TAC ATTACK

March 1966

TAC ATTACK

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COVER PHOTO:

Probe and drogue refueling gives a thirsty F-105 extra distance on a long deployment.

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Angle of Attack

angle of attack

SUPERVISION !

WHO'S RESPONSIBLE ?

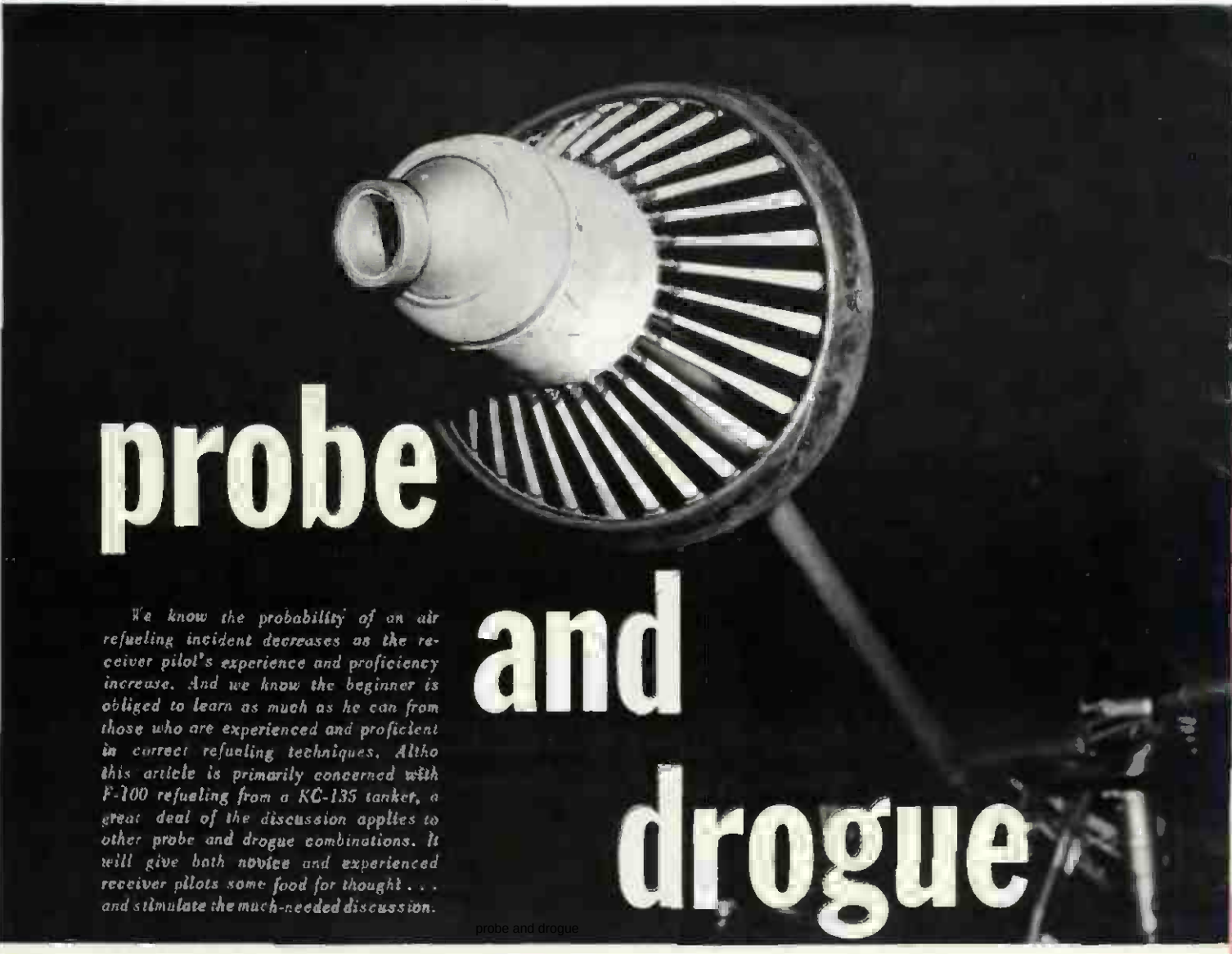
A pilot is late arriving at his airplane, dashes thru a superficial preflight, and manages to jump into the cockpit and check in with his flight on time. An oxygen man is servicing an aircraft with LOX without wearing a face mask or protective gloves. A mechanic fails to safety a nut he has installed.

How often do you take the time to correct or question these men . . . or do you go on about your business because it is someone else's responsibility to insure that particular job is done correctly? As the hurried pilot's flight leader, do you correct him? Or do you overlook the incident during debriefing as unimportant? As line chief, do you stop the LOX service until protective equipment is being used? When you find safety wire missing during an inspection, do you just install it yourself to save time?

TAC's Maintenance and Operations are the end product of costly trial and error and lengthy research and planning. They have been carefully fashioned in such a manner that we have supervision at all levels of training and in every facet of the mission. Every person in an organization is a potential supervisor!

Too often we think of supervision as the job of the commander, section heads, and senior NCOs; we often forget to emphasize that the individual's responsibility to manage and inspect his own work can not be ignored or delegated. Accident prevention and supervision are organizationally the commander's responsibility and the personal responsibility of every individual. The success of our mission depends on this personal acceptance of supervisory responsibility.

Colonel Gust Askounis, TAC Chief of Safety, presents the Air Force Commendation Medal to Major Karl K. Dittmer upon his departure from TAC in February to an assignment in Southeast Asia. Major Dittmer edited TAC ATTACK from its inception in 1961 and became known throughout Tactical Air Command for his OLD TAT column in the magazine.



probe and drogue

We know the probability of an air refueling incident decreases as the receiver pilot's experience and proficiency increase. And we know the beginner is obliged to learn as much as he can from those who are experienced and proficient in correct refueling techniques. Altho this article is primarily concerned with F-100 refueling from a KC-135 tanker, a great deal of the discussion applies to other probe and drogue combinations. It will give both novice and experienced receiver pilots some food for thought . . . and stimulate the much-needed discussion.

probe and drogue

Probe and drogue refueling with the F-100 has been jawed about and described in many colorful terms, but they all carry the same message that it isn't easy. Add turbulence, bad weather, or a dark night to the problem and even old heads in the squadron use a little extra adrenalin while getting their fuel. From the least to the most experienced, F-100 pilots know that losing or bending a probe, breaking a canopy, or tearing off a drogue isn't an uncommon occurrence. For example, during 1965, F-100 units reported their pilots lost 17 and bent eight probes while participating in airborne refuelings. Those figures by themselves are not too earth-shattering; however, consider that 62 per cent of last year's reported One-Hundred refueling incidents were caused by improper pilot technique and almost 50 per cent involved F model aircraft. Even more significant is that 85 per cent of all TAC F-100 inflight refueling incidents occurred during checkout or proficiency training; and the mishaps, for the most part, were preventable. TAC's F-100 units will be training more pilots in 1966 with the advent of Replacement Training Units (RTUs) and the increased combat crew training output. Therefore, unless particular emphasis is placed on proper refueling techniques an increase in lost and bent probes, broken drogues, cracked wings, and shattered canopies can be expected.

If we are to ward off an increase in refueling incidents and attack the problem of applying efficient refueling techniques, we must carefully examine the refueling process and refine, amplify, and learn the techniques and procedures outlined in the air refueling TOs. We must also understand what causes the majority of broken and bent probes and

drogues.

The primary culprit appears to be hose whip. It is the result of the hose trying to equalize the forces being applied to it. The slip stream, fuel pressure in the hose, and you dangling on the drogue are the main forces that the hose is trying to accept. When the drogue is pushed directly in line with the knuckle, along the longitudinal axis of the hose, the hose tries to seek a position of equilibrium from the forces being exerted on it. However, there is no equilibrium position when the drogue is aligned with the knuckle; you get hose whip. The farther forward you push the hose the greater the kink and the more out of balance the forces become. The larger the kink the more violent the hose whip, and the greater your chance of tearing off a probe or damaging something else. By using proper references, a slow closure rate, and not kinking the hose, it is possible to avoid hose whip almost entirely.

The next most common cause of torn-up equipment while refueling is the receiver pilot allowing his aircraft to slide out of the desired refueling envelope. This is usually the result of the receiver pilot using incorrect references and failing to detect a change in his position or abrupt movement of the tanker or boom. You, as the receiver pilot, should concentrate on small corrections and not be too proud to pull off power and get off as soon as you recognize you're approaching the limits of the envelope. Once you effect a disconnect, then attempt to determine whether it's you or the tanker that's spastic. Trying to hang on and salvage a hook-up is like trying to save a bad traffic pattern or gunnery pass. You may get away with it; but if you make it a habit, you're going to get bit.

One fighter wing has developed a technique for KC-135 refueling that they call Straight Hose Refueling. The idea being the straighter you can keep the hose, without causing a premature disconnect, the less likely you are to cause hose whip and equipment damage. As with any refueling technique, the foundation of their tactic is the ability to fly smooth, close wing formation. There is really nothing basically different between formation flying and refueling except the references are changed.

Some pilots can fly beautiful formation all the way to tanker and back; but when they get behind the tanker, in the precontact position, they look like their bird's bungee system failed. Usually the cause is apprehension which leads to overcontrolling. If the stick is moving more than two inches, you're overcontrolling. Drop back behind the drogue five to ten feet and stabilize; then check for overcontrolling, proper trim, and try to relax. Keeping your aircraft trimmed will make being smooth a lot easier. If you hold too much pressure, you are bound to get tired and start overcontrolling. Another good way to keep the corrections small is to adjust your seat so your right forearm rests on your thigh. In this position, you'll be making stick movements with your wrist rather than your whole arm.

Now that you are steady as a rock check your references. The primary visual references for holding a precise position while refueling are the basket, the hose, and the boom. Your peripheral vision should enable you to keep all three references in view. The basket and hose are the best elevation references, and the boom works best for azimuth. The bottom of the tanker is too far away for you to rapidly detect small changes; and besides, on a dark night you won't be able to see anything but the position lights. Then you are forced to find new references under very difficult conditions. Placing the knuckle on a point in the windscreen is fine, provided you don't attempt to rely on it as your sole reference. Using the hose, boom, and basket simultaneously should give you the best results.

Once you're stabilized about five feet behind the KC-135's drogue and you have your references, it's time to sneak up on that little bear. Keep all three references in perspective and start a rate of closure. When you have started forward, don't stop to make minor probe and basket alignment adjustments. The rate

of closure should be very slow, about one or two knots, and barely perceptible to you. Don't try to ram the basket; you just want to pick it up gently without compressing the hose more than a foot while you move the basket up and left about two feet. Making contact is where you are most likely to get hose whip and send your boom cart wheeling off into space. It's almost impossible to hit the drogue too slowly, but a closure rate higher than three knots is likely to get you into trouble.

In the event you miss the basket and haven't any idea of where or by how much, you are probably not using the proper references. While keeping the hose, boom, and basket in sight, look more to the right at the basket and see if that doesn't give you better results. Should you hit the drogue on the rim, don't make a large hairy correction and try to salvage the pass. You'll only get into trouble and at best end up overcontrolling. Ease back to the precontact position and try again. By repositioning and starting a new closure you will usually save time, energy, and fuel in the long run. Turbulence will just compound your problems so fly formation with the tanker and wait for a patch of smooth air. Once you are hooked up, you'll jostle around in unison without too much risk of damage.

After you get hooked up, you still have the hardest part of refueling, off a KC-135, ahead of you . . . keeping your One-Hundred within the refueling envelope. Here is where the Straight Hose Refueling technique may help you keep your steed in one piece.

The envelope you must keep within is a semi-circle approximately three feet in diameter and to the left of the drogue's normal trail position. Once contact is made with the drogue move it up and to the left about two feet while keeping the hose almost straight. By keeping the hose nearly straight, but offset, you reduce the possibility of hose kink, whip, and the damage that usually follows. If on your first few attempts at keeping the hose straight you fall off, you are most likely closing too fast or overcontrolling on the power. A high closure rate causes the hose to kink and whip off, or causes you to make a large power change and snap off when you reach the end of the hose. One or two knots is all the closure you need; and to reduce the size of the power changes, place your hand flat on the throttle quadrant with the throttle between your thumb and index finger. Remember, keep the hose almost straight and make small corrections.

The disconnect, whether it be normal or emergency, must be accomplished with the same finesse required for hook-up and keeping within the refueling envelope. When executing a disconnect, you must move directly aft while you stay level with the drogue in its free trail position. A disconnect made to the right of the drogue's normal trail position will probably earn you a trip home in an open-cockpit Super Sabre. Just keep in mind, the refueling isn't complete until you have left the refueling area, so don't get caught short like the guy who believed the flight was over when the nose wheel touched the runway . . . until he found himself rolling through the boondocks.

nowhere to go .... but out

The crewmembers and passengers in the cargo compartment of the C-130 heard a thump. The co-pilot, who was at the controls, noticed a sudden buffeting and felt the big bird roll to the left. By the time the aircraft commander had the wheel in his hands the left wing had come back to level, but the aircraft had pitched up requiring nose down trim. The aircraft trim returned to normal when the crew dislodged the life raft from the horizontal stabilizer by changing airspeed and diving.

Fifty-four wing-stowed life rafts have been inadvertently released from U. S. Air Force and Navy C-130s. Twenty times the rafts struck the empennage and eleven times they lodged on the horizontal stabilizer. Usually, the rafts were dislodged by altering the airflow. Seven of the rafts popped the door but remained in the compartment and the remaining 16 releases resulted in no damage. In all cases only one raft popped out in flight leaving the remaining three intact.

Control problems consisted of buffeting, slight roll, and pitch-up or pitch-down. The degree or severity of trim changes varied unpredictably and did not approach a loss-of-control situation. However, the absence of major control problems or serious structural damage to date does not necessarily mean that they are not a possibility.

This potentially serious hazard and failure of the CO2 system to properly inflate the raft after exposure to low temperature have directed a good deal of attention to the wing-stowed rafts in the C-130. One unit temporarily removed rafts from the wing stowage area, repacked the MK-20 rafts in MK-7 containers, and put them in the cargo compartment. Although this appeared to solve the existing problems it presented a new . . . and bigger . . . one. By placing them inside, the organization lost the automatic launch and inflation feature of wing stowed rafts, and they now face the problem of launching the rafts thru the small overhead escape exits. The Flight Manual says when you ditch a C130 the fuselage will rapidly fill with water and sink to wing level. The only escape is thru the roof and it would take a ten-foot crewmember with seven-foot arms and herculean strength to launch a MK-20 raft thru the overhead escape hatch unassisted.

There are better solutions . . .

A new raft inflation system is under development. It replaces the CO2 unit with a cool-gas generator that assures proper inflation after exposure to cold temperature.

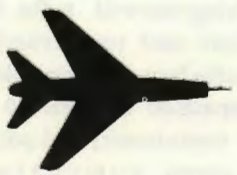
The inadvertent inflight releases were originally caused by two basic problems. Residual air within the rafts would expand at altitude and force the doors open. Valve failures in the automatic inflation system allowed CO2 to seep into the rafts with the same result. Vacuum pumps are now used to eliminate the residual air during repack and a new valve has been developed for the CO2 bottle.

Now the major problem appears to be in packing procedures. If residual air is not completely evacuated, or if a valve is damaged and malfunctions, the raft partially inflates at altitude . . . it has nowhere to go but OUT!

When one of these incidents occurs, a great deal of attention within the unit is focused on packing and inspection procedures. Tighter control and a better awareness of what poor packing can do pay off, and the rafts stay in the wings . . . for a while. As time passes the heat wears off this topic or new problems divert attention to other areas. The emphasis is gone, the last incident forgotten, and complacency begins.

Then another raft pops out . . .

A 2ND LOOK



Everything went according to plan on the dart tow mission until landing. The two pilots had exchanged gear-down checks on final; the mobile controller had checked the gear down with binoculars. But as the airplane settled after touchdown the left gear collapsed. Altho both pilots got on the right rudder and the front seat pilot used nose wheel steering, they left the runway at 4000 feet. The aircraft rotated counter-clockwise and sheared the nose and right main gears.

The accident board found that three bolts and their associated washers and nuts were missing from the left main gear downlock assembly. The empty bolt holes were hidden behind an access panel that had not been removed since the landing gear had been assembled and installed. The aircraft had flown five successful flights in that condition... just enough to weaken the remaining bolts.

Primary cause, the board found, was maintenance factor at the depot where the landing gear was installed. Contributing cause was failure of the Quality Control inspectors at the depot to identify the incomplete job.

A second look at the circumstances in this accident makes you wonder about the inspection procedures at the unit that accepted the aircraft from the depot... after extensive repair to the landing gear! It's common and accepted practice to shake down an airplane pretty thoroughly when it comes into your outfit. It's not that we don't trust each other, but when a bird has been subjected to someone else's maintenance... not under your own control... you want to be sure it's up to your own exacting standards.

When the board questioned the inspectors who pulled the acceptance check, they insisted that their inspection only "consisted of the exterior of the aircraft and under all panels secured by lock type fasteners." They said their MOI doesn't require them to look under the screw-secured panel that hid the missing bolts. As a matter of fact, they said it's just like a normal pilot walk-around.

Strange, isn't it, that we'd expend these high-experience man hours on a simple chore like that?

Everything went according to plan on the low-level navigation mission until landing. The pilot checked gear down and pressure up; the mobile controller confirmed gear down and watched the smooth landing. But after touchdown the pilot reached for the drag chute handle and got the gear handle instead. Both mains started to retract, the tail dragged the ground, the pilot slammed the handle back down, and the right main extended and locked as the aircraft swerved down the runway. The left main didn't make it. The aircraft slid off the runway and sheared the nose gear.

Pilot factor, the board said, for retracting the gear after landing; but a second look makes it appear this pilot wasn't sufficiently aware of the defective design that placed the gear handle and drag chute handle only three inches apart. In his 63 hours in the airplane, the pilot probably had never experienced the chilling realization that he almost raised the gear when he wanted a drag chute, as hundreds of others have. He wasn't that fortunate. Altho he agreed the marks on the gear doors left no doubt that the right gear started to retract and then re-extended, the pilot's memory later refused to recall the gear handle at all!

The poorly engineered location of gear and drag chute handles in too close proximity is not as old a problem as the sleepy, unconcerned, and indifferent maintenance in the case above; but it requires the same attention. We must never resign ourselves to live with a defective and dangerous design any more than we would shrug our shoulders and live with defective and dangerous maintenance, or hazardous flight techniques. If the design defect remains uncorrected, we must take positive action to make certain that everyone operating the defective equipment is fully aware of it. Especially during checkout and training, precautions must be repeated... until the operator builds defensive habit patterns that will overcome the defect. In this case, special training must stress the proximity of the gear and drag chute handles until the new pilot automatically hesitates and feels the shape of the handle before he moves it. Once the habit is firmly established, he can almost forget the problem... until he later becomes the instructor.

The weather over the gunnery range was forecast to be high overcast and about five miles; but as the flight approached, they realized the clouds were lower than expected. The range officer didn't comment on the weather or ask them to check cloud bases, and cleared them into the pattern. The leader took his flight past the range tower at 400 knots and broke up to downwind for rockets. He went into the clouds in a 40 degree pitch attitude with 60 degrees of bank. When number two saw him again, he was in a vertical dive. The canopy was still on the aircraft when it hit the ground. Investigators considered all possible factors and concluded that all the evidence pointed to the pilot's judgment and technique.

A second look into this one brings visions of a range officer who thinks his main job consists of scoring hits, logging them, and calling scores to the pilots. It's too easy, it seems, to forget that the range officer's name is really Range Control Officer... and the word control implies he is the one responsible for the efficiency and effectiveness of range operations.

GROUND CHECK ? OK !

new look in *troubleshooting*

New look in troubleshooting

As our tactical aircraft and their component systems become more complex and sophisticated, the maintenance man's job has become equally complicated and perplexing. When an airplane returns from a mission with a system malfunction, it's an even bet the symptoms have disappeared and will not recur on the ground. Until recently, there was little that could be done to correct malfunctions unless they could be observed with test equipment on the ground to isolate the malfunctioning component. In spite of a lot of plain and fancy intuition, experience with previous failures, and some occasionally amazing luck, failures and malfunctions repeated themselves when the airplane flew again.

"Ground Checked OK," became dirty words and the source of many mumbled accusations when, in fact, the prescribed ground checks had been conscientiously completed... the aircraft just refused to malfunction in a static state. As a result, missions were repeatedly aborted and many sorties were lost. In some cases, an airplane was tied up for several days while repeated test flights were flown to isolate the cause.

Recent breakthroughs in the concept and design of support equipment are going to change a lot of this. The airplane mechanic's tools are catching up with the sophistication of modern airplanes. Two such tools are an airborne engine analyzer and a test unit for the central air data computer which give maintenance troubleshooters a look at the airplane in a flight environment.

Modern, high-performance aircraft rely heavily on a central air data computer (CADC) for their operation. The CADC computes and processes data about the environment thru which the aircraft is flying and the aircraft's relationship to that environment. This data is then transmitted to flight instruments and automatic systems such as the auto-pilot and fire control system.

Frequently in the past, malfunction or improper operation of some of the integrated aircraft systems was blamed on the CADC. However, the CADC could not be operationally tested on the ground. Some static tests of voltages and pressures were possible; but dynamic operation of the CADC under the influence of its normal operating environment was only possible in flight... and the test equipment couldn't go along for the ride.

The dynamic CADC tester now undergoing evaluation at Nellis supplies two pneumatic pressures corresponding to altitude and airspeed and two electrical signals simulating angle of attack and temperature. Using these inputs, the tester simulates a flight profile in the CADC and monitors its performance. Ten outputs which represent all the CADC subsystems are monitored on a strip-chart recorder, and the recorded test results can be easily checked with overlay templates. The tester uncovers the transient time-based and rate-type faults that are the most troublesome in a complex electro-mechanical system. Most malfunctions that occur in flight can be faithfully reproduced on the ground by subjecting the CADC to a dynamic test while continously monitoring its response. During evaluation of this tester with the F-105 at Brookley AFB, it was found that the number of test flights for the CADC system was dramatically reduced.

When a fighter pilot reports an airborne engine malfunction that can not be readily identified by experienced engine technicians, the engine is usually removed from the airplane and run in a test cell. The test cell is instrumented to

display many parameters of engine operation that are not displayed in the cockpit: selected pressures, temperature, and flow rates are presented for the technician's analysis. However, one major factor missing in the test cell often prevents the troubleshooter from identifying the cause of the reported malfunction. The engine running in a test cell is static and not operating in the constantly changing flight environment of speed (ram pressure), altitude (ambient pressure), and temperature (ambient or friction-caused).

An airborne jet engine analyzer now being service tested by TAC provides this missing link in troubleshooting. It consists of a sixty-pound computer and signal translator that continuously records twenty parameters of engine operation while the aircraft is in flight. After landing, the recorder tape may be processed thru existing base computer facilities that will identify any parameter that exceeded established limits during the flight.

COMPUTER DISPLAYS

GO/NO GO STATUS LIMIT FLAGS

- SLOW START
- FAST STOP
- HIGH FUEL FLOW
- HIGH ETR
- HIGH EGT
  - START
  - CONTINUOUS
- HIGH SPOOL SPEED
- MAX SPOOL SPEED
- LOW OIL PRESS
- HIGH OIL TEMP
- HIGH OIL CONSUMPTION

DIALS

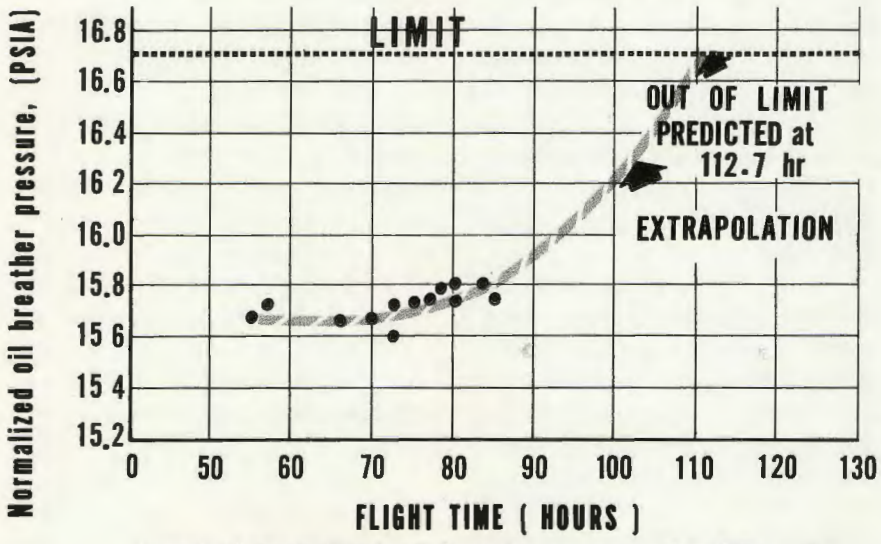
- HOT SECTION GROWTH FACTORS
- TIME SINCE OVERHAUL
- ELAPSED TIME INDICATOR

The aircraft equipment also contains a computer display that, although not available to the pilot, will show the maintenance technician at a glance the status of eleven critical measurements in the engine. The status limit indicators of the computer display frequently show a maintenance technician that something is wrong before a malfunction becomes evident to the pilot. In effect, the airborne engine analyzer makes it possible to identify and avoid trouble before it occurs.

Using a diagnostic handbook provided with the system, even an inexperienced mechanic can rapidly isolate the cause of trouble by associating several out-of-limits parameters or by using a table of probable causes for each separate parameter. With this equipment less time, less experience, and lower skill levels are required for troubleshooting and analysis following a reported malfunction.

In addition to the rapid and automated troubleshooting advantage of the engine analyzer, it is capable of predicting failures by analyzing measurement trends before they exceed limits.

TREND ANALYSIS AND PREDICTION



Trend of normalized oil breather pressure for J75 engine

help wanted

By - Captain Vincent C. Hughes, Jr.
Hq TAC Office of Safety

How would you like to be the only troop carrier project officer in a room filled with fighter pilots, all hidden in little cubicles, with phones ringing all the time bringing bad news? They talk a different language most of the time. Like six o'clock is very important to them for some reason, and nothing is meaningful unless it can be described in terms of G, dive angle, and sight picture.

With all these tigers in the room I want you to know that my life is no bed of roses. You see, they all think it's a piece of cake with a four-engine accident prevention program going for you... all those guys to help find your way, and raise and lower the gear, and tell you when an engine is out of limits, and pull the preflights for you, and tie down your bulging B-4 bags.

They sure give me a hard time. They can out-shout me everytime ... even tho two of 'em just left. They got so hungry for that airplane handle between their knees that they volunteered for Vietnam. I'm going astray a bit, but I gotta add one more thing: There's a funny little gadget sitting over one guy's desk with a finger grip, some red buttons, and a trim knob. For a long time I thought it was a throttle, but I guess it goes on top of the stick. The fighter boys tell me that if you squeeze it hard every day you can get back to the cockpit. When the guy who owns it finally gets his transfer, he passes this thing on to the next most deserving individual. I caught the guy who now owns it out at the office one Sunday. He's afraid if he misses one day the charm might wear off.

Anyhow, I decided to start an education program with them about troop carrier, but it's been pretty difficult to convince them troop carrier life is exciting and challenging. I tried arguing speed with them. I halfway convinced them I could get to the west coast faster than they could... inflight refueling ain't fair, of course... but that's another story. Because they were surrounded with great stacks of accident reports while I just had incident reports to process, they said my airlift birds never had accidents. I told them that while they were worrying about accidents I was preventing them. For a while even the bosses believed it.

At times it seemed I was making the wrong kind of progress ... one day they looked out the window and saw this big thing fly over and drop a teeny weeny practice parachute over the field. At a quarter mile you almost needed binoculars to see it. It took some research on my part before I could confront them with that 25 pound practice bomb bit the fighters do.

Lately, though, things have changed. I'm really getting to be one of the boys. It all sorta started with our practice bombing... I mean air drops. For a while it got so the people in the vicinity of our drop zones were blowing air raid sirens when they saw one of our mickey-mouse-nose birds coming.

It seemed the loads were rolling out when you least expected it. We kind of half got that fixed and next the wheels started blowing up during taxi, takeoff, and landing ... then the axles started breaking. Pretty soon the gear only wanted to come down part of the time and I had to tell the fighter drivers the only reason we have so many people on board is to chop holes in bulkheads, pry the gear down, and run some chains around it. Still no accident reports, but lots of perspiration and maybe a little more respect around the office.

Then it started. My friends out in the field, knowing my predicament and that I was losing face by not having any accidents, started

helping me out. First, one bird ran into another on the ground making practically the biggest bonfire in that state's history. Then another got tired of playing games on an ORI during night low-level and clipped some trees. Pretty soon another one tried to see how close he could come to the end of the runway after passing over some tall trees just short of the approach end. He flattened the rear end a little short of the runway, yet! Then another pal set the brakes on fire and burned up the wheel well, while taxiing all over the place. Next, some of the guys in other commands started adding to my reading material. Two tried water landings and another put it in some scrub brush. But my guys were not to be outdone. One proved he could land shorter and cause more damage than the one earlier in the year and still another proved he could flatten the aft end even tho he did land it on the runway. A third took off in almost a vertical climb and came down just as rapidly. Meanwhile, some of my other buddies were teasing me by hitting trucks, light poles, other aircraft, light cables, runway lights, obstruction lights and so forth, with wings, propellers, wheels, or whatever else they found handy. And just to make sure, the old herky bird even decided to help out all these pals who were already doing so much to raise my status. One day he got ornery and decided not to let down one of his main gear. He's so mean he didn't even tell the copilot and here came another report. Then he had one of his wheels fail... it raised the dickens in the wheel well when the old gear was retracted.

It's gotten so I know the boss better than some of the fighter guys. I've been on his carpet often enough. But now I've made the grade. Those propless characters are thinking of making me an honorary fighter pilot. But I want you to know it just ain't worth it. I'm writing this surrounded by so many accident reports I can't even flirt with the pretty secretary across the room any more.

The real reason I'm writing all this is to let you know I'm ready to resume the role and status of plain old troop carrier SPO again. But I need your help. No more accidents, please! Help! Help! Help!

The PEASHOOTERS

The original P-1 made its debut in 1925. Its design features and construction were incorporated in the basic design of many Curtiss pursuit types which followed for many years. It was hailed immediately by the military services as the most outstanding pursuit type of its day. A total of 93 "Hawks" (P-1, P-1A, P-1B & P-1C) were built between 1925 and 1929 at a cost of $9,862.00 each.

CURTISS HAWK P-1

Gross Weight	*2,973 pounds*
Span	*31' 7"*
Top Speed	*154 mph*
Cruising Speed	*124 mph*
Landing Speed	*58 mph*
Range	*650 miles*
Armament	*Two .30 cal mach guns*
Engine	*Curtiss V-1150, 435 HP*

CHOCK TALK

chock talk tricky tester inflation and short cuts

tricky tester

When the IP attempted to trim the F-4C from the rear cockpit, right movement of the trim button brought the right wing up and left trim moved the left wing up. Control was taken by the front seat pilot, and his trim checked out normal. After landing it was discovered that the aft cockpit trim switch was wired in reverse. Investigation revealed the following: The aircraft was written up for a sticking aileron trim switch in the rear cockpit. The stick grip was removed and taken to the field maintenance electric shop. The electrician disassembled the stick grip and wired the new trim switch according to the wiring of the defective switch. The stick was reassembled and tested on a locally fabricated test bench designed for the B8A stick grip. Actuation of the trim switch on the repaired grip caused the opposite indicator lights to illuminate on the tester. The electrician then disassembled the stick grip and reversed the trim switch wiring so that when the switch was actuated on the tester the corresponding trim indicator lights came on. The stick grip was then reinstalled in the aircraft and an operational check performed by a flight line mechanic. Investigation following the discovery of the reverse-wired trim switch revealed that when correctly wired stick grips are tested on the B8A tester opposite indications will be received on the indicator lights. The electrician was not aware of this situation, didn't use a wiring diagram, relied completely on the tester, and failed to accomplish an adequate operational check.

inflation and short cuts

We in maintenance have learned that inflation and short cuts don't mix ... tire inflation, not the kind that has to do with prices. The pressure in aircraft tires can range up to 275 psi. That's a lot of pressure. Enough to hurt people. It has!

Recently one of our troops started to remove a wheel from an aircraft without deflating the tire. He received fatal injuries when he loosened the retainer nut and the wheel exploded. Probably, he had done this type job many times and considered himself an old-head maintenance type. But this time he took a short cut and ignored the TOs that say to deflate a tire before you attempt to remove the wheel.

It's natural, after doing any one job often enough, for us to start doing it from memory without referring to the tech orders. Once away from the published procedures, we unconsciously start looking for ways to trim down the time and effort involved. In this case the airman's only interest was in getting the old wheel off and the new wheel on. As long as his jack held the wheel off the ground, he could do a safe job by removing the retainer nut and taking off the wheel. But was it safe? He knew he should deflate the tire, but the wheel was going to the tire shop. The folks there were the ones involved in deflating it and breaking down the wheel. Had he taken two or three minutes more to deflate the tire, he could have lengthened his life by 50 years. Perhaps he didn't know why the tire should be deflated before he pulled the wheel ... until it was too late!

When we start taking short cuts in a procedure, we usually omit the steps we don't understand. Take a good look at the procedures for your job. Do you really understand them? If not, you'd better do some study or ask some questions. It may lengthen your life.

- MSgt Asher
Hq TAC (DMEMWS)

phantom object

During the latter portion of a test flight, a Navy phlyer slowed his Phantom to conduct checks in a landing configuration at 10,000 feet. When he lowered flaps at 230 knots, a pronounced nose-down movement occurred which he could not stop with the stick. The aircraft pitched approximately 20 degrees nose-down, but the pilot was able to recover after losing 2000 feet. He conducted an inflight check of all possible malfunctions and finally determined that only through the use of AFCS could he control the aircraft at a reasonable approach speed. He had adequate control at 180 knots and decided on a no-flap landing. Except for the high approach speed and no flaps, his landing was normal. Postflight inspectors found a screwdriver lodged in the stabilator feel trim motor that restricted full aft movement of the stick. The screwdriver had apparently been left in the aft fuselage and became lodged during the test flight. Had this phlyer not been highly qualified and experienced, the situation that developed could easily have resulted in loss of the aircraft and possibly the crew. If this had not been a test flight, the pilot would have gone to landing configuration at 1500 feet or below. At that point nothing could have saved the aircraft.

believe it or not

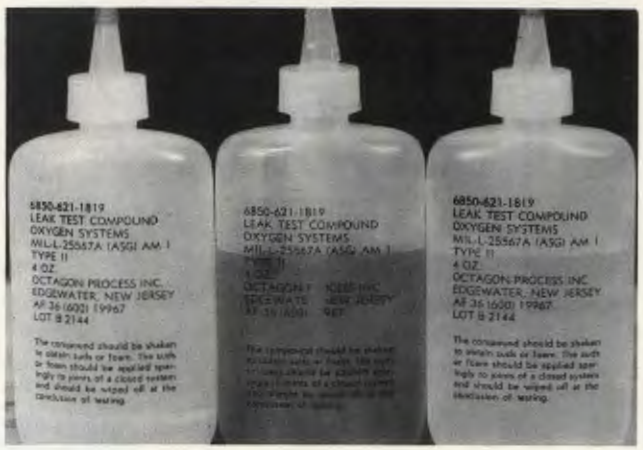
A Military Suggestion came thru the office recently recommending wheel chocks be carried on the K-25 vehicles that are used to load cargo-type aircraft. It went on to explain, "The benefit is that we won't have to take chocks from the wheels of the plane ..." to keep the loader from rolling into the plane. A bonus benefit of leaving chocks under the airplane wheels would be to keep the plane from rolling into the loader.

TAC ATTACK certainly endorses this much-needed contribution to safety ... and wonders if the crew chief, line chief, chief of maintenance, safety officer, and unit commander are now looking around to see where else chock-snatchers are active.

Now, about those supervisors who endorsed this astounding piece of paper up the line ...

bad nickel cad

The nickel-cadmium battery in T-33 aircraft has experienced numerous problems in the past. Most of these problems were spelled EXPLOSION! The prime depot for the MA2-1 ni-cad battery recently reported that in their investigations of these problems they found battery maintenance procedures to be the main cause of trouble. Altho shorted cells can occur in a well maintained battery, they can sometimes be detected by monitoring individual cell voltages during the charge and discharge cycles on a 60-day capacity test. You will get an indication during the test because voltage in marginal cells rises faster during charge and drops faster during discharge than it does in good cells. The depot is investigating the possibility that battery cell age is a factor in shorted cells and may decide to specify an age limit on all cells for the ni-cads. But in the meantime, it's important that everyone handling these batteries recheck their procedures to be sure that cell voltages are monitored during the 60-day test.



molotov murphy

These three bottles were found in the field maintenance shops at a TAC base. The bottle on the left contains a sudsing or foam compound that is applied to joints in an oxygen system to check for leaks. The center bottle contains oil and the left one contains lacquer thinner. If someone had picked up the wrong bottle and used either the oil or thinner on a leaking oxygen system, a disastrous explosion could have occurred! The cap on these plastic bottles is removable and makes a handy container for other liquids after the sudsing compound has been used... DON'T DO IT!! Make a point of destroying or disposing of these too-handy containers as soon as they're empty.

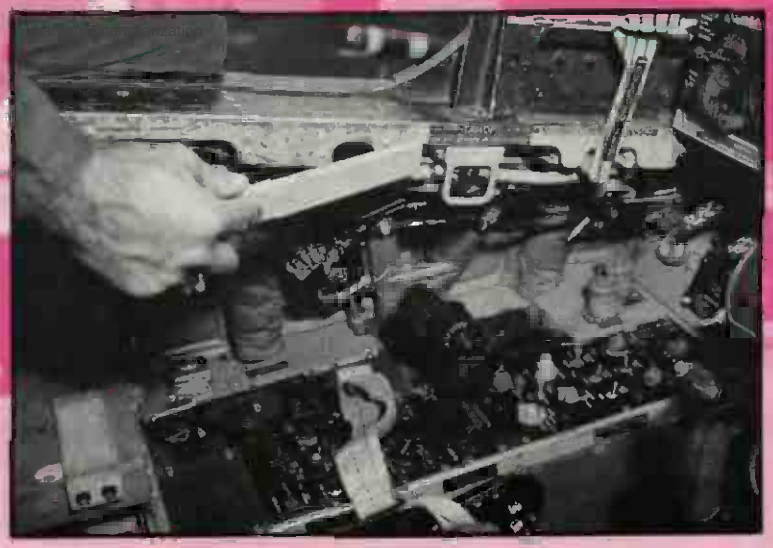
PHANTOM

PHAMILIARIZATI

When a relatively new airplane taxies up to the transient parking ramp for the quick fill-er-up and check-the-oil treatment, the aircrew's requests may be met with blank stares and head scratching unless the transient troops have seen the bird before. Lately we've been seeing more and more of the F-4C Phantom and the recce version, RF-4C. The following quick and dirty look at the high points of basic turnaround and servicing precautions is meant to pham . . . oops! . . . familiarize you with the Phantom. Of course, the detailed procedures are contained in T.O. 1F-4C-6, and you shouldn't attempt a pre- or post-flight inspection without the PR/PO cards.

When any aircraft taxies in, your first order of business, after placing chocks under the wheels, is to install ground safety pins and locks. The F-4, unlike some birds, doesn't require downlock pins on the landing gear. The gear safety struts are huge and heavy, and normally used only during maintenance. You'll seldom find an aircrew that brings them along. However, external stores should be protected with safety pins whenever the aircraft isn't flying.

The external wing tank pylon safety pin renders the pylon jettison system mechanically and electrically inoperative. Always insert it from the outboard side of the pylon. The wing missile pylon explosive bolt is safetied with a pin through the hole in door 219.



Internal canopy controls.

By - Major Bruce Barber
CMS Donald Gambrell
MacDill AFB, Fla.

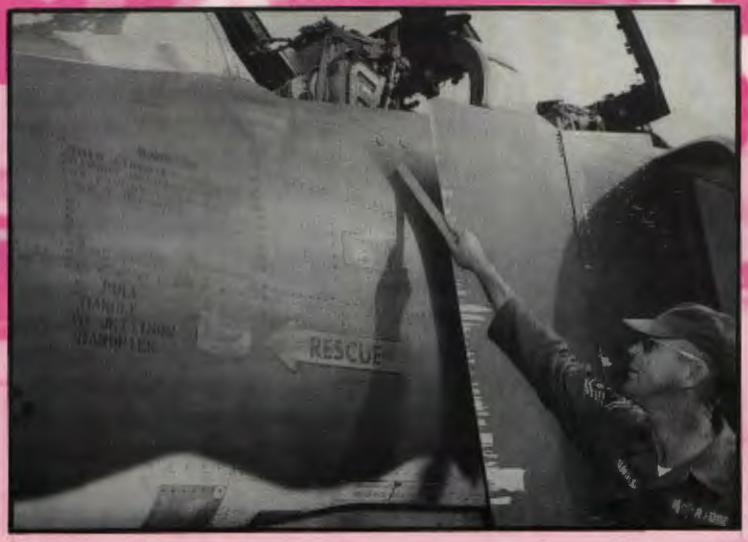
ION

Landing gear jury struts are big and heavy.

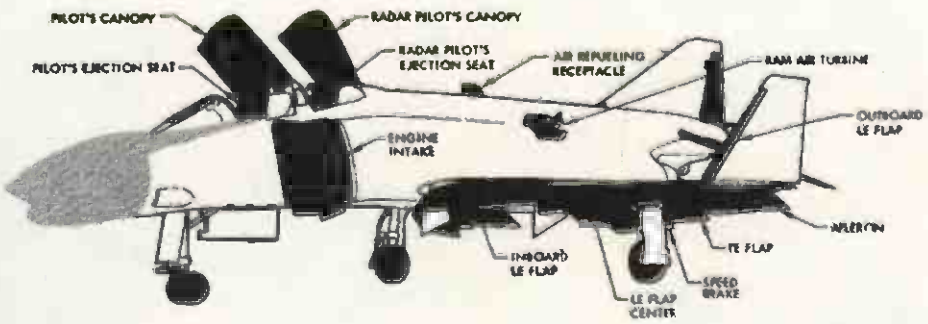
Before you lean into the cockpit to insure the seats and canopy are safe, familiarize yourself with the canopy controls. The canopies are air operated and move rapidly. Jury struts are available to hold the canopies open. If the aircrew brought them along you should install them whenever the canopy is open, but be careful and know what you're doing. Improperly installed, they can cause the seat to fire on the ground!

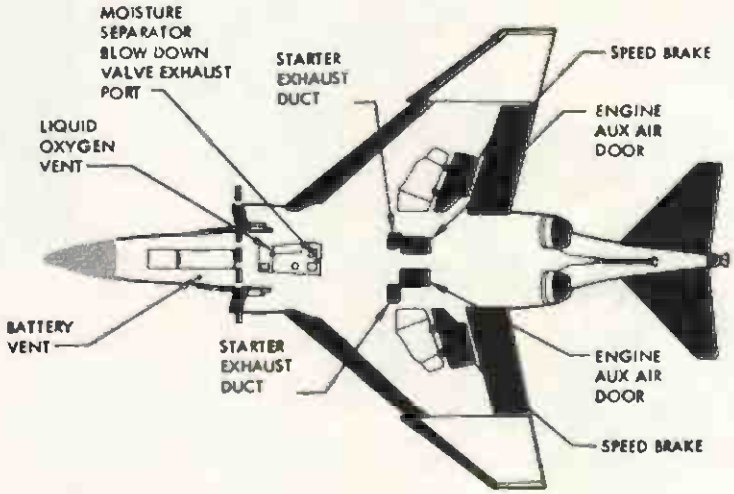
Six safety pins and two plugs, all attached to yellow streamers, are used to safe each ejection seat. The aircrew should install these before leaving the aircraft. Don't be satisfied when only the face curtain pin (on the top of the seat) is installed.

OK, the safety pins you'll normally find have been installed, but there are still plenty of danger areas around the big bird. All the control surfaces have sharp cor-

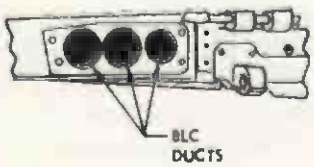


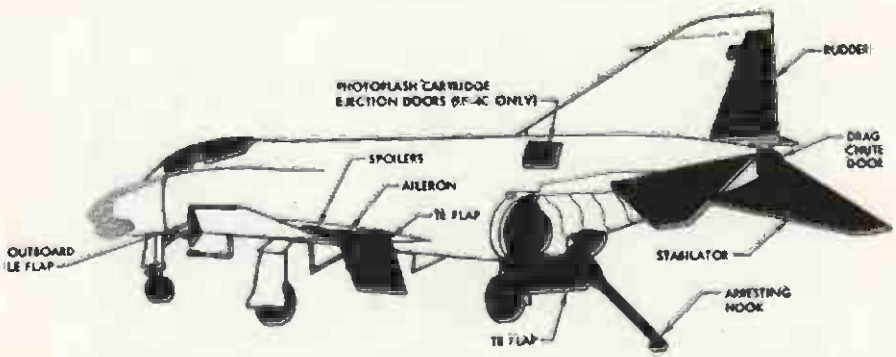
External canopy controls.



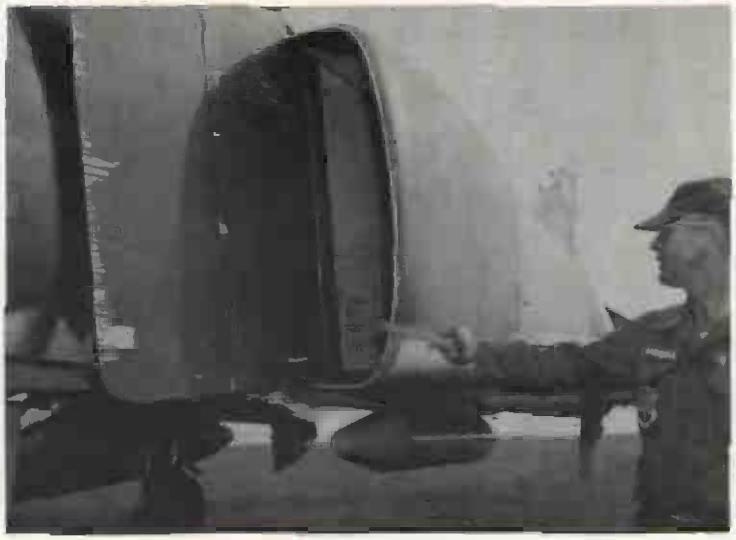


ners and may move rapidly and violently when hydraulic and electric power are applied. Use special care around the auxiliary engine air doors between the gear wells. They snap shut with great vigor when electrical power to the aircraft is interrupted! The tail hook is just like any other tail hook . . . dangerous! Walk around it, not under it! Folding wings are a novelty to most of us, but stay away from them when the engines are running. Boundary layer air ducts are exposed when the wings are folded, and some mighty hot air blasts from them when engines are running and flaps are down.





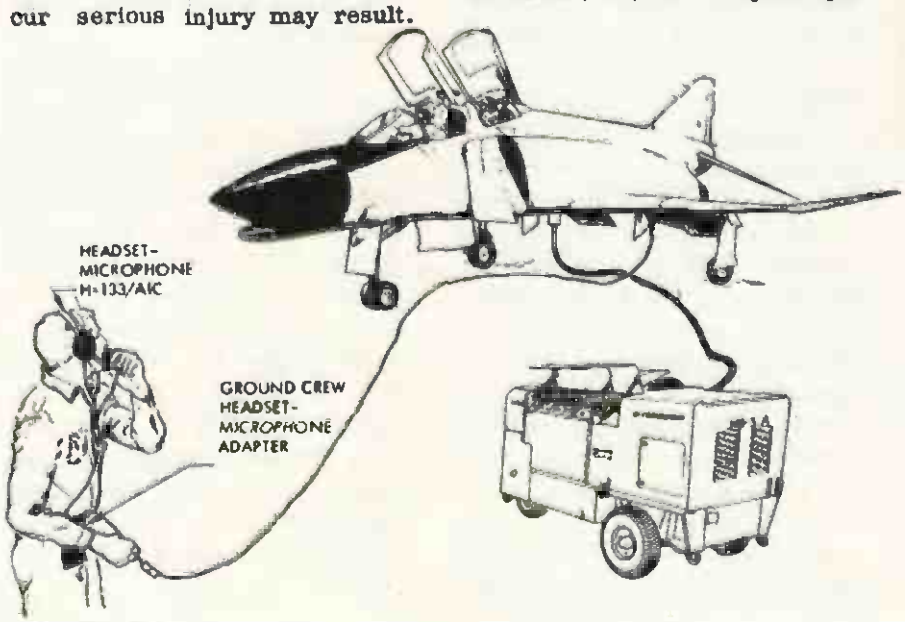
An innovation with this fighter is intercom communication between ground crew and pilot. The H-133/AIC headset and microphone connect thru an extension cord to a junction box in the forward inboard corner of the left wheel well. The intercom greatly improves aircrew and crew chief coordination during engine start and preflight checks. You can use the standard pilot-to-marshaller signals if you don't have the headset, but they're second best.



During the start there are several safety considerations you should be familiar with. Of course, the large engine intakes are dangerous. The cockpit entry ladder takes you directly in front of the left intake. Like *any* other large jet engine, the Phantom's J-79s will swallow hats, people, aircraft forms, nuts and bolts, or anything else that comes their way.

Never attempt to load a starter cartridge in either starter with any electrical power, internal or external, applied to the aircraft system. Should a malfunction occur serious injury may result.

Engine aux air doors are located beneath the aircraft, snap shut with great vigor!



Beware of the starter exhaust ducts located under the airplane just forward of the engine aux air doors. Exhaust gasses from these ducts may reach *1500* degrees F during a cartridge start.

Again, beware of the engine aux air doors and speed brakes under the aircraft. As a matter of fact, it's a good idea to keep your mitts out of ANY door on the Phantom unless you know what it is *and* what you're doing. All the hydraulically actuated doors on this bird will snap shut if electrical power is interrupted, such as when both generator switches are cycled simultaneously.

Do not attempt a pneumatic start with an unfired cartridge

Stay clear of starter exhaust, located forward of aux air doors.

installed in the starter. The cartridge may ignite and the resulting added torque may shear the starter shaft.

Now that you're phamiliar with the Phantom, go out and give it a go . . . but remember this is just a nodding acquaintance. You must follow the steps in the TOs during your care and feeding of the big bird.

Phyllis
plays ...

THE BLUFF

Do you play poker? If you do, you're familiar with the bluff. Many players give themselves away when they are bluffing by little personal idiosyncrasies. Before you sit in on a game observe the players for an hour or so. Some always light a cigarette when they are getting ready to bluff, pretend they forgot it was their turn to bet, scratch their nose, or pat their bald spot. And remember, professional players seldom bluff. The rest of us are inclined to overdo it.

Can you use the bluff when driving? Sure you can, and it's even more fun than in poker. More important, it may save your life. Your need for the bluff in driving stems from the fact that even the best drivers, fully aware of all the standard driving rules and every defensive trick in the driving book, are still in constant danger of being killed by another driver. Almost half of the drivers killed in auto accidents were legally in the right.

In this game, unlike poker, it is virtually impossible to watch the other players before you jump into the game. So at this point, it's obvious that we need something more to insure our safety from the mistakes of others. Of course, at the prospect of a trip, you can just crawl in bed, assume a prenatal position, and turn your electric blanket up to 98.6. But assuming you aren't quite ready to vegetate, here is the solution.

Go to the nearest wrecking company. Pick out the worst looking wreck on the lot and study it carefully. Then go home; lock yourself and your car inside the garage. This is so a kindhearted wife or well meaning neighbor won't have you committed. Now, get out a sledge hammer and go to work on your car . . . don't stop until you have it looking like the one you saw at the junkyard. If you have never done anything like this before, you'll be surprised at how much fun it is. Of course, if you have access to a car that is already wrecked but still drivable, it will suffice; however, it's better to do the demolishing yourself.

Now drive down the street and see what happens. You will be shown the utmost of courtesy and caution. Other drivers will instantly recognize you as an idiot driver and act accordingly. This method has been thoroughly tested and is the best guarantee I know that the other driver will steer clear of you.

Now don't forget to smile and give a sympathetic wave to all those drivers that pass you in shiny-new, unscratched automobiles. They're certainly not as safe as you. Just a little smile though . . . you don't want to scare them. Ho! Ho! You know what they're thinking, don't you?

Now that you are breezing merrily and safely down the highway don't f o r g e t . . . you still have one idiot driver to contend with. A little over half of the drivers killed in auto accidents were legally in the wrong!

Ground Safety

Safxty Mxssage

Xvxn though my typxwritxr is an old modxl, it works quitx wxll xxcxpt for onx of thx kxys.

I havx wishxd many timxs that it workxd pxrfxctly. Thxrx arx 48 kxys that function wxll xnough, but just onx kxy not working makxs thx diffxrxncx.

Somxtimxs it sxxms to mx that a safxty program is somxthing likx my typxwritxr -- not all thx kxy pxoplx arx working propxrly.

You may say yoursxlf, "I am only onx pxrson. I won't makx or brxak a safxty program." But it doxs makx a diffxrxncx bxcausx a safxty program to bx xffxctivx, nxxds thx coopxration of xvxry pxrson rxlatxd to that program.

So thx nxxt timx you think you arx only onx pxrson and that your xfforts arx not nxxdxd, rxmxmbxr my typxwritxr and say to yoursxlf, "I'm a kxy pxrson in our safxty program and nxxdxd vxry much."

Fall on your nose lately ?

One airman noticed another busily playing with a fire extinguisher and scattering water on the floor; of the barracks hallway. The first airman had to go down the hall to remove his laundry from the clothes dryer. He walked carefully over the wet hall floor, but despite his caution, slipped and almost fell. Undaunted, he pressed on.

On the way back to his room with a full laundry bag on his back, he again walked over the wet hallway floor. This time he wasn't so fortunate because when he slipped he fell and landed directly on his nose . . . breaking same!

Sounds like a simple accident, doesn't it? Unfortunately, they happen too often. This one illustrates two unsafe conditions: horse play and living with known hazards. Both cause accidents.

A few of us are guilty of the first . . . many more are guilty of the second. Most of us will deny that we live with hazards, but a little honest reflection will change our minds. For example, how many people do nothing about slipping hazards in their own homes. Take throw rugs (aptly named since they throw people), they are usually placed where it is only a matter of time before someone slips and falls.

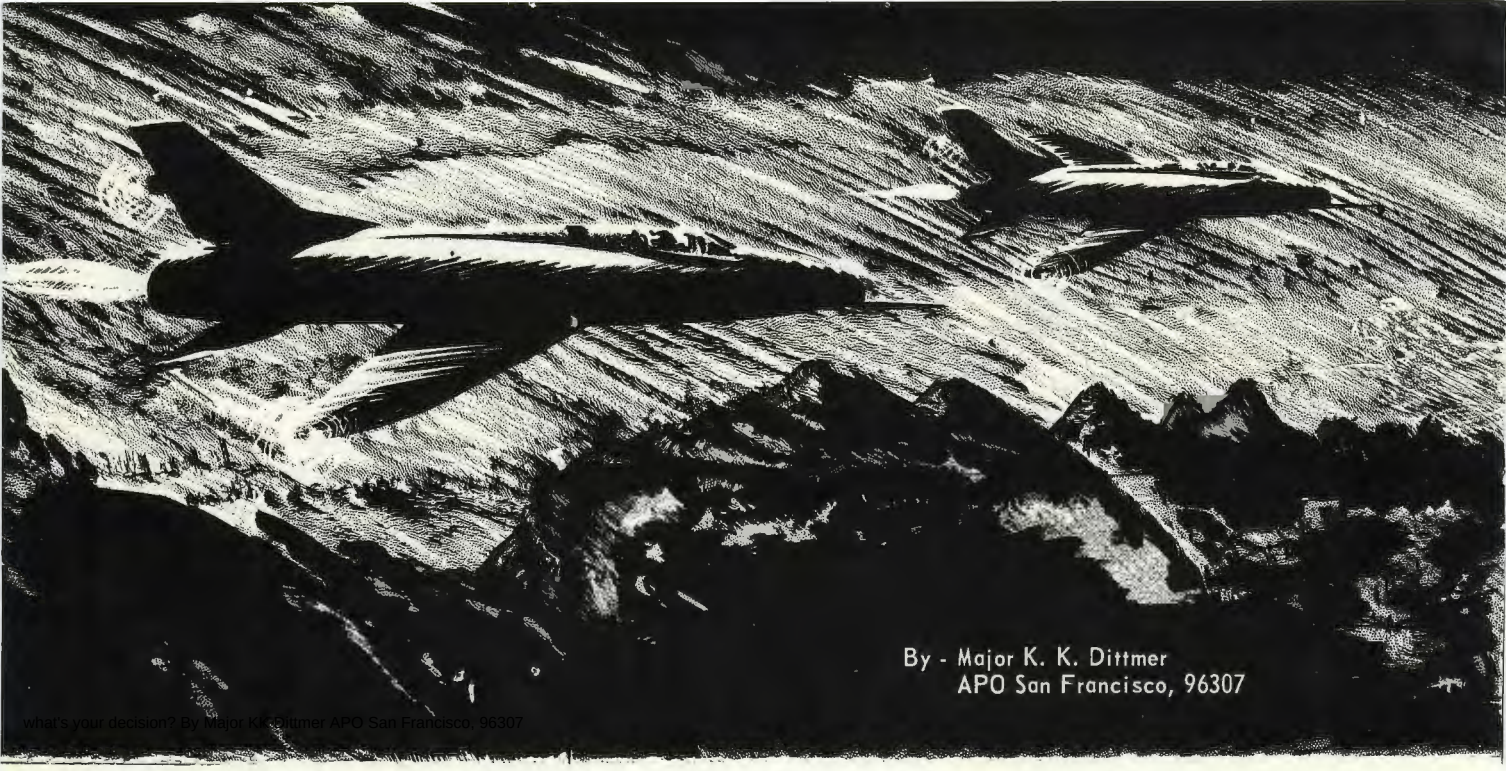
How about tripping hazards? Many homes abound with them . . . toys on the stairs; rake handles on the garage floor. See what I mean?

A good honest look around your home or work area may be very fruitful. Why live with such hazards when a little caution on your part can easily correct these problem areas before they hurt somebody?

2nd ANNUAL TAC SAFETY CONFERENCE

The second annual Tactical Air Command Safety Conference is scheduled for the last week of April at McConnell AFB. All Directors of Safety and Wing Flying Safety Officers will be attending the conference to discuss the command accident prevention program. The conference this year is planned as an idea exchange between safety officers at each level of command, and the goal is a more effective program to reduce accidental loss of the resources and personnel in TAC.

Now is the time to start thinking of the problem areas you want your safety officer to discuss at the conference . . . preplanning by each participant will increase the impact of the conference on our accident rates.



By - Major K. K. Dittmer
APO San Francisco, 96307

what's your decision?

Capt Luckless switched his radio back to channel 20 and heard Red Two check in, his voice partially masked by the background noise. The alternate channel was much quieter, but he hadn't been able to establish contact with Two. He glanced at the DME and keyed the radio. "Roger, Two. Hardlife Approach, Hardlife Approach, Red 21, 60 out at 9000 with a flight of two F-100s."

"Roger Red 21, call 40 out."

"Approach, Red 21 would like current Hardlife weather." It should be good, judging from the two reports he got before leaving the range.

"Ah, Standby Red."

Never could really tell about this place. With that front hanging across the area, it was tricky. They had canceled the morning missions, but had been able to get off VFR by noon. The voice interrupted his thoughts. "Red 21, Approach. Hardlife weather is 1500 scattered, 2500 broken and 15 miles, over."

"Roger, Approach. We'd like to pick up an IFR clearance with a random GCA. Will call about 40 out."

The DME was reading 20 miles out when approach control finally made positive radar contact with them, and Capt Luckless was beginning to be a little concerned. They'd left the range with enough fuel for a VFR recovery... and his gage was now below 1500 pounds. He decided to make a formation full stop, even tho Two had about 300 pounds more than he did. Two's radio might crump again and they couldn't afford to do much milling around.

Approach handed them over to GCA. The GCA operator advised that the lower clouds were 400 scattered with good visibility

underneath. The controller then let them down on a 170 degree heading and advised that they were eight miles from the airfield, on a downwind for runway 35.

Capt Luckless glanced at his fuel gage. "Roger, GCA, and be advised Red 21 will be down to minimum fuel in about two minutes."

"Roger Red 21, understand minimum fuel in two minutes." He continued to direct them around the pattern and turned them over to the final approach controller.

The approach looked good. Luckless monitored the instruments and listened to the calm, almost detached, voice..."You're on glide path, drifting slightly right...turn left to 346 degrees ...346 the heading...turn further left 344, 342 the heading...left to 342." The voice was beginning to sound concerned..."Two one, turn left to 340...you are too far to the right to make a safe approach. If you do not have the runway in sight execute a missed approach. Execute a missed approach."

Capt Luckless had already added power and started cleaning up. They were still in weather and his altimeter was indicating 300 feet...right at wing weather minimums. "Lead, I've lost you." It sounded like Two.

More trouble. "Roger Two, we'll make separate approaches. GCA, Red 21 here, can you bring me around for another approach? I'm down to emergency fuel! I have 300 pounds!" He looked at the gage and realized it was at 700 not 300. "Correction, GCA, Red 21 has 700 pounds."

After the weather started to deteriorate, Lt Col Grimm went to the tower to wait out a flight of clean F-100s. The visibility had stayed quite good over the field itself, but some clouds were beginning to form over to the west.

Two transient F-100s landed from a straight in TACAN approach and GCA was working Red Flight. He listened to GCA, and when the controller broke off the approach, Col Grimm started to chew on his cigar. He peered out the window trying to spot the aircraft, half listening to the chatter over the radio. He saw one F-100 descend out of the clouds and fly the length of the field, black smoke lingering behind. The bird turned left as if the pilot was planning on a closed pattern. He heard one voice call emergency fuel, 300 pounds. The radio chatter was confusing. He heard someone say they had 700 pounds remaining and Red Two said he was diverting to Furst Air Base. The situation was getting serious.

Capt Luckless acknowledged Two. "Roger Two, understand you are diverting to Furst. Ah, Hardlife GCA, is the ceiling lifting any?"

"Negative."

"Hardlife, could you give me the weather at Furst?"

He heard the GCA operator read off the weather, noting only that it was VFR at Furst. "Roger, GCA, understand Furst is VFR. Look, I'm going to divert to Furst. I am climbing out on 025 heading, squawking emergency."

Col Grimm continued to chew his cigar. Furst was about 75 miles away...Red Leader would never make it, not with 300 pounds. With 300 pounds, he couldn't make another GCA, either. Grim turned to the tower operator, "Sarge, you better notify Furst that we have two F-100s headed their way with minimum fuel."

Red Two leveled at 12,000, reduced power, and checked his fuel. The gage had read 1200 pounds right after he decided a low visibility approach was going to be risky. "I could probably have made it," he mused, "but why take a chance. I must have been at 200 feet before I broke out and it was awfully hazy over the water. I could have made another GCA, but with old Luckless milling around the area..." He tried to raise Furst. The radio was intermittent and he made several tries before getting a vector. About 30 miles out, he reduced power to idle and coasted toward the field. During the descent the controller at Furst advised him that Luckless had ejected after running out of fuel.

Altho Luckless didn't make it to Furst, he did make a successful ejection...and, in due time, the accident board investigated all aspects of this flight and came up with their findings. They attributed the accident to operator error because Capt Luckless made an incorrect decision when he elected to divert instead of trying another GCA. They assessed Lt Col Grimm with supervisory factor because he was in the tower to give advice ...and failed to give it. They also considered the lower-than-reported ceiling to be a contributing factor.

As the report bounced up thru channels the various commanders rearranged the cause factors, added GCA to the list, and in two cases deleted the supervisory error. Regardless of how you feel about the board findings, they warrant some consideration, since a little consideration at the right time, by the right people, can stop most accidents like this.

First, consider the weather. The weather in the area was subject to change, and Capt Luckless knew it. He kept a close check on the weather during this flight. He

was obviously expecting it to deteriorate.

It did, at a very inopportune time. However, it never deteriorated below the established GCA minimums for the field. When Capt Luckless started his wave off, he was still in weather (his wingman reported scattered holes, delayed his wave off and broke out underneath). On the wave off, Capt Luckless was at the artificial minimums established by wing regulation. He started his diversion almost 5 minutes after taking the wave off. The wing had thoughtfully established some diversion cards that give the heading, distance, fuel required, and other pertinent information. These cards specified 900 pounds of fuel as minimum fuel to divert to Furst. Luckless had less than 700 pounds when he diverted.

The board was correct. The good captain traded a possible course of action for an impossible one. Tempering this is the fact that the board had plenty of time available for making their calculations and decisions.

Still, the calculations had already been made and entered on the diversion card. At this point, Lt Col Grimm comes into focus. He knew of the diversion cards and was monitoring the situation. He could also appraise the weather from his vantage point in the tower and could easily have influenced the pilot's decision even tho he had misread the fuel state. However, no matter how you look at it, he was in a difficult position. Had he acted on the information - as he understood it - he would have confused number two and we may have lost two aircraft.

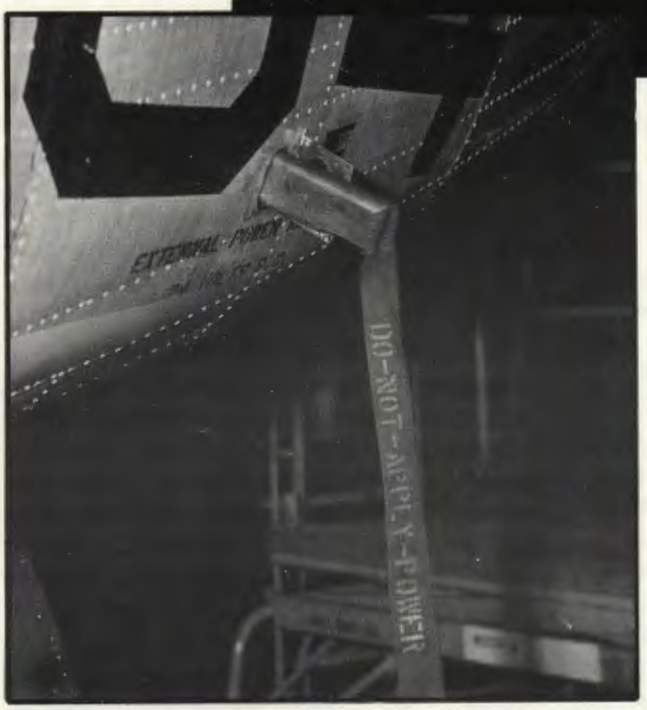
This accident again brings up an uncomfortable question ... whether to press below established minimums once your fuel state has committed you to landing at a given field. The answer, in this particular case, is easy. You press. The established minimums were artificial and the actual minimums for the field were much lower. But supposing the weather had gone below the published minimums. Then what?

It's an emergency! And I, for one, would set up a GCA, and if the approach was good at minimums, I would place my life in the controller's hands and stay on glide slope and glide path until I spotted the runway or touched down. It has been done before. If the approach was bad at minimums and fuel was too low for a second, I'd ask for a bailout vector.

That's my decision, what's yours?

better mousetrap department Dummy plug

better mousetrap DEPARTMENT



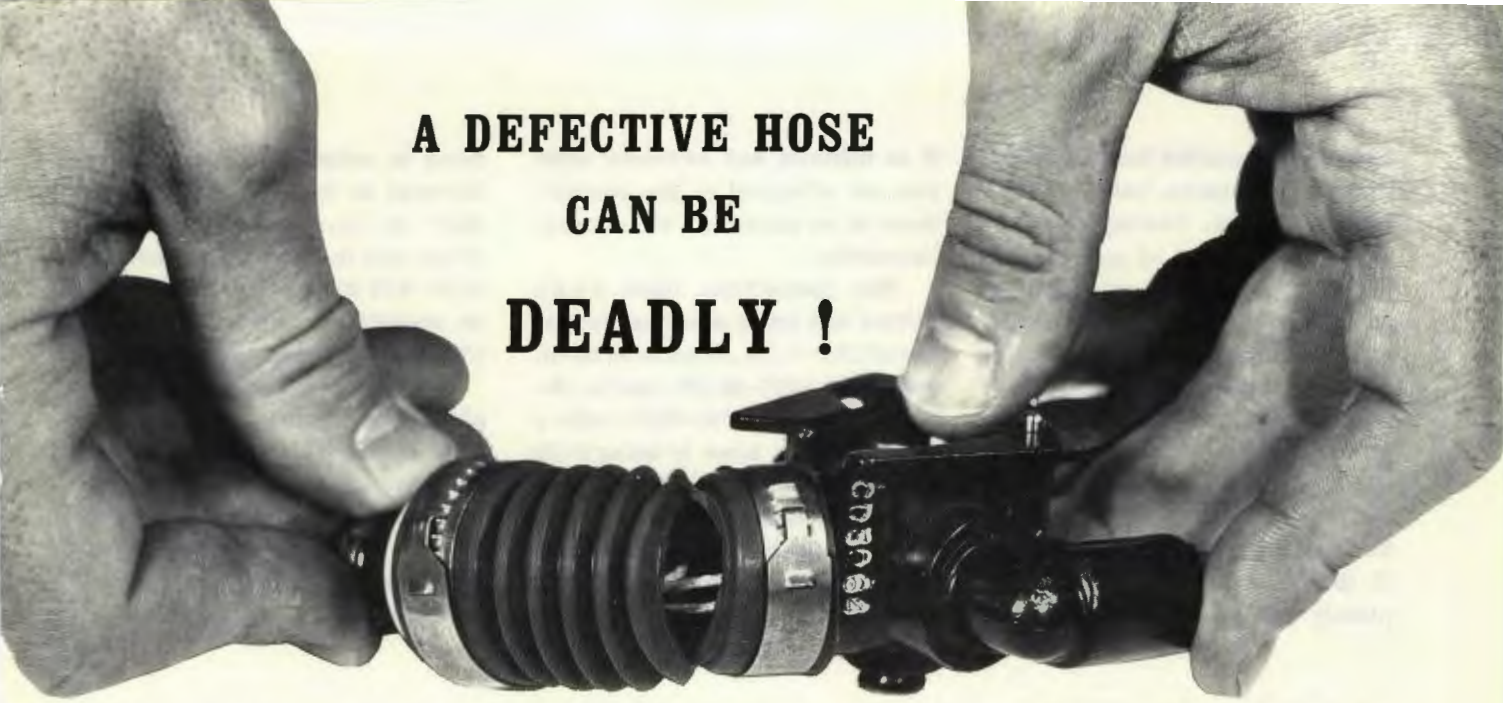
Dummy Plug

You can get the shock of your life if someone connects external power to the aircraft while you're inside working on a re-wiring job. Captain Joe Kabot of the 927th Troop Carrier Group sent in this picture of a dummy plug his unit uses in the external power receptacle to avoid such mishaps. The wooden plug is eight inches long, shaped to fit the aircraft receptacle, and has holes drilled in the end similar to the female connector. The red streamer with the words DO NOT APPLY POWER warns everyone that there's a good reason to keep the external power away and find out what work is in progress on the bird.

Locally fabricated, it takes only a few minutes to build. Each electrician and crew chief could well use one in his tool bag ... for his own protection.

Good idea, 927th ... thanx!

A DEFECTIVE HOSE CAN BE DEADLY !



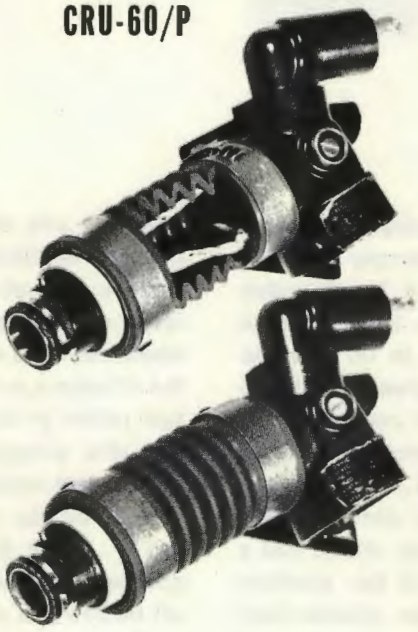
After level off on a day refueling flight, the aircraft pressurization system malfunctioned and all pressure was lost. The pilot was on 100 per cent oxygen, but he noted the blinker was not moving. There was no pressure in his mask when he placed the oxygen switch in the emergency position. He realized he must be hypoxic when he found it increasingly difficult to stay in formation, he couldn't tell what position the oxygen supply lever was in, and his hands started to shake. The pilot pulled the green apple to actuate his bailout bottle, but still no oxygen. Again, he checked his hose connections; all were connected. He then noticed the CRU-60/P connector hose was broken. This pilot corrected his problem with a rapid descent to lower altitude; however, the real cause is still with us . . . brittle hoses on CRU-60/Ps.

In case you aren't familiar with the CRU-60/P nomenclature, it is the connector that ties your oxygen mask hose, bailout bottle, aircraft oxygen system, and parachute harness together. The CRU-60/P looks similar to the older all metal CRU-8/P that it replaces, except it has a 2 1/4 inch piece of rubber hose between the connector and the male end of the quick disconnect.

Briefly, the reason for the -60/P is to allow a smoother disconnect during ejection. When the force exerted during disconnect is not aligned with the body of the connector, the -8/P quick disconnect feature may be impaired. This could cause complications during seat/man separation. The short hose on the CRU-60/P permits both sections of the quick disconnect to remain aligned, thus reduces binding during disconnect.

Although the disconnect problem has apparently been corrected a greater one has been created. The small section of rubber hose on the CRU-60/P is not sufficiently flexible; and it may split when twisted more than 90 degrees. Unless you make a careful visual inspection of the connector before each flight, after you hook up to the aircraft oxygen system or when you suspect a malfunction, it is easy to overlook a crack or hole in the connector's short length of hose. Any hole in the 2 1/4 inch connector hose will allow ambient air into your mask. If you recognize the lack of oxygen and activate your bailout bottle, the bailout oxygen will escape through the

CRU-60/P



CRU-8/P

defective connector hose, the line of least resistance, before reaching your mask. Feeling the connector or tugging of the aircraft oxygen line to see if you are hooked up will not bring a split hose to your attention. A close look at the cutaway picture of the CRU-60/P will reveal a cord inside the short pieces of hose. This cord keeps the connector from pulling apart and would also offer resistance to a pull on the aircraft hose even if the connector hose was completely split in two. Even though it is difficult and awkward when you are strapped in the cockpit, there is no substitute for a visual inspection.

The connectors have been EURed and depot has conceded the use of CRU-8/Ps, if you have them, until new CRU-60/Ps can be obtained. A new CRU-60/P with a more flexible hose is being built by Sierra; the unsatisfactory unit is built by Gilco. The best way to tell them apart is by the manufacturer's name stamped on them. The Sierra connector incorporates an attaching plate which is fastened to the body of the CRU-60/P by four screws, while the Gilco unit is a one-piece casting. Gilco will soon start production of an acceptable unit and identify it with a white dot on the back.

Until this problem is completely corrected and all units have serviceable CRU-60/P connectors that offer the reliability expected of this type equipment, you, as the user, will have to pay extra close attention to your oxygen plumbing.

TAC TIPS

EJECTION SENSE

In an overseas ejection the pilot stepped out and left his aircraft engine running. His empty airplane blasted around the local area for a few minutes before crashing into a housing area. This caused a good deal of discussion about what to do with the throttle before ejection. Everyone agreed that if the situation permits, a substantial power reduction will save the worry of an unmanned aircraft careening about the sky. When the smoke settled, the best move appeared to be to put the throttle in idle . . . when circumstances give you the time. This allows you a second chance if trouble develops in the ejection sequence. In most of our birds, the unlatch-the-seatbelt-and-roll-inverted routine becomes pretty difficult without some assist from the engine. However, if you check the dash-ones of our ten most popular ejection seat birds, you'll find that four of them say to stopcock the engine. The remaining six make no mention of the throttle in the actions to take when time and conditions permit. One base resolved the dilemma in their local area rule book by directing that pilots go to idle before ejection if they have time. But this disagreed with some of the handbooks, and no one got around to formally proposing a dash-one change on the subject. The problem isn't resolved yet . . . like the dash-ones don't agree. Kick this problem around on a rainy day. Honking the power off before you punch out is the kind of thing you have to discuss and think about before it becomes part of your own instinctive reaction.

TRIPS, RUTS, and UNDERPINNINGS

The F-84 pilot made a smooth landing on the wing following a night air refueling mission. When he lowered the nose to the runway, he saw he was overtaking the lead aircraft. He applied light brake pressure to slow down; and when he released the brakes, the aircraft started to turn to the right. Left brake and rudder failed to stop the turn until he was rolling across the turf beside the runway. The situation seemed to be under control... until his right gear hit the deep ruts, the aircraft turned sharply right, and he found himself sliding sideways. The left gear collapsed, the aircraft swerved left, and he slid across the secondary runway.

No comment on this pilot's premature braking and the blown right tire... let's look at those ruts. The sideways slide wiped off the left gear and turned a minor trip thru the toolies into a wild ride and a busted bird. This followed a well established pattern ... after years of research and innumerable experiments, fighter pilots have learned that you can usually survive a trip thru the weeds if you can keep it rolling straight ahead. Once your chariot turns sideways, look out! The underpinnings start coming loose! Now, about those ruts... the report said they'd been there since the big snow-clearing operation six days before.

THROTTLE STOP

The GIB (guy in back) was working his Phantom around the pattern for a back seat landing when the right generator light and check hydraulic gages light illuminated on downwind. The GIF (guy in phront) saw PC-2 hydraulic pressure dropping toward zero and the right engine RPM passing thru 20 per cent. The GIF shut off the right motor and took over for an uneventful single-engine landing. When the Phyxers got to poking around the throttle linkage, they found it was out of rig... the engine could be shut down by the GIB!

Two thoughts:

- - 'Twould have caused some grandiose puckering and elaborate scrambling around the cockpit if both throttles had been rigged that way!

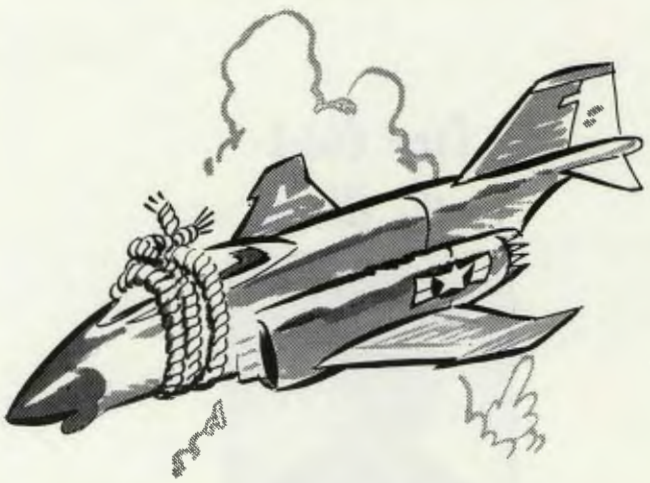
- - Might be a good idea to have the GIB honk both handles all the way back before the Phantom leaves the ground... the shock might be as great if one or more quit, but the pressure's off the whole situation.

STICKY BUSINESS

An F-100 pilot was making a simulated rocket pass at night when he found himself in what appeared to be a spin. As he rolled in for his pass, he recognized adverse yaw and tried to recover with rudder and neutralized controls. However, he was unable to recover until he applied spin recovery procedures and jettisoned external stores. Although the primary cause of this incident was attributed to pilot induced adverse yaw, the right slat that was binding because it had camouflage paint on the slat rollers probably didn't help matters. It is very possible the right slat stuck in the partially extended position and aggravated flight control.

MARKER BOUYS

After a recent over-water ejection, the pilot lost his life raft when it deflated and sank. Search planes had a great deal of difficulty sighting the downed pilot floating in the water. The accident board recommended that in similar circumstances other fighters in the flight drop their empty external fuel tanks close to the downed pilot. If they float, the tanks could serve as marker bouys to aid in later visual sighting. We have no experience in this area. Will the tanks float? Or will they split open on impact with the water and sink? Are fighter fuel tanks large enough to be a significant landmark on the open sea? Can we aim jettisoned tanks with sufficient accuracy to place them effectively close to the pilot? What's the danger of getting them too close? The drop-tank marker bouys might be a good plan... any ideas?



PHANTOM PHOIBLES

From a Navy Phantom incident: The RIO was forward in the seat as he double checked for positive gear down and locked. When he moved back, a pencil in his left sleeve pocket caught and actuated the normal canopy switch. When the canopy opened, it separated from the aircraft.

Recognition

Outstanding Contributor to Missile Safety

Technical Sergeant James N. Hewitt, a missile safety technician in the 4520 Combat Crew Training Wing, Nellis Air Force Base, Nevada, has been selected as the Tactical Air Command Outstanding Contributor to Missile Safety for the six month period ending 31 December 1965. In addition to outstanding participation in his unit's accident prevention program, Sergeant Hewitt's accomplishments include writing a missile safety officer's checklist that was adopted for Air Force-wide distribution and participation in AGM-12C and AGM-45A test programs.

Crew Chief of the Month

Technical Sergeant Jacob Owen, 4511th Organizational Maintenance Squadron, Luke Air Force Base, Arizona, has been selected as a Tactical Air Command Crew Chief of the Month.

Maintenance Man of the Month

Technical Sergeant Wendell W. Agee, 4510th Field Maintenance Squadron, Luke Air Force Base, Arizona, has been selected as a Tactical Air Command Maintenance Man of the Month.

Pilot of Distinction

Major Wilford E. Deming of Headquarters Tactical Air Command, Langley Air Force Base, Virginia, has been selected as a Tactical Air Command Pilot of Distinction.

When Major Deming advanced the throttle of his T-33 for go-around following a low approach, he could only obtain 90 per cent power and the rpm began to fluctuate. He quickly retracted the speed brakes, gear, and flaps at 140 KIAS and declared an emergency. As Major Deming pulled up to a modified flameout pattern, engine vibration became more severe, the generator failed, and rpm dropped below 50 per cent. When he reached low key, the engine vibration was very intense. Major Deming shut down the engine and executed a dead-engine landing.

Examination of the engine revealed a turbine blade had failed damaging other turbine blades and guide vanes. The severe vibrations caused damage to the fuel filter, tailpipe, wing flaps, and plenum chamber.

Major Deming's calm, rapid, and accurate application of procedures averted the loss of an aircraft and qualify him as a TAC Pilot of Distinction.

TAC OUTSTANDING SAFETY OFFICERS

JULY thru DECEMBER 1965

Flying Safety Officer

Captain Charles H. Van Diver, Jr.
516 Troop Carrier Wing
Dyess Air Force Base, Texas

Missile Safety Officer

Major Lewis C. Lemon
836 Air Division
MacDill Air Force Base, Florida

Nuclear Safety Officer

Lt Colonel Luther A. Pipf
403 Troop Carrier Wing
Selfridge Air Force Base, Michigan

To the Editor

I appreciate maintenance savvy too, but not enough to endorse Ol' Sarge's December parting shot. Hopefully, the crew day length was established after numerous hours of thought and for the safety of the passengers, the crew and the machinery. He ought not imply, even with tongue-in-cheek, that the crew day rule should be waived simply because someone has get-home-itis.

Was the Lt Colonel expecting the command post to find somebody to co-sign the responsibility 'note'?

Captain H. E. Larson
Assault Airlift Plans, Hq TAC

Ol' Sarge is a firm supporter of, and believer in, Crew Rest . . . along with Check Lists, Gear Down Landings, and Motherhood. His Lt Colonel certainly did have tongue in cheek but had it pointed at the flippant misuse of waivers we see so often. And about co-signing the responsibility . . . . Rog, we agree it's usually pretty hard to tell the condition of an aircrew via telephone.

To The Editor

Regarding your "Better Mousetrap" in the November TAC ATTACK. My hearty congratulations to the AGE Section of ANG's 108 Tactical Fighter Group. Their modification of the LOX cart is indeed a worthy contribution to the Air Force maintenance effort. However, T.O. 35-1-3, dated 22 September 1964 (Change Notice 22 April 1965) stipulates in Section II, paragraph 2-8 that "Liquid oxygen servicing carts (50 gallon or smaller) shall have the top 3/4 painted with green enamel TT-#-489 color 141110." Judging from the pictures you published with the article, I believe the 3/4 of the LOX cart illustrated is painted white. Also, where is the NATO symbol as shown by T.O. 35-1-3, figure 5-2?

Capt Michael E. Wielunski
TAC Maint Evaluation Program
4413TCW (P)
Sewart AFB, Tenn

We agree the 108 Tactical Fighter Group's swivel boom for F-105 oxygen servicing is a resourceful and positive contribution to the U. S. Air Force maintenance effort and the NATO markings appear to be missing. As for the top three-quarters of the cart not being painted green, we will take the lumps for that. Our lead time was a little long on this item and considering normal T.O. distribution the picture was probably taken before the T. O. change reached the field.

The following units were awarded

UNIT ACHIEVEMENT AWARDS

during January 1966 for 12 months accident - free flying:

928 Troop Carrier Group, O'Hare International Airport, Illinois

128 Air Refueling Group, General Mitchell Field, Wisconsin

481 Tactical Fighter Squadron, Cannon AFB, New Mexico

152 Tactical Reconnaissance Group, Reno MAP, Nevada

834 Combat Support Group, England AFB, La.

927 Troop Carrier Group, Selfridge AFB, Michigan

160 Air Refueling Group, Clinton County AFB, Ohio

121 Tactical Fighter Group, Lockbourne AFB, Ohio

126 Air Refueling Group, O'Hare International Airport, Illinois

TAC TALLY

A COMPARISON OF TAC ORGANIZATIONS

ACCIDENT FREE			
ACTIVE	MONTHS		ANG/RES
354TFW	11	6	121TFW
33TFW	8	5	131TFW
4500ABW	55	110	434TCW
4442CCTW	38	71	435TCW

F-100

MINOR - Heat & vent duct came loose, heat damage to hyd lines, control cables, wires.

F-101

MAJOR - Left main gear lower strut fell from acft. Landed on nose wheel and stub of left main. Pilot uninjured.

JAN TALLY		
UNIT	MAJOR	MINOR
479TFW	1	
401TFW		1
464TCW		1
4453CCTW	1	
123TRW	1	
514TCW	2	

F-104

MAJOR - Left main gear damaged on landing attempt, went around, ejected successfully.

F-4C

MAJOR - Lost control after formation roll, crew ejected from vertical dive. Both received back injuries.

C-119

MAJOR - Struck snow bank on TO roll, departed runway. No injuries.
3 FATAL - Prop failed in flight, nr. 2 engine fell from acft. One successful bailout.

C-130

MINOR - Rt. wheel brake ruptured after practice assault landings. Fire damage to rt. wheel well.

MAJOR ACCIDENT RATE			
TYPE	TAC	* ANG	AFRES
ALL	3.9 / 8.9	7.7 / 13.2	23.2 / 1.7
A-1	0 / 15.7		
F-84	– / 0	0 / 15.8	
F-86	0 / 121.6	0 / 31.1	
F-100	0 / 14.4	0 / 17.0	
F-101	0 / 0	285.7 / 0	
F-104	35.3 / 23.3		
F-105	0 / 22.3	0 / 46.5	
F-4	12.6 / 10.5		
B-57		0 / 12.3	
C-47	0 / 0	0 / 0	0 / 0
C-97		0 / 6.6	
C-119		0 / 0	24.2 / 1.3
C-123	0 / 0		0 / 11.0
C-130	0 / 1.8		
T-29	0 / 0		
T-33	0 / 0	0 / 5.3	
T-39	0 / 0		

*estimated due to non-receipt of ANG rates at presstime.

thru Jan 66 / 1965


Princess
ANN
AND A PERFECT FORM
AFTO FORM 781
EVER CONSIDER THE IMPORTANCE OF THE FORM 781 ?
OKAY, PRINCESS, GROUND BOYS GOT 'UM IRON BIRD READY FOR BIG MAINTENANCE INSPECTION !
TEEPEE #ONE
MSGT HIRSCH
REMEMBER, PAY SPECIAL ATTENTION TO THE CORRECT ENTRIES ON THE FORMS!
ME RED-HOT SUPERVISOR!
NEVER, NEVER, NEVER USE 'UM FORCE!
AND GET SOME CAPS ON THOSE OPEN HYDRAULIC LIKE SAY 'UM IN T.O. 44H3 !
IRON BIRD ALL SET FOR WILD BLUE YONDER!
GOOD, PARK 'UM ON FLIGHT LINE !
UGH, ME HAVE TO TELL 'UM YOUNG BUCK EVERYTHING!
LET ME SEE THE FORMS FIRST!
FORMS, FORMS ? OH, ME NOT FINISH FORMS YET !
ME GET 'UM FORMS PRONTO!
LOOK AT THIS! RED CROSS CONDITIONS ARE SIGNED OFF AS CORRECTED, BUT NOT INSPECTED. RED DIAGONAL DISCREPANCIES WITH CORRECTIVE ACTION ACCOMPLISHED, BUT NOT SIGNED OFF IN THE PROPER BLOCK, ALSO TORQUE VALUES ARE NOT ENTERED!
ME RECOMMEND THAT US SUPERVISORS INSURE STRICT COMPLIANCE WITH TO 00-20 SERIES AND RELATED MAINTENANCE PUBLICATIONS !
ROCK SLIDE