maintenance complex. Sheet metal, electrical, mechanical personnel, etc., were cross-trained into the weapons control systems due to a shortage of weapons control people upon arrival of the F-102. Everyone of these people successfully passed their training requirements and obtained their seven level in minimum time. If maintenance integrity was the key to safe operations, then training was the grindstone that shaped the key.

The engine is the guts of all flying machines and so it is with the F-102. Lt Colonel Coward says the engine shop personnel are the best he has ever seen. A personal tour of the engine shop verifies all of his claims. If engine work is supposed to be a messy job, someone forgot to tell these Arizona guardsmen. The place is spotless and gives the impression of being a showcase rather than an outstanding production shop. Since the arrival of the F-102 aircraft, only one J-57 engine has ever been shipped off base due to local inability to repair it. Besides giving the pilots a comfortable assurance that their blow torch is dependable, these engine troops are responsible for procedures and special tools that are now published in engine T.O's.

For the rest of the fleet, the 162nd has contributed significantly through studies and proposals to SAAMA and AFLC's Configuration Control Board. To cite a few, we would include partial replacement of MC-

Another on-time takeoff, thanks to good maintenance

WCS wiring, rewiring of flight control damper system, speed board control, and landing gear and fuel indicating system deficiencies. All in all, the entire system has not just been maintained, it has received special attention to make everything just a little better than the job calls for.

It is this kind of ingenuity that compiles accident-free hours in the air. It is this kind of performance that assures the pilot that he can concentrate on fighting the air war. It is this kind of personal integrity that allows the 162nd Fighter Group to proudly support its unit shield with the words "Pro Deo Et Patria."

The 162nd has now left the ranks of ADC. Though the unit is no longer with us, they left the Command better for having been a part of it. Most of all, they gave us still another *maintenance* key to unlock the door to safer flights. They called it simply — maintenance integrity. ★

Clean hangars — a sign of good maintenance

BRAKES OF THE VOODOO GAME

by **CAPTAIN DWAYNE M. SHACKLETON** / *Chief of Safety, 18 FIS, Grand Forks AFB, ND*

We fighter jocks tend to pay more attention to in-flight performance, range, mission profiles, and other tactical applications of our machine than we do to the simple task of getting the bird into the air and back on the ground again safely. Actually, if you have a pilot error type accident in the future, the odds are better than four to one that it will be in the landing phase of the mission. Also, in case you are feeling smug and think this isn't written for you, the average pilot experiencing a landing accident is not the new pilot in transition, but rather the pilot with upwards of a hundred hours or so in the particular brand of machine.

Voodoo pilots tend to take for granted the excellent stopping performance produced by the One-O-Wonder. We rarely need to make a maximum performance stop. We are so used to plunking the bird on the runway, flinging out the rag, and heading for the 8,000 foot turn-off that we forget we are touching down with a minimum of thirty million foot-pounds of Kinetic Energy. This energy must all be converted to some other form before we can con the crew chief into installing the nose pin.

Let's assume that we have some sort of problem and must land the airplane. Whether the problem is high gross weight, utility failure, a slippery runway, or just an extremely short runway, only the procedures established by the laws of physics and flight test can minimize the chance of the C.O. having his next coffee break with a General.

There is an old saw that says a good landing starts with an excellent approach, so let's start our discussion there. Sixty second patterns are fun, but they require lots of judgment. Judgment usually shows up in accident reports as being faulty. When we have problems, we should try to eliminate the judgment factor. Use a positive glide slope. Even if the weather is clear and sixty, fly a GCA, ILS, or VASI glide path. This will establish a 2½° to 3° glide path on nearly every runway in the world. As we approach the end of the runway, we can make a controlled deviation from this electronic glide path to land at our selected touchdown point. We should use the handbook final approach speed and stick to it. If we fly much slower, we will be on the back side of the power

...rve, or for you young bucks, "the ...tion of reverse command." The airplane can fly slower, in fact military power will provide level flight even at touchdown speed, but will lack the required energy to flare. On the other hand, don't add extra knots for the wife and kids. Every added knot is just energy that must be converted later on, and can only compound whatever other problems you already have.

If you have low ceiling and visibility conditions and must stay on the electronic glide path, remember that the Glide Slope Intercept Point (GSIP) is normally 750 to 1,000 feet down the runway. Flight tests show that the F-101 touches down an average of 1700 feet beyond the GSIP from a 3° glide slope and 1800 feet beyond the GSIP from a 2½° glide slope if you remain on the glide path all the way down to your flare. Under really adverse weather conditions, you may be forced to waste ...00 to 2800 feet of concrete just getting your wheels on the ground. Don't forget to add this distance to the computed landing roll when figuring your stopping distance.

If the weather is good, plan the last portion of the final approach to touchdown just beyond the near end of the runway, at proper touchdown speed. Pick your touchdown spot just far enough into the runway to ensure that you don't leave your main gear hanging on the lip. Don't try to fool the mobile officer by putting the bird down with excessive speed. He may not know the difference, but the laws of physics state that stopping distance varies as the square of the landing speed. An extra fifteen knots at touchdown on a dry runway converts to an extra 1000 to 1500 feet of stopping distance. Add this to the 1000 foot GSIP and another 1800 feet to ...flare, and you will soon be wondering what stupid Civil Engineer put all that concrete behind you instead of down on the other end where you could use it. Always assume that your drag chute will fail. If you have the choice of landing long or landing hot, *go around*. Try to correct your errors on the next approach. Don't commit yourself to a landing where the drag chute *MUST* work to avert disaster.

In the flare itself, your airspeed will start to dissipate as you reduce your rate of descent. Don't chop power prior to establishing the flare or the knot meter will spin at a rapid rate and you may find yourself trying to taxi up to the runway. Keep your power on until the flare is established and then reduce power as a means of controlling the rate of airspeed "bleed-off." Remember to put the throttles in idle prior to touchdown, as any unnecessary thrust does not improve stopping performance. As soon as the wheels touch, deploy the drag chute. Any delay reduces the overall effectiveness of the chute as a stopping device. Parasite drag varies as the square of velocity. In other words, parasite drag is reduced to one-fourth if we reduce velocity by one-half. So the quicker you get the chute working, the more effect it will have on your stopping performance.

Now that we have our wheels on the ground, what is the best means of getting rid of that 30,000,000 foot-pounds of energy I mentioned earlier? According to one of Mr. Newton's laws, you will continue to roll forever unless some decelerating forces are applied. Let's see what forces can be brought to bear on the problem. Keeping us going, we have a minimum of 30,000,000 foot-pounds of Kinetic Energy (sea level: 33,000 pounds gross weight) and the combined idle thrust of two engines. Our Kinetic Energy goes up to a maximum of about 95,000,000 foot-pounds at 6,000 feet pressure altitude with full internal fuel. For stopping forces, we have varying amounts of five forces. They are:

1. Parasite Drag (Variable according to airspeed and position of flaps and speed brakes)
2. Rolling Friction (Drag of wheel on the runway)
3. Induced Drag (Variable as a function of the amount of lift produced by the wings and slab)
4. Drag Chute (Variable as a function of airspeed)
5. Wheel Braking (Variable according to tire and runway condition and the percentage of aircraft weight supported by the main gear).

We can only control the first two factors by ensuring that the aircraft is in the proper landing configuration and that the wheels are on the runway surface. We have varying degrees of control over the remaining three factors.

Let's assume that we land at about 33,000 pounds gross weight. This will put us on the ground at about 155 KIAS. To appreciate the relative effects of induced drag, wheel braking, and the drag chute, let's lower the nose immediately and make like a tricycle. If we make no attempt to slow down and just let rolling friction and parasite drag produced by the airframe, gear, flaps, and speed brakes resist our progress, we find that it will take about 6500 feet of concrete to slow from 155 KIAS to 100 KIAS. Now, let's go back to our 155 KIAS touchdown and add aerodynamic braking by holding 10° nose high attitude. The addition of induced drag will slow us to 100 KIAS in only 3200 feet. Parasite drag and rolling friction alone have produced an average stopping force of 3090 pounds. The addition of induced drag has raised the average stopping force to 6250 pounds. If we take the portion of the landing roll above 115 KIAS, our average stopping force with induced drag is 8900 pounds. Now, back to our supersonic tricycle. With gear, flaps, speed brakes, no drag chute, and 33,000 pounds gross weight, we will use maximum wheel braking (full antiskid) to slow from 155 to 115 KIAS. If we lower the nose and use constant antiskid we can only produce an average stopping force of 4800 pounds. We have produced almost twice the average stopping force (8900 pounds) with induced drag. The crossover point at which wheel braking becomes more effective than induced drag varies with tire and runway condition. Assuming a dry concrete runway and good tires, the speed at which maximum wheel braking and induced drag are equal is 109 KIAS. Any reduction in RCR lowers this speed even further.

The above figures should convince you of the benefits of aerodynamic braking versus maximum wheel braking at speeds above 110 knots. Actually, you can beat the figures quoted. In our example, we used 10° nose high attitude. The tail pipes drag at about 15° nose high. The Dash One tells us not to use more than 13° to keep from dragging the tail pipes. In a real minimum run situation, attempt to get the nose as high as possible without dragging the tail. Nothing is to be gained by dragging the tail due to the low coefficient of friction of steels on concrete. About all you will do is make pretty sparks and build up heat in the crew chief.

Now, let's go back and see what effect the drag chute has on stopping performance. I said that the main purpose of the drag chute was to increase parasite drag, and that parasite drag varies as the square of velocity. A sixteen foot drag chute produces 10,000 pounds of drag at 160 knots, 4000 pounds at 100 knots, and as you would expect, 2500 pounds (one-fourth the 160 knot value) at 80 knots (one-half the velocity). This is a lot of stopping force, especially in the high speed ranges where we are trying to get slow enough to get some benefit from wheel braking. On any given landing, if all other factors are held constant, loss of the drag chute will cause an increase in landing roll of 30 to 50 percent, depending on gross weight and altitude. Anyone who tells you he lost a chute and still stopped in the same distance he would have with the chute is really telling you that he doesn't normally utilize maximum aerodynamic braking to slow from touchdown to nose-down speed.

The Dash One tells us to start lowering the nose at 120 knots and to have it on the ground by 110 knots, and then use whatever braking is necessary to stop on the remaining runway. If you fly each and every approach and landing down to 120 knots in this manner, always striving to touch down at proper airspeed, as near the end of the runway as possible, and use maximum aerodynamic braking down to 120 knots, you will always be prepared to make that minimum run landing or high speed abort when the need presents itself. If you are on the ground at any gross weight or pressure altitude and have the urge to stop as short as possible, remember, the Voodoo always produces more stopping force with aerodynamic drag than with wheel brakes if your speed is above 110 knots. Don't cheat yourself and take a chance on blowing a tire at high speed by clomping on the binders.

Now that we have discussed how to get from approach speed down to 110 knots, let's talk about the only portion of the landing that should be done differently if we want a truly minimum run landing—wheel braking. For a normal landing, the Dash One tells us to use whatever braking is necessary to stop in the remaining portion of the runway. On our runway this usually means little or [illegible] wheel braking is required.

The procedure for stopping in the minimum distance is not going to give you maximum tire life. The brakes on the Voodoo are adequate to provide one maximum performance stop from any gross weight. All you have to do is apply enough pressure to cause constant antiskid cycling. This will give you a coefficient of friction which is an average between 10 and 50 percent tire slip. This is the best you can do, and is probably considerably better than you could do without antiskid. The onset of tire slip is not readily discernable to the pilot, and for maximum braking, the tire must be maintained at the onset of slip. Do not pump the brakes. If you are really trying to stop, you cannot afford the loss of braking action. Maintain enough pressure to keep the antiskid cycling. When you get down to about 20 knots, you will probably experience heavy landing gear chatter. This is the time to back off on the brakes. If you don't, you may damage the aircraft, and will almost certainly blow a tire. The price you will pay for a stop of this nature is two ruined brakes, two ruined tires, and probably two ruined axles due to the heat build-up in the brake assembly and the loss of heat treatment in the axle. If you do perform such a stop, don't taxi to the parking area. Go directly to the hot brake area. Do not pass GO! Do not collect 200 dollars! Sit out the full cooling period in the hot brake area and *don't let anyone near those wheels!* You can expect a post-stop blowout and quite possibly a brake fire as well. Don't shut down an engine unless the fire department is there to put out the fire that will most probably result if drained fuel splashes on the hot brakes.

While you are in the last phases

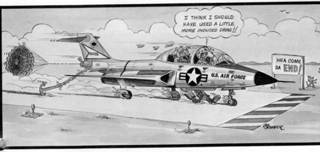
your stop, you may wonder if you will be able to stop at all. You can save yourself a lot of worrying and perhaps some unnecessary overuse of the brakes if you will note the runway distance remaining as you pass 100 knots. The math behind stopping tells us that in the first 50 percent of the stopping distance you will lose 30 percent of your speed. If it takes 4000 feet to decelerate from 100 knots, you should lose about 30 knots in the first 2000 feet and about 70 knots in the last 2000 feet. Don't panic and think that your antiskid is not working if your initial rate of deceleration is somewhat slow. It's doing the best it can. If you turn it off and push harder on the brakes, you will only compound your stopping problem with a blown tire.

The only remaining force in our problem is the idle thrust produced by two engines. Do not shut them down. The effect of a few hundred pounds thrust against the thousands of pounds of stopping forces we can produce is hardly worth measuring.

Now that we know how to make a true minimum run stop, let me ask just one question. Why? Tires, wheels, brakes, and axles are not cheap in either time or money to replace. Under normal conditions we should be able to stop quite comfortably on most runways. If we plan every approach and always practice maximum aerodynamic braking, we should have plenty of runway remaining to stop. Refuse to land out of a lousy approach. Be too proud to land rather than too proud to go around. I fully realize that sometimes we are forced into a situation where the remaining runway is too short, our drag chute has failed, and the Civil Engineer is rapidly moving all the concrete to the wrong end of the runway. This condition may be caused by either a high speed abort or a foul weather condition that forces us to land longer than we would like. If the runway has no barrier, you will be fully justified in doing everything you can to get stopped, including having the gunner drag his feet. However, if you have a tail hook type barrier, consider using it even if you could possibly stop using maximum everything. A barrier engagement does not require new tires, wheels, brakes, or axles. The tail hook must be magnafluxed, but that is quick and easy. If you do use maximum wheel braking, you always run the risk of an antiskid that is not properly adjusted, a tire that has a hidden flaw, or perhaps a tire is just near the end of its life. Any one of these factors could result in a blown tire and loss of control. Having been both off the side of the runway and into the barrier, I can tell you that it is much cheaper in dollars, time, and the amount of explanations if you use the barrier. When things get tense, for whatever reason, use moderate braking. Brake as much as possible without overheating the brakes, and if that isn't enough, use the tail hook. If anyone questions your judgment, just show them the airplane with zero damage. They can't argue with that. ★

ABOUT THE AUTHOR

Captain Dwayne M. Shackleton enlisted in the Air Force in August 1955, and graduated from OCS and Pilot Training. With combat crew training in both the F-100 and F-101, he has been assigned at England AFB, Louisiana, RAF Woodbridge, England, and SEA, and as instructor in the Pre-intercept School at Tyndall AFB. He is presently Chief of Safety at the 18th Fighter Interceptor Squadron, Grand Forks AFB, North Dakota.



THE TENTH TIME

"The fact is that anytime someone is working in, under, or around a piece of hardware which weighs twenty tons or more, accident potential is present. Whether an accident actually takes place depends on the correctness or incorrectness of the work being performed. Past mistakes have been recorded and procedures established to make conditions as safe as humanly possible. Shortcuts or lack of knowledge will result in disaster eventually. It's just a matter of time. With very few exceptions, maintenance accidents can be traced back to a failure on someone's part to follow procedures or to use a checklist. And that's the reason Murphy's Law enjoys such a success rate."

INTERCEPTOR, February 1969

When we wrote that for the "Enter Murphy" article, we had a sneaky suspicion that we weren't going to drive the Murph out of ADC forevermore. The best we hoped for was that maybe a few more of our maintenance guys would get the clue and save themselves some injuries or official embarrassment. We guessed right. Murph is still around; unfortunately a certain T-bird isn't.

Before getting into the gory details of the accident, we'd like to throw out (or maybe "throw up" is a better way of putting it) a couple of pearls of wisdom, just to show how smart we are and maybe save a hide or two in the process. The flight line can become a real hot place, even in a blizzard (Pearl). When skill levels and manning are low and the break rate is high, the pressure is on (Fact). Long hours and a fast pace are necessary to barely keep even (Fact). Short cuts are taken to avoid delays (No-No). Accident potential is dangerously high (Fact—Pearl).

There are probably more occasions than anyone will ever know where the boss orders a clunker fixed and put on schedule when there isn't even enough time to pump it full of gas. Maybe a part isn't readily available or an extra pair of skilled hands are needed but not available. How many times has a crew chief been asked to help connect a flight control linkage or an electrician a fuel control? When the required number of wing wal

can't be found, how do you get the Queen out of the hanger in time for the next mission? These situations come up day after day and you either have to buck the boss or the book. Our guess is that the book frequently loses.

What we're trying to say is that we know our maintenance types have stuck their necks out many times to get the job done. Nine out of ten times the risk pays off. But watch out for that tenth time. The ax falls swiftly and without mercy after the accident. It would be easy for us to say, sitting behind a lofty desk, that no situation justifies bypassing the book. We won't do that because we're not in the thick of the rat race. But we will say that when it appears something can only be done in a not quite legal way, for gosh sake's stop for a second before pressing on and think of the possible consequences. A delayed takeoff or a nondelivery is small stuff when compared with the loss of life, limb, or an aircraft.

The following is an example of that tenth time situation:

A T-33 was written up for a fuel system malfunction and a fuselage fuel low warning light which would not go out even though the tank was full. Engine specialists were not available, so an instrument specialist was dispatched to correct the warning light writeup. The fuselage tank fuel quantity transmitter was found defective. The part was on back order and was not in stock. So, the defective transmitter was pulled from the aircraft for attempted repair. The aircraft was put on a Red X and the transmitter returned to the instrument shop where the dispatcher was informed of the incomplete job. Maintenance control was then supposedly informed of the situation.

In the meantime, the aircraft was also in need of an engine trim because of the fuel system writeup. A crew chief was assigned to taxi the aircraft to the trim pad. He noted the Red X in the 781A and checked the two transmitters which he thought the writeup could have referred to. He found both transmitters (fuel pressure and fuel metering) installed and intact. No one was consulted as to whether the Red X had in fact been cleared. He then made a walk-around inspection and found nothing out of order.

Another crew chief requested and received permission to go on the taxi-runup mission for the purpose of furthering his OJT to receive his license. He got in the front cockpit. The engine was started and the aircraft taxied to the trim pad where it was met by an engine specialist. Two military runups were completed, and the engine was retrimmed within limits. The engine specialist signed off the forms and returned them to the crew chief. At an undetermined time after the runups, the main wing boost pumps were turned on to replenish the fuselage tank. The two crew chiefs then taxied the aircraft about 300 feet away from the trim pad when the occupant of the front seat mentioned that he smelled fuel fumes. The instructor in the rear seat ordered the engine shut down, but before this was accomplished, a low grade explosion occurred which started a catastrophic fire, resulting in the destruction of the aircraft.

The fire was caused when the main wing boost pumps were turned on. Fuselage tank fuel was raised to a point where it was allowed to escape through the opening in the aft top portion of the tank. The hole was created by the removal of the transmitter. Fuel flowed down the sides and aft portion of the tank and into the engine compartment through various openings in the fire wall. The fuel ignited — scratch one T-bird. It can happen to you, IF you let it.

The following recommendations made as a result of this accident are noteworthy because they can be applied to a multitude of situations:

RECOMMENDATION 1: That it be re-emphasized to maintenance personnel, including flight line supervisors, crew chiefs, and specialists, the seriousness of Red X status on aircraft and the importance of the need for close monitoring of Red X status aircraft.

RECOMMENDATION 2: That the line chief or flight chief personnel review the entire aircraft forms (781) before assigning movement of that aircraft by maintenance personnel.

RECOMMENDATION 3: That an MOI be established that the shop specialist brief the expediter or crew chief as to the aircraft status anytime the specialist departs an aircraft on which he is performing a maintenance function.

RECOMMENDATION 4: That it be re-emphasized to maintenance personnel the importance of adhering to existing directives and specifically T. O. 1-1-3.

RECOMMENDATION 5: That it be re-emphasized to maintenance personnel the importance of procuring and adhering to existing T. O. s while performing maintenance functions.

RECOMMENDATION 6: That definite procedures be established for coordination between supervisors during dining periods or any shift change periods. ★

BARRIER BARRIER BARRIER

(With liberal plagiarism from AFR 55-42)

by **MAJ DAVE SCHNEEKLOTH** / *Hq ADC/Ops Support (ADOOP-SB)*

As we read our info copies of messages that pass to and from Norton, or run into our friends from the field in the corridors each Wednesday, we begin to get the uncomfortable feeling that something is lacking in the knowledge of aircraft arresting systems.

Certain people would say that some jocks never really knew or understood this small facet of their overall education. Just as likely, I think, is that this knowledge can be easily forgotten when passing over the end of the runway, *calmly(?)* calling "BARRIER, BARRIER, BARRIER" while awaiting gear down speed.

First, let's see what an aircraft arresting system is supposed to do. It is designed primarily to stop, *in an emergency*, jet aircraft having an arresting capability. The logical fallout from this, other than gear doors, lights, and fairings, is first, save the pilot, and second, save the aircraft.

Now let's take a look at the type of arresting systems we can expect to run into at our bases.

In the "barrier" category (J-BAR to you FLIP readers), we have our old friend, the nylon-webbed MA-1/MA-1A chain dragger. The only difference between the two is that the "A" model can be raised and lowered from the tower. If you see one listed as MA-1A (MOD), that means it has been modified with an extra cable and rubber donuts so a hook-equipped aircraft can take it with its tail hook.

The "arresting gear" systems (A-GEAR) that we have are the BAK-6, BAK-9, and the BAK-12. The one thing they all have in common is that the cable and donuts are all you will see on the runway and are strictly for tail hook equipped aircraft.

The BAK-6 "water squeezer" has been with us a long time and hopefully for not much longer. This system requires 1500 feet of runout, is quite critical on off-center engagements, and doesn't have the energy absorption capability of the later BAKs. It is also capable of being slapped off the runway and engaging a retracted hook on rotation or touchdown much to the amazement of the pilot, the amusement of mobile, and the consternation of the CO. After the first winter of operation, antifreeze was substituted for water in the tubes.

The arrival of the BAK-9/12 in the inventory was certainly an improvement. Both systems utilize B-52 brake drums and a self-generating hydraulic pump. Therefore, the faster you hit it, the more braking action is produced. These units only require 950 feet of runout. This has really helped us on airpatches involving civil aviation, because we are able to keep the cable in the overrun. This looks real tight for approach-end engagements, but so far we're batting a thousand on those attempted.

Speaking of approach-end engagements, you'd better have enough loiter fuel so someone can get out there and remove the MA-1. Otherwise the results are going to be sudden, momentary, and somewhat terrifying, and you're not going to catch the BAK after the MA-1 is through with you.

Now let's look at the other side of this, and that is the cable and hook limitations. So I'm not going to discuss cable limits or give a lot of figures on hooks. You're going to have to go into your particular Dash One and figure the speed/weight limits for your bird and the arresting system you have. One rule that is always true is to have the aircraft as light as possible. If you are airborne and the drop tanks have fuel in them, they should be emptied prior to landing and dropped if so specified in your particular Dash One. You are going to have to consider many factors on whether you want to drop them on the runway during an abort or landing emergency.

Something else to think about: If you sing out with a "BARRIER, BARRIER, BARRIER," or the tower suspects a radio failure, you're going to have the MA-1 pop up in front of you. There is no call that is necessary for the BAKs, they're just lying there waiting for you 24 hours a day. Engagement procedures can differ between the J-BAR and the A-GEAR. Therefore, if you have both types at the end of the runway, you should have some well thought out plans handy before you ever need them.

One last thought, if you're the type who always counts on getting a good chute, then you are probably going to become familiar with the operation of at least one of the systems we've been looking at. ★

ORI

OPERATIONAL READINESS INSPECTION TEAM

HQ, ADC

PRACTICE WHAT WE PREACH

A recent Interceptor article titled, "The Rules of the Game," (Mar-Apr 69) described how an organization could receive an unsatisfactory rating on an ORI through failure to understand the rules and determine how the game is to be played. The rules are designed to enable the ORI Team to evaluate the capability of the unit to perform its assigned mission.

Are these rules some mystical set of guides to be followed once every year or so? One might think so by the changes that are made in a unit just prior to the arrival of the ORI Team.

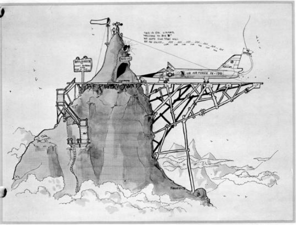
What does the ORI Team really look for? Nothing more than what the Commander, Chief of Maintenance, and all supervisors should be looking for on a day-to-day basis. If the daily training sorties are not fully utilized or truthfully evaluated for "weapon system" success, then the unit may go into an ORI with many unknown quantities. No one would expect the Green Bay Packers to practice all year using soccer rules to prepare for a football game. Neither can we expect a squadron to perform at peak efficiency during an ORI when their "practice" or day-to-day procedures have been geared to other commitments.

Unfortunately, in many units, daily flying is done to support sortie and flying hour requirements. Required maintenance must be performed to keep the aircraft flying, and preventive maintenance is "squeezed in" only if it has no adverse effect on the OR rate. Aircrews are reluctant to call an aircraft out-of-commission during the day since "even though it is bad, it is better than nothing." If the debriefers call an aircraft out for evaluator problems, they are sometimes accused of breaking the aircraft. As a result, maintenance is deferred until the swing and graveyard shift. Little practice is gained in rapidly turning an aircraft to support a flying schedule. Also, weapon systems of increasing complexity are being maintained by fewer, and sometimes less skilled, maintenance people who have fewer spare assets to work with. The 12-15 hour workday is not uncommon. People get tired, both physically and mentally. Fatigue clouds judgment and stifles motivation.

In view of these factors, how do some squadrons achieve an "Outstanding" rating while others fail? Is there a secret to success or is it all just luck? With basically the same numbers of aircraft, people, and supply spares, why is it that one squadron excels while another flounders? The shortage of spare assets and skilled people, which is command-wide, should have the same overall effect on all squadrons having the same type of equipment and yet, past ORI results do not bear this out.

One of the possible reasons for the difference is how effectively the squadrons are utilizing the assets they do have. Today, as never before, the impact of effective (or ineffective) Management and Supervision is being felt at all levels in the command.

How many Commanders are maintenance oriented from the standpoint of insisting on a quality product *and* allowing maintenance the time required to provide it? Invariably, when a unit "busts" an ORI, the causes is for failure to pass the AWSVP, unreliable weapons



systems, unacceptable OR rate, or any combination of the three. Very few ORI failures were for "hack rate" or pilot proficiency. Yet, every month, we insist on generating the prescribed sorties and flying hours at the expense of quality maintenance.

How effective is evaluator scheduling and utilization? In many squadrons over 25 percent of all evaluators loaded are never fired for one reason or the other.

Is a highly skilled pilot and/or WSO in debriefing (IAW AFM 66-1/ADC Sup) to analyze NADAR or scope film and to assist the maintenance debriefers? Thorough, factual debriefings can save many maintenance man-hours.

How effective is Work Load Control in scheduling priority work and in having more than one shop work on an aircraft at any one time?

Are maintenance supervisors closely monitoring problem areas and especially repeat malfunctions? How many times will they accept the same corrective action for the same repeat malfunction before they try a diffent approach? Are most of the NCOs working days while the majority of maintenance is being performed on the swing or graveyard shift?

These are some key questions that must be asked and answered for effective day-to-day operation. Why wait until the team arrives to do it because it is usually too late then. How true is the philosophy voiced by one old NCO when he said, "We get ready for an ORI, we get ready for Tyndall, but we just don't seem to have time to get ready for War"? If you are ready on a daily basis you will not flounder during an ORI.

DO YOU PRACTICE WHAT WE PREACH?

BILL NORRIS, Colonel, USAF
Team Captain, ADC ORI Team

√ POINTS

We would sincerely appreciate your inputs mailed directly to:
The Editor, INTERCEPTOR, Box 46, Ent AFB, Colorado 80912.

√ RED X SYMBOL . . . . A Red X must be entered in the appropriate sections of the aircraft forms when reported defects of systems or components which affect safety of flight cannot be located or the reported deficiency cannot be duplicated during operational checks. Reference T.O. 00-20-5. (4600 WGMME-Q)

√ CANNOT DUPLICATE. A reported discrepancy by the flight crew will not be cleared as "Cannot Duplicate Malfunction" until all possible trouble-shooting actions have been taken. If the specialists on-the-job experience difficulties in duplicating a malfunction on the ground, they will request assistance from higher skill level personnel. Malfunctions of this nature will be thoroughly discussed with flight crew and/or at the debriefing meeting to isolate the reported problem. Reference T.O. 00-20-5. (4600 WGMME-Q)

√ Noncompliance with applicable directives on the use of aircraft safety pins and locks has caused the Command several costly accidents within the last three months. ADC message number 191606Z Jun 69 was recently transmitted to the field on this subject. Follow the T.O. and let's eliminate this needless waste. (ADCSA-G)

√ T-39 WINDSHIELD PROTECTION. If one AC generator should fail during normal inflight windshield heating, a controller unit will automatically allow the remaining AC generator to supply power to both windshields. Also, two circuit breakers in the static ground circuits protect the windshield temperature controller from excessive static charge flashback. When the aircraft has been subjected to high static potentials, these 5 amp circuit breakers in the electronic's compartment should be checked for proper operation and then reset with an appropriate entry in the AFTO Form 781-A. Reference T.O. IT-39A-2-2. (4600 WGMME-Q)

√ The RAF found significant fatigue in skill performance of pilots after 10 hours of recip flight, and after 3 one-hour jet sorties. Fatigue decreases your skill even more rapidly at night . . . . Lack of sleep, alcohol, or accumulated exertional fatigue really decrease these times. Considering that your vision is reduced any time you go above sea level, especially at night, and more so if you smoke, it makes real good sense to come home from a weekend cross-country in broad daylight — if you got a good night's sleep the night before! (ADCSG)

Probably the most important cause of obesity in the United States is the abundance of purified foods of high caloric content but low nutrient value. The agricultural, industrial, and computer reevaluations have made food more available and have minimized the physical exertion required for an enjoyable (?) life. The urgent problem with obesity is the associated heart disease. The annual death rate from atherosclerosis (hardening of the arteries) and degenerative heart disease in U.S. men aged 50-59 is the world's highest. Isolated coronary heart disease is a common cause of disability and mortality in younger men and is associated with overnutrition. Studies strongly suggest lesions in the arteries are reversible by diet. In Americans, coronary artery disease is lowest in persons below normal weight and increases proportionately with the degree of overweight. Diabetes is 4 times as common in obese than in lean adults. The shorter survival of overweight persons is due mainly to increased vascular disease . . . so plot your course for an IP with the scales, direct to your flight surgeon for a diet, with a jogging departure! (ADCSG)

MAX T-BIRD ENGINE SPEEDS . . . the maximum permissible continuous in-flight engine speed for the T-33 is 100% rpm. **It is recommended that engine speeds used for cruise not exceed 96% rpm except when absolutely necessary.** Deliberate planning of missions requiring cruise in excess of 96% should be avoided because the turbine wheel and blades are subjected to reduced lifetime. Engine ground operation above 85% rpm shall be limited to one minute. During takeoff, any value between 100 and 101% rpm is acceptable. Reference T.O. IT-33A-1. (4600 WGMME-Q)

T-33 JOCKS . . . planning a "Lockheed Racer" cross-country into Pete Field soon? As the distance remaining markers flash by with incredible speed during the landing roll, take the hint before you tell Transient Alert to "fill her up." On a typical summer day with a runway temperature over 90°F, the pressure altitude above 6,000 feet, and a full load of fuel, the venerable ol' T-bird just doesn't leap into the sky. It must be gently coaxed off with the takeoff roll over 7,000 feet and the rest of the performance figures just as "hairy." A check with WX on forecast runway conditions for your planned takeoff time may interest you in "purchasing" somewhat less than a full load of fuel and making one extra hop on your way back home. (4600 WGCSA)

BLUE ZOO

"Guess who made regular?"

safety officers'

FIELD REPORTS

F-101B ENGINE FAILURE. Aircraft was taking off in trail as number two in a flight of two. The pilot terminated afterburner at an altitude of about 400 feet. Two seconds later the pilot heard a loud explosion and felt a moderate thump. The left engine RPM began to unwind and ground observers reported a 30-40 foot streak of flame coming out of the left tailpipe. Pilot shut down the left engine and dropped the external fuel tank in the bay. Single engine approach and landing were accomplished. The number one compressor was totally destroyed and number two compressor and turbine severely damaged.

F-106B THROTTLE HANGUP. Pilot unable to reduce power below full military power on climbout, declared an emergency and commenced penetration. During approach efforts to reduce power were successful and an uneventful landing was accomplished. Investigation revealed that the guard housing surrounding the throttle teleflex had been inadvertently damaged during maintenance causing the throttle to hang up.

F-106A GEAR INDICATORS. Two separate malfunctions of the landing gear indicating system occurred. On each occasion after the gear handle was placed down for landing, there were no indications to the pilot in the cockpit. Visual checks showed the gear apparently down and locked. Both pilots landed successfully, stopped on the runway and had the gear pins inserted before taxiing. Corrective action included replacement of the landing gear indicator fuze, a converter unit, repair of the tail hook switch assembly, and a complete systems check.

TF-102A FUEL LOW RIGHT SIDE. After approximately 50 minutes of flight, the right #2 tank stopped feeding into the right #3 tank. Right and left sides both showed 2500 pounds balanced. The right #3 tank slowly filled during a low power descent and while taxiing to the line. Cause was an ice-clogged air pressure line in the wheel well. The air lines were purged and aircraft flew the following day without a like discrepancy.

F-101B FLIGHT CONTROLS. During turns at high altitude, it was noted that aileron control appeared sloppy, accompanied by a slight "nibble" and transient yaw condition. Troubleshooting of the flight control system following an emergency landing revealed that the left aileron actuator was defective, resulting in slight up and down movements during steady state operation of the aileron control system.

F-102A UNSAFE GEAR. After low approach and gear retraction, airframe vibration was noted indicating the nose gear down or nose gear door open. Airspeed was maintained below 240 KIAS and landing gear recycled. At this time the warning horn activated and unsafe bar and gear handle light illuminated. Repeated recycling did not solve the problem. Emergency gear lowering was attempted, but unsafe indication persisted. Fly by mobile tower confirmed the nose gear to be down, but they could not positively state if it was locked. Normal landing was accomplished with nose carefully lowered to runway. Aircraft was stopped straight ahead, pins installed, and towed to the line. Investigation revealed a missing attaching bolt on the downlock position indicator arm. This caused an interruption of normal sequence after retraction causing the nose gear door to remain open. The attaching bolts were also bent on the downlock switch. The missing and bent bolts were replaced and adjusted. Retraction tests were performed and system checked OK. Aircraft flew the next day without recurring landing gear discrepancy.

F-106B NOISE. During Aerial Combat Tactics training the pilot heard a loud noise which he described as similar to the sudden rupture of an inflated canopy seal. This noise was followed by a low oil pressure warning light and a pressure drop to 20 psi. An immediate precautionary landing was made. Investigation revealed a defective main oil pump. The pump was replaced and oil system operationally checked. No evidence of an explosion of any sort was found.

F-102 VIBRATION. During flight (at 40,000), the pilot felt a low frequency vibration. Fuel flow was fluctuating from 2800 pph to 4000 pph. All other instruments were normal. Pilot returned to base and landed out of a PLP. Investigation revealed a loose 16th stage air clamp to the shut-off valve. One engine mount was 1/16" out of adjustment, and the radar cooling duct in the upper "E" bay end was torn.

F-102 STUCK STICK. During entry onto initial the control stick momentarily froze in the neutral position. Quick, firm pressure towards the left forward corner freed the stick from its frozen position. An emergency was declared and landing accomplished without further difficulty. Both hcp valves were removed and replaced. A functional check flight was flown with no malfunctions noted.

F-106B HIGH OIL PRESSURE. After having flown for approximately one hour, the oil pressure indications increased to 100 PSI. This same indication was observed in both cockpits. Oil pressure checks on engine runup and after takeoff were normal until this time. Immediate RTB was requested and precautionary landing was accomplished. Investigation revealed a faulty oil pressure transmitter. After replacing with a serviceable oil pressure transmitter, the system was operationally checked. Aircraft has flown to date without further oil system discrepancy.

T-33A RPM FLUCTUATION. After takeoff, the pilot noted a 1% RPM fluctuation which had a corresponding fluctuation of fuel pressure (15 PSI) and EGT (15°). Emergency fuel control was not selected. Investigation revealed no positive cause. Suspect either or both of two possible causes: (1) air in the fuel system/control; or (2), fuel system icing. The fuel system was bled and operationally checked. A functional check flight was performed and the aircraft was released for operations scheduling. Aircraft has flown to date without further fuel system discrepancy.

F-102A FUEL FEEDING. The left low fuel light illuminated 1+15 after takeoff while the aircraft was level at 35,000 feet. A check showed that the left #3 tank contained 500 pounds with total left side fuel to be 2,000 pounds. The left #3 tank began to fill during the descent for landing. The cause of the problem was internal failure of the left wing tanks pressure relief valve. The valve was replaced with no further fuel feeding problems encountered.

PRECAUTIONARY LANDING, F-106A. The DC generator failed immediately after takeoff and the J-4 compass and TACAN were giving unreliable indications. Due to low ceilings and rain showers in the area, the pilot elected to take radar vectors to another field for an immediate landing. Fuel on board at touchdown was 13,000 pounds. During braking on the wet runway, the left main tire blew. The aircraft was brought to a stop short of the barrier and shortly thereafter the right main tire blew. Investigation revealed a bad DC generator.

F-102A FIRE. After takeoff and upon afterburner termination, wingman reported visible fire coming from the tailpipe area. Fire eventually went out; however, a precautionary landing was accomplished. Pigtail at 5 o'clock position was found cracked and afterburner was replaced.

EB-57B BRAKE FAILURE. Aircraft recoverd from a night exercise. When the brakes were applied during landing roll, the right brake failed and aircraft could not be kept on the runway. Aircraft stopped approximately 30 feet from the left edge of the runway. Crew evaluated the aircraft without incident. No damage to aircraft. Brake failure resulted from failure of brake metering valve.

F-106B ELECTRICAL PROBLEMS. Pilot reported AC/DC power failure in flight. When throttle was retarded, the constant speed drive would drop off the line. When throttle advanced, electrical power returned to normal. Investigation revealed the engine main gear box oil line was leaking. Oil line was replaced.

T-33 LOW SPEED. Acceleration check speed was slightly low on takeoff but within minimum acceptable for field length. Pilot stated aircraft seemed underpower in flight. All engine instruments were normal. Maximum airspeed at 15,000 feet, rpm 100% was 260 knots. Precautionary landing was made without incident. Pitot head was found defective and replaced. Pitot static check and engine trim performed with no discrepancies.

F-102A DRAG CHUTE. Due to his preoccupation with aircraft control in gusty cross-wind conditions, pilot failed to pull the drag chute handle "that final 1/4 inch"; additional handle pull during rollout deployed the chute — no problem in stopping the aircraft, but the right main gear tire was changed due to above normal scuffing condition resulting from the cross-wind landing. System functionally checked with no discrepancy found.

DOWN and out

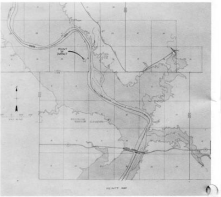
F-106 OUT OF CONTROL

Three pilots were briefed to fly high altitude radar intercepts with the target at 49M and the fighters at 45M. Taxi, takeoff, and climb were normal. During the climbout, the pilot of the number two aircraft completed two evaluator passes on the lead aircraft. During the first one hour and fifteen minutes of the mission, he attempted four additional intercepts. The first of these was completed successfully at the briefed altitudes although his afterburner would not light. Following this intercept, the target was descended to 40M for the remainder of the passes. The last two intercepts were flown using AUTO D/L and auto attack.

Following the last pass, the pilot of the number two aircraft dropped in trail with the leader to allow the number three aircraft to complete an evaluator pass. His altitude was 37,000 feet and his position was 12 miles to the rear and three thousand feet below lead, flying on a parallel course in AUTO D/L. After Three completed his evaluator run, the pilot of number two aircraft was given a starboard D/L turn to join with lead for recovery. He moved the flight mode selector switch to PITCH and began to roll out on a heading which would allow a greater cutoff on lead. As he moved the flight controls to level the wings, the aircraft began a roll to the left. He quickly reached full right aileron without effect. The left roll continued and the aircraft entered a left spiraling descent. The pilot pushed the emergency manual disconnect button, held the momentary interrupt switch, and visually checked the flight mode selector switch in DIRECT MANUAL. The master caution light was not illuminated.

Between 20,000 and 30,000 feet, he called on the radio that he was experiencing flight control problems. Nearing 10,000 feet he requested a join-up. Shortly afterwards, he transmitted that he was going to eject. Lead asked for his altitude and the pilot replied that he was at 6,000 feet and had full rudder applied. At this point, the pilot later stated that he had between 200 and 230 knots and the roll rate had decreased. However, the aircraft continued to roll left, although full right aileron, full right trim, and full right rudder were applied. At 5,500 feet and as the aircraft rolled upright, the pilot looked at the ejection seat handles to make sure he got them the first time, and then pulled both handles up. The canopy jettisoned and the seat fired. The aircraft continued rolling and impacted on an ice-covered lake 55 miles from home plate.

The pilot's chute deployed normally about 2,000 feet above ground. The survival radio in the parachute did not activate automati-



cally, nor did the pilot deploy his survival kit. He landed on the snow-covered ice of the lake and spilled the chute without difficulty. Using the ACR RT-10 radio in the kit, he contacted the flight leader and vectored him over his position. Approximately 45 minutes after landing on the ice, a helicopter arrived and carried the pilot back to base.

With the exception of minor debris, consisting mainly of cockpit components and forward sections of the aircraft, the major portion of the aircraft penetrated 31 inches of ice and was resting on the bottom of the lake. The water was 60 to 65 feet deep and the wreckage was covered with 5 to 6 feet of silt. Diving operations uncovered numerous pieces of wreckage, but only two flight control components were recovered before salvage operations were discontinued. Portions of the recovered flight instruments showed that at impact the aircraft was turning through an approximate heading of 185°, in a 30° left bank, with the nose 30°-35° below the horizon, descending at approximately 18,000 feet per minute, and an airspeed of about 390 knots.

Since the major portion of the aircraft's flight control system was not recovered and analysis of those parts found did not reveal internal failure, it was necessary to rely on the pilot's description of the flight control malfunction, the information gained from interviewed personnel, the aircraft maintenance records, and the expertise of technical representatives called in for assistance.

The pilot's description of the malfunction commenced when he attempted to roll the wing's level after making a turn to the right. Aileron control apparently continued to feed in slowly to the left until such time that he noticed he had the stick positioned full to the right and was still unable to stop the left roll. From that time until he ejected from the aircraft, he remained in a continuous left roll which he could slow down but never stop. He felt he had some aileron control because he could speed the roll rate up by releasing full right aileron and the one time he positioned the stick to the left, the roll rate "really wrapped up." He also felt he had some positive rudder and some elevator control. He was able to slow the roll rate by using full right rudder and could control his pitch, to some extent, by using back stick pressures during the upright portions of the rolls. The pilot also stated that the control stick pressures felt normal and that at no time did he feel the stick driving in any direction.

The maintenance records indicated this aircraft had considerable flight control maintenance performed, especially after a flight control write-up about three weeks prior to the accident. In clearing that write-up, the Shelly Unit, both HEP valves, the aileron position pot and the right inboard elevon actuator were changed. The flight controls were also re-rigged as a result of these components being changed. The aircraft was then test flown and written up for excessive roll during the takeoff trim check. As a result of this write-up, the aileron trim actuator was changed. On the next flight, the pilot was forced to eject when the aircraft entered a series of rolls to the left and would not respond to the control stick movements.

In an attempt to duplicate the control problems encountered by the pilot, numerous checks were made on an aircraft with a hydraulic mule attached. All checks were discounted, with the exception of three, as they did not duplicate the responses required to make the aircraft roll left. The three remaining checks were as follows:

1. A disconnect at the aileron trim actuator, as this was the last maintenance performed on the flight controls. This condition would allow the elevons to drive to some intermediate position between neutral and their full limits and give either a right or left roll, depending on the direction of drive. Elevator control would still be available but the pilot would only be able to raise the nose during the first and last quarters of the roll. Aileron control would be non-existent or limited to movement of the aileron control portion of the mixer assembly due to G-Forces or the aileron trim actuator dragging across the mixer assembly as the pilot moved the stick.

2. A disconnect of the left elevon control linkage aft of the mixer assembly. This could have allowed the left elevon to drive up, thereby creating a left roll condition. However, as the pilot applied full right aileron, the right elevon would move up 7° thereby slowing the roll rate but it would not stop it. If he applied full stick while holding full right aileron, the control surfaces would balance, the roll would stop and he would be in a steep climb. This is assuming he applied these controls as he approached a wings level condition.

3. A disconnect of the right elevon control linkage aft of the mixer assembly. This could allow the right elevon to drive down and give the left roll condition. Full right aileron would then give a maximum of 7° down deflection to the left elevon. This would slow or stop the roll rate depending upon how far the right elevon had driven down. Application of elevator would then cause the roll rate to the left to increase and

any application of left aileron would also cause the roll rate to increase. The only way the pilot could balance out the elevon positions and stop the roll rate would be by applying full right aileron and forward stick or elevator. This would place the aircraft into an extremely steep dive or "outside loop" and it is unlikely the pilot would attempt this maneuver.

Failure of the Hydraulic Elevon Package (HEP) valves was also considered by the board, however, the pilot did not experience any driving of the stick and stated several times that the control stick pressures felt normal at all times. If a malfunction occurred within the HEP valves that failed to transfer the control movements back through the flight control linkage to the control stick, a condition that is thus far unknown, a failure of the HEP valves may have induced the left rolling condition.

The primary cause of the accident was considered to be materiel failure of the flight control system, or a component thereof, from an undetermined cause.

The ejection sequence was normal, but the pilot received major injury to his back from forces of the rocket catapult because he was positioned in less than optimum sitting posture. The force deployed parachute operated perfectly with the exception that the beacon radio failed to actuate automatically at chute deployment. The Global Survival Kit did not automatically deploy because the ground maintenance safety pin was installed as per squadron policy. The pilot did not manually deploy the kit because there was insufficient time and he wanted to be sure he had good b position for landing.

In his attempt to regain control of the aircraft, the pilot delayed his ejection until approximately 5500 feet. Elevation of surrounding terrain was 2000 feet. He did not leave much room to spare. Descending at about 18,000 FPM, something less than 10 seconds stood between life and death. That is cutting it too close, especially since the out-of-control condition began at 37,000 feet. There are times when a pilot has no choice but to rely on the minimum capability of the ejection equipment. But where a pilot has failed to regain control of a bird that flops to the 15,000 foot mark, there's no percentage in trying any longer. Even if it does recover, there probably won't be enough sky left to pull it out safely. It's been said a thousand times, but we'll say it again "Don't mess around with a bird that's out of control be 15,000 feet."

SPECIAL RECOGNITION

for a unit with a special mission

College Eye Task Force

The College Eye Task Force has, since 14 April 1965, flown their EC-121D aircraft for over 50,000 hours without a major accident. This is a most commendable achievement in itself, but even more so considering the environment in which they operate. Currently based at Korat RTAFB, Thailand, it is the fourth and best Forward Operating Base they have staged out of. They are frequently faced with austere support and hazardous operating conditions, flying around the clock in all types of weather. They have actively participated in many successful search and rescue missions resulting in the recovery of downed aircrew members.

The unit has been responsible for unique saves of fuel-thirsty fighter aircraft returning from strike missions by quickly sorting them out and vectoring them to tanker aircraft.

On one occasion the entire crew of a foundering scientific research vessel was rescued through "College Eye" efforts just before the ship sank in the South China Sea.

The unit is TDY on a rotational basis from its parent organization, the 552nd Airborne Early Warning and Control Wing located at McClellan AFB, California.

Accomplishments of the "College Eye Task Force" have been most significant and are worthy of recognition. They are an outstanding example of what dedicated people with a professional attitude can accomplish.

We SALUTE the College Eye Task Force.

YOU'VE GOT IT, COOLSTONE!

by **ROGER G. CREWSE** / *Chief, Analysis Division, Hq ADC*

Because of his broad and varied experience in all phases of the Aerospace Defense Command's operations, Coolstone I had been selected as a member of that most elite group of all, the ADC ORI Team. Coolstone just felt so proud and so pleased with his good fortune he could hardly contain himself. He could scarcely believe that such an honor could be his. There were quite a few others that could scarcely believe it, either. There was, however, a small inner group of headquarters experienced troops, wise to the ways of the system, that felt that a type such as Coolstone would serve the Command well. This conclusion was based on the theory that it took one to know one, and this was really why he was selected.

The secret plans had been drawn. The date had been set. The roving street fighters were about to be unleashed upon the Command once again. The target of their attention, the 25th Air Division. Because this was the first ORI since Coolstone was assigned, he was sent to Paine AFB to observe—they said. What it really did was to keep him out of the way as much as possible. T-bird targets were to be launched from Paine at the secret time which Coolstone knew. He therefore awakened at his BOQ room around 0100. He shaved, shined, and otherwise readied himself for his first assault upon the unwary.

His bright new orange flying suit was not resplendent with the appropriate patches, badges, and personal alterations, much to his chagrin. He had managed to scrounge it just before the classified departure time from Peterson Field, and had not been able to procure the proper embellishments. He did, however, have a snappy scarf and his major's leaves shone and were carefully positioned. As he arrived in the squadron ops, it was clear to see that there had been an intelligence leak. Many of the fighter squadron pilots were there and ready. The target pilots were also there, nervously going over their routes. The activity was stimulating to an old war horse such as he, and he found himself wishing to be a direct part of the action. The many times he had been a direct part of the action, he had spent most of the time wishing quite the opposite.

While he wasn't particularly avoided, on the other hand he was not receiving the attention he figured a representative of the head shed should. For several minutes he served as he was supposed to do, clearly outside the action, and then, no longer able to contain himself, he sidled up to the ops officer and 'lowed as how he'd noticed they were pretty busy, and could he help in any way?

"Well," said the ops type, "we're looking for a body to fly with the Colonel on one of the T-bird target missions. Would you be interested?"

Coolstone quickly mentally reviewed his instructions. He could remember no remarks to the effect that he shouldn't observe from a target bird. "Sounds fine," he said, "I would be glad to fill the hole."

The ops type introduced him to a graying colonel, gave him a target folder, bird number, takeoff times, and the other many details that the target pilot must have to sneak around in the middle of the night effectively. The Rock looked over the target route altitude and saw they were going out to the west, well out, over the Pacific. He immediately had some second thoughts about being part of the action. At least they were not going to thrash around at low altitude. That was some consolation. He wandered over to the P.E. shop very casually and drew everything that they had for water survival.

The formal briefing was very well conducted, thought Coolstone, and he made a note to that effect. After it was over, he and the Colonel went out to the bird. He helped the Colonel with the preflight. He held the flashlight, mainly, and pointed it at the appropriate places called out to him by the Colonel from the checklist. It was a slow but very thorough preflight. Coolstone noticed that the Colonel was either somewhat uncertain about his procedures, or was, for Coolstone's benefit, touching bases that Coolstone hadn't touched for five years.

They strapped in, the Colonel in front of course; got the power, and on the interphone, the Colonel, once again, called off each prestart check from the checklist. The Colonel then began to start the engine and he also called off to Coolstone each procedure as he accomplished the action. At exactly the right time they arrived at the end of the runway.

"How do you want to work this?" asked the Colonel. "Do you want me to take care of the flying, and you handle the radios?"

"Sounds fine," said the Rock. "I'll handle the radios and the navigation for you if you like."

"OK," said the Colonel, "you take the radios."

"Rog," said Coolstone, and he checked in with the tower for their IFR clearance which had not yet been received as they were taxiing out. He got the clearance and fumbled it only slightly on readback, which, in itself, was a minor miracle. There was a ceiling at about 4,000 and tops were estimated at 12,000. Out to sea the weather was even better—strictly a no-sweat flight.

The tower released them for takeoff and once again the Colonel carefully called all pre-takeoff checks. Then they had at it. The takeoff was normal. They checked in with departure control, established their climb heading and airspeed, but just before they entered the cloud deck, the Colonel said, "You've got it."

Coolstone wasn't ready and really didn't want it, but he took it, and shook the stick indicating he had it. The Rock glued his eyes to the instruments, and attempted to maintain some semblance of a climb attitude which would get them through to the tops. He began to experience a slight case of vertigo. He had a death grip on the stick. He could see that if they didn't get on top pretty soon, they wouldn't. He had about arrived at the point where he felt that he would have to give it back to the Colonel before he fell out of the airplane, when he noted they had finally broken out.

"I've got it," said the Colonel.

"Rog," said the Rock, between gasps.

The target mission was uneventful. They were intercepted on schedule, and Coolstone mentally noted to include on his observation report that the 25th's systems were all go and procedures and effectiveness were good. "Tips dry, leading edge checked, wing tanks on," said the Colonel.

One thing about this cat, thought the Rock, he keeps you informed. They headed back for Paine, were handed off to approach control, and started their descent. Coolstone was tidying up the cockpit a bit, stowing charts and cards. He hadn't flown with many colonels, but unless this one was from SAC, he certainly operated strangely, much differently than the fighter squadron pilots. Everything he did, he did very deliberately, and always advised Coolstone before he did it.

Coolstone could see that they were nearing the cloud deck again, and just before they entered, the Colonel said, "You've got it."

Once again, the Rock wasn't ready, and didn't want it. "I've got it," he said weakly, and wondered to himself what was wrong with this guy. Everytime they got near a cloud, it's "You've got it."

Coolstone was really springloaded to the vertigo position this time, but he hung on as best he could to the attitude that the Colonel had established during the descent. They kind of fell out of the bottom of the clouds and Coolstone didn't wait. He quickly said, "You've got it."

"Roger," said the Colonel, and added, "Do you want to cancel IFR and go on in and pitch, or shall we make it an ILS?"

"Suit yourself, sir," replied the Rock, "And do you have the field in sight?"

"Roger," said the Colonel, "I've got it dead ahead."

"Paine tower from Coolstone One. Have field in sight. Please cancel IFR. And we need landing instructions, please."

"Roger, Coolstone," said the tower, "IFR cancelled. Landing is to the north, runway 34, report five miles on initial."

The Colonel quickly and smoothly set them up on an initial approach. Coolstone rested his elbows on the canopy rails, and relaxed for the routine pattern and landing. The Colonel pitched, "You've got it," he said.

Coolstone scrambled for the stick, pumped it a time or two, leveled the wings for the downwind, and said, "You've got it."

The Colonel called gear and flaps, started the turn for the base, and said, "You've got it."

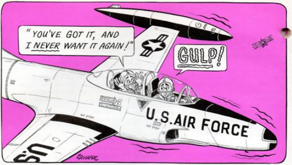
What's with this cat, thought the Rock, as he herded the bird generally towards the final, and then he said, desperately, "Colonel, you've got it."

"Look," said the Colonel, "you're the IP, I've never flown this machine before, and with the night landing and everything, I think you'd better take it. I probably should have been in the rear seat, anyhow."

A great burst of adrenalin caused Coolstone to stand up in the cockpit as he jammed the throttle to the full position. "Colonel," he said desperately, "I'm not an IP, I'm an RO. I can't land this thing. *You've got it, and I never want it again!*"

The Colonel took it. "This is rather awkward," he said, "I sure hate to get everybody on the ground upset."

Coolstone, now working on a level slightly below full panic, put his



broad experience to good use at last. "Look," he said, "why not declare just a minor emergency. You know, just enough to get the fire trucks out, but not enough to bring out the whole base. I would just as soon not have any more publicity than necessary myself. How about an unsafe gear? That ought to work."

"Great idea," answered the Colonel. "Go ahead and give them a call. And look," added the Colonel, "I appreciate your help. Don't sweat it too much, I think I can get this thing down in the correct number of pieces."

Coolstone relaxed to rigid, then said with a great deal of bravado, which took extreme self control, "My end goes where your end goes, Colonel, I'm with you." He then called the tower. "Paine tower from Coolstone One. We have an unsafe gear indication and are going around. Please get the fire trucks out." The note of desperation in his voice belied the minor nature of the *declared* emergency.

"Roger, Coolstone," replied the tower. "We saw you as you went over. They look like they are down to us. Emergency vehicles are alerted."

"Roger, tower, we will make a large box pattern and land."

"Coolstone One from mobile control. Do you need any help? I'll read the checklist for you if you like."

"Negative, I don't believe there's anything you can do," said Coolstone. "Particularly from down there."

The Colonel made a big box pattern—big—big—big.

"Paine tower, Coolstone One. Turning base leg."

"Roger, Coolstone," said the tower, "we don't have you in sight. I think you went over the horizon. How far out are you?"

"We're a ways out, all right," replied Coolstone, "but we're working on this gear."

"Roger," said the tower, "call us when you're turning final."

Three other aircraft came in and pitched, and landed ahead of them without disturbing their pattern in the slightest.

"Tombstone One from Paine. Are you still going to land here? And is your gear still unsafe?"

"That's Coolstone One," said the Rock, "Coolstone One, and yes, we're still coming in, and yes, we still have the emergency."

"Roger, Tomb - er - Coolstone. Do you have the field in sight yet?"

"Roger, roger," said the Rock, "I can see it up ahead. We're on final now."

"Roger," said the tower, and added dryly, "you're cleared to land whenever you get here."

The moment of truth had finally arrived, accompanied by numerous power changes, but either because of his several thousand hours or a lot of luck, the Colonel greased it in, but was about halfway down the runway.

"Tombstone One from mobile control. You'd better take it around, you're down too far. Tombstone One, take it around, take it around, you're too far down, too hot."

"Negative," said the Rock, weakly. "We'll keep what we've got."

The radio was silent for several moments. Then, "Tower, this is Tombstone One, please send a truck out to the barrier, we seem to be somewhat entangled."

THE WAY THE BALL Bounces

ACCIDENT RATE

1 JAN THRU 30 JUNE 1969

	ADC	ANG
Thru June 1969	6.3	*6.7

MAJOR — ALL AIRCRAFT

ON TOP OF THE HEAP

MO	ADC	MO	ADC	MO	ANG
62	48 FIS	23	343 Ftr Gp	77	162 Ftr Gp
37	4603 AB Gp	21	49 FIS	75	112 Ftr Gp
29	75 FIS	16	71 FIS	56	148 Ftr Gp
27	4758 DSES	15	78 Ftr Wg	34	147 Ftr Gp

ACCIDENT FREE

BOX SCORE

ACCIDENTS FOR Jun / CUM TOTAL	1st AF	4th AF	10th AF	ADWC	4600	ANG
T-33		/1				/2
F-100						
F-101	/1		/1			
F/TF-102						1/2
F-104						
F-106	1/2	/2	/1			
B-57	/1	/1				
F-89						
EC-121	/1					
OTHER CONV						

MINOR ACCIDENTS THIS PERIOD — 0
MINOR ACCIDENTS CUMULATIVE — 3

CUMULATIVE RATE

1 JAN THRU 30 JUNE 1969

	ADC	ANG
JET	7.9	*7.3
CONVENTIONAL	2.0	0.0

BY AIRCRAFT	ADC	ANG
T-33	2.2	*22.6
F-89		0
F-100	0	
F-101	11.5	
F TF-102	0	*5.3
F-104	0	
F-106	16.4	
B-57	21.2	
EC-121	3.8	

RATE = MAJOR ACCIDENTS PER 100,000 FLYING HOURS *Estimated

we point with PRIDE

Captain Peter M. Green
Det 1, 4650 Cmbt Spt Sq
Stewart AFB, NY

ENGINE FAILURE, C-119J

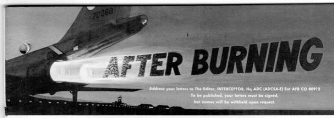
On a morning flight, Captain Green, Aircraft Commander of a C-119J, was enroute from Malmstrom AFB, Montana, to Scott AFB, Illinois, cruising at 11,000 feet IFR. Midway between Lewistown and Miles City, Montana, a total loss of power was suddenly experienced on the left engine. Captain Green instinctively reacted to his emergency training, but power could not be restored and the engine had to be feathered and shut down. The loss of an engine on a loaded C-119 is considered critical.

The aircraft was unable to maintain level flight on a single engine at this altitude and weight, and a minimum rate of descent was entered. An emergency was declared with Miles City radio and the aircraft was cleared direct to Billings, Montana, 65 miles distant.

At 7,500 feet indicated altitude, 2,500 feet above the terrain, the aircraft was in VFR conditions; however, level flight still could not be established. Maximum power was applied on the good engine, but the aircraft continued to descend. The situation was becoming critical. Already below the minimum enroute altitude and computed service ceiling, it became apparent the aircraft had to be lightened to prevent an impending forced landing or the bailout of the crew under adverse survival conditions. Captain Green directed the copilot and flight engineer to jettison the cargo which consisted of an 8,000 pound generator and engine stand. Captain Green flew the aircraft while the crew opened the flight operable door and rolled the cargo out. The descent was stopped at 6,500 feet indicated altitude, 1,500 feet above the terrain. The aircraft climbed to 7,000 feet, power was reduced, and the remaining 40 miles were flown without further difficulty. An uneventful single engine landing was made at Billings.

Subsequent inspection revealed internal failure of the left engine.

"We Point with Pride" to Captain Green for his exceptional airmanship and professional judgment in the skillful handling of this inflight emergency which prevented the loss of a costly ADC aircraft and possible injury to his crew.



AFTER BURNING

Address your letters to The Editor, INTERCEPTOR, Hq ADC (ADCSA-E) Ent AFB CO 80912
To be published, your letters must be signed,
but names will be withheld upon request.

EGT AND JUDGMENT

Concerning your paragraph entitled "EGT and Judgment" in the May 1969 issue of INTERCEPTOR! Am I to understand that you are issuing an unqualified chastisement to a Deuce pilot who elected to begin a takeoff roll after his EGT peaked out at 646°?

Undoubtedly you were making a point, but your scorn seems rather hasty in forthcoming since pages 5-2 through 5-4 of T.O. 1F-102-1 are definite in stating that 680° maximum for up to two minutes is allowable. Are you saying in your article that a Deuce pilot should not accept a peak EGT of over 630° on initial engine run-up? If so, I suggest an AF Form 847 requesting a change to T.O. 1F-102-1 be ...itted.

Capt Dave Ladd
(Another Deuce Pilot)
158 Ftr Gp (VTANG)
Burlington Muni Aprt, VT

***Glad you brought up the point. To the chastisement question, we answer "yes," if the pilot began his engine acceleration from any throttle position other than IDLE power and took more than one second to complete the movement. Pages 6-35 (paragraph 6-56d) and 6-40B (paragraph 6-61b) of T.O. 2J-57-26 state respectively that "Each acceleration shall be accomplished by motion of the power lever from IDLE to MILITARY in not more than one second," and "Acceleration (temperature) limit applies during first two minutes of engine acceleration over the full thrust range (IDLE to MILITARY or MAXIMUM) of engine." Therefore, according to the -26, an acceleration is not an acceleration if the above criteria are not met and thus, the 680° max does not apply. Since the nonacceleration limits below 30M are 630° (MIL) and 640° (MAX), an engine which overshoots after a throttle burst from, say, 70% or 80% indicates there may be something going rotten in the rotor, so to speak.**

As for the hasty scorn, we thought a scorn ...e might save nine, especially since the ... One is as clear as mud.

F-101 SPECIAL ISSUE

In the "Afterburning" section of your May 1969 issue it was mentioned that a 46 page article on the F-101 and Pitchup had been recently published. Since this is a subject near and dear to our hearts here at Honeywell and since we are still flying on F-101B to investigate cures and causes for this malady, I would appreciate very much if a copy of said article could be sent. Thank you very much for your enlightening and thought provoking magazine.

Jim O'Neil
Manager, Flight Operations
Honeywell, Inc.
Minneapolis MN

***We still have some copies of this special issue available.**

FROM NASA

As a pilot, I enjoy reading INTERCEPTOR and greatly appreciate the many safety tips therein; but, as the Manned Spacecraft Center Aviation Safety Officer, I have a duty to pass these ideas along to our pilots. Therefore, I would like to be added to your distribution list to ensure that this office does not miss any issues of INTERCEPTOR.

Conway H. Roberts
Aviation Safety Officer
Flight Crew Operations
NASA Manned Spacecraft Center
Houston TX

***You're on.**

RUNWAY IMPRESSION FENCES

Throughout Southeast Asia, aircrews are constantly subjected to extremes in airfield hazards. One of the biggest problems we face in PACAF is how to improve the situation, especially those which create land short illusions in the face of a fluid, tactical environment.

Searching for answers, we ran across an article in your December 1962 issue, "Introduction to the Runway Impression Fence." This may be a simple, practical, and economical solution.

We realize that it's 6½ years since publication, but are hoping that the plans and material specifications are still available. We could also use any information on actual ADC experience with the fence.

Your assistance is appreciated. Perhaps ADC can play a large role in the PACAF Accident Prevention Program.

Colonel R. J. Broughton, Jr.
Director of Safety
Office of Inspector General
Hq PACAF

***Fortunately we had one copy of the brochure left which contained the article referenced with the addendum of flight test data and a fabrication plan. Hope it helps.**

SCUBA AND DYSBARISM

Reference the article "Be Prepared to Dive" which appeared in the May 1969 issue of the INTERCEPTOR, I would like to compliment the author for this excellent article.

Since, however, a large proportion of the readers of this publication are flying types, I would like to emphasize one point which was not covered and which pertains directly to flying personnel.

Exposure to altitude after diving can be an extremely hazardous situation due to the increased incidence of serious dysbarism which can result in permanent physical damage and suspension from flying status.

Paragraph 8e, AFR 50-27, is quoted as follows: "No individual is to be exposed to cabin pressure of more than 18,000′ within 12 hours after scuba diving to a depth of 30′ or below."

Major Robert M. Paull, USAF, MC
Office of the Command Surgeon
Hq ADC

***The pressure differential can do you in but good—so watch out!**

the Cold Hard Facts...

1. OPERATIONAL HAZARD REPORT
(Indicate recommendations on reverse)

ANONYMOUS: YES | NO

TO: Flying Safety Officer

FROM:

LOCATION OF OCCURRENCE/HAZARD

TIME OF OCCURRENCE: DATE | HOUR | DAWN | DAY | DARK | DUSK

IF HAZARD OCCURRED WHILE IN AIRCRAFT, COMPLETE THE FOLLOWING:

DEPARTED FROM | DESTINATION | MISSION

ORGANIZATION AIRCRAFT ASSIGNED

AIRCRAFT: TYPE | ACFT SERIAL NO. | RADIO CALL

CLEARANCE: LOCAL | VFR DD 175 | IFR DD 175

COMMUNICATION DIFFICULTIES: YES | NO

ALTITUDE | WEATHER CONDITIONS

CREW POSITION: PILOT | INSTRUCTOR | NAVIGATOR | ENGINEER | OTHER (Specify)

PHASE OF FLIGHT: PRE-FLIGHT | CLIMB | CRUISE | DESCENT | LANDING | POST FLIGHT

DESCRIPTION

This is a copy of AF Form 457, Operational Hazard Report. An "operational hazard" is any condition or act that affects or may affect the safety of Air Force aircraft or associated personnel. Operational hazards include BUT ARE NOT LIMITED to inadequacies, deficiencies, or unsafe practices in the following areas:

- Operation of weather service and facilities.
- Aircraft maintenance or inspection.
- Operation and maintenance of airfield facilities and services (airfield and approach lighting, construction lighting and marking, runway and taxiway cleanliness, base firefighting services, etc.).
- Aircraft ground services (follow-me, towing, parking, starting, fireguard, etc.).
- Hq USAF, major air command or subordinate command regulations, procedures, or policies.
- USAF training and education of aircrew or air operations personnel.
- Flight publications.
- Near collision between aircraft in flight.
- Navaids (TACAN, GCA, VOR, ILS, surveillance radar, etc.).
- Personnel procedures, techniques, or instructions in management of air traffic or voice radar approach aids.
- Air regulations, procedures, or policies published by the Federal Aviation Administration (FAA) or foreign civil or military agencies.

Any person, military or civilian, assigned or attached to the Air Force, is authorized and encouraged to submit OHRs. AFR 127-301 establishes the procedures for submission of this form. Timely use of this form saves lives and resources, so if a "hazard" comes to your attention . . . don't be bashful—submit an OHR.

DATE | SIGNATURE OF REPORTING PERSON (Optional)

AF FORM JAN 62 457 PREVIOUS EDITIONS ARE OBSOLETE.

REPORTING OPERATIONAL HAZARDS