

TAC ATTACK

TAC Attack April 1965



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COVER PHOTO:

Each F-105 is able to haul 14 tons of ordnance.

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"three yards and a cloud of dust"

General Meyers on Safety



Many football fans are familiar with the term "three yards and a cloud of dust" because it describes the normal style of a team whose coach stresses fundamentals. In some measure, the term may also describe the distinctive style of the TAWC accident prevention program because of our unusually strong emphasis upon basic safety fundamentals.

The most important fundamental in the TAWC program is the unrelenting effort to elevate the individual state of mind toward an ever increasing awareness of safety. One method employed is to demand progressively greater personal involvement in the safety program by those individuals performing additional safety duties. The assignment of investigation, reporting, and prevention tasks greater than those normally required has clearly increased individual interest and awareness of safety. Consequently, it is not acceptable in TAWC for the safety function to be carried out solely at wing level while squadron safety personnel occupy positions in name only.

Next to personal involvement, I feel, nothing pays greater dividends toward accident prevention than a commander who personally emphasizes and exemplifies the standards of performance which he expects from subordinates. In addition, a commander must avoid actions which degrade the exact meaning of established standards. For example, the oft-quoted statement, "Do as I say -- not as I do" contains an insidious expression of approval to deviate. Even more unacceptable is the feigning of ignorance by commanders when known deviations are allowed to exist. Inevitably, this attitude leads to an accident which could have been prevented by timely command action.

Strong supervision is the final key fundamental stressed in our TAWC program and to help achieve this objective, command channels are utilized rather than safety channels for initial transmittal of incident information. While strict adherence to this procedure does not relieve safety personnel of their reporting responsibilities, it strengthens supervision because it directly pinpoints responsibility and expedites corrective action.

Perceptually, the intent of this article has been to reveal the importance that we--at TAWC--have placed upon basic safety fundamentals while adding nothing new except emphasis . . . and emphasis . . . and emphasis. To illustrate this point I presented a football analogy which included the term "three yards and a cloud of dust". I feel this term is particularly significant because it connotes steady progress toward a goal. In the conduct of our TAWC accident prevention program, we are attempting to maintain this same steady progress. Therefore, by emulating the football coach who stresses fundamentals, we are aiming for the safety equivalent of football's "three yards and a cloud of dust" in the drive to our goal of zero accidents!

Major General Gilbert L. Meyers, Commander, Tactical Air Warfare Center, is from Milford, Iowa, and completed pilot training in 1938. He has flown 57 combat missions and was commander of the 368th Fighter Group when it became the first Air Force unit to land in France after the Normandy Invasion. In 1948, he assumed command of the First Fighter Group, the first jet fighter unit in the Air Force. Assigned to Korea in 1950, he served two years as Fifth Air Force Director of Operations.

He graduated from the Canadian National Defense College in August 1958. Then commanded the 312th, 27th and 354th Tactical Fighter Wings. He also commanded the 4530 Combat Crew Training Wing. Later, as commander of the 836th Air Division at MacDill, he accepted delivery of the first F-4C for the Air Force in December 1963, and became Commander, TAWC later the same month.

His decorations include the Distinguished Service Medal, DFC, Bronze Star, Air Medal with seven clusters, Croix de Guerre from France, Luxembourg and Belgium and Republic of Korea Military Merit Medal with Silver Star.

angle of **ATTACK**

angle of attack

SAFETY VISITS & SURVEYS



Colonel Jack W. Hayes
Chief of Safety

At present, the TAC Office of Safety is implementing a drastically new approach to our safety surveys. Our old, scheduled, prior notice, formal surveys induced a tremendous level of safety awareness for an unknown period of time before the survey and for a short time afterward. And, because of the pre-survey activity, most of our surveys revealed few weaknesses and generated little lasting action.

There have been exceptions, including one very recent one where a tactical unit was found very weak in several different safety areas. This indicates habitual weakness and I shudder to contemplate the day-by-day safety program of this unit!

We in the Office of Safety, and the Commander, TAC, are concerned with the safety program of every TAC unit right now... fifteen minutes from now... tonight... tomorrow and on into the future. We want everyone in TAC to have an active aggressive accident prevention program 365 days per year, every year.

I have proposed and received command approval, to start using two different safety survey techniques. The first will be in conjunction with the Inspector General's no-notice ORIs. Our Safety Survey Team will travel with the ORI team, but will not be part of the team. The Safety Survey Team will critique each Commander and his staff in conjunction with the ORI team, but will prepare a separate report directed solely at safety.

The other survey technique will be weekly, no-notice visits by officers from the various safety divisions. They'll travel by T-33 and plan to visit each unit at least once each quarter. The senior officer will critique the commander or his representative before he leaves the base.

Officers making these visits will be looking for danger areas the commander and his staff may have missed and formal replies will not be required.

Briefly, our goal is to continuously evaluate the overall safety program and assist commanders with safety inspections. Your cooperation will be appreciated and will help TAC attain the safety record for which we all strive.

problem solution

In the final analysis most of us are lazy. Being lazy, we often end are lazy. And being lazy we often end up with problems that take a great deal more sweat and effort to channel changing is a prime example. We lived with that confusing killer a good many years before a few pilots started to complain about having to look down and back at a poorly positioned radio panel. Very shortly after the complaints started coming in, radio panels were relocated front and center! Next came the IFF.

Then someone griped about changing frequencies at low altitude and we got the single frequency approach. We lost several pilots trying to live with this problem before the rest went the OHR route and got it corrected.

Just recently someone took time to question another well established problem the rest of us here rather bovinely accepted as something we had to live with... the problem of night formation. I doubt if there's a fighter pilot alive - to say nothing of some who are no longer with us - who hasn't sweated trying to join up in formation at night. Most have also wished for better references on a long haul at night so they could ease out of close formation to relax a bit, check the engine instruments, or change radio channels.

Like I said, someone finally questioned all this on an OHR and we'll all profit from the result. He happened to be an F-105 pilot, so the Superchief pilots will benefit first; however, tests are currently

under way to do something for all types.

The obvious answer to his OHR was better lighting. Lighting that would outline the aircraft or otherwise provide more references. I won't bore you with the systems that were tried with negligible improvement since you're only concerned with the one you'll be living with. It's rather simple and, believe it or not, cheap.

On the F-105 they were able to use existing circuits and existing switches to keep the cost down to an estimated \$24.00 per bird. All they did was put a couple of lights on the inside trailing edge of the 450 drop tanks. They shine toward the aircraft and light up the whole tail section. I understand these lights will be on the tail cone of the 335 gallon drops on F-100, on the tip tanks of the F-104 and mounted in the upswept part of the wing on the F-4C.

How good are they? Pilots testing it report excellent depth perception. They said they could easily judge wing tip clearance and attitude changes while flying close formation. In spread formation

they reported they were able to fly a comfortable position about 500 to 1000 feet out. At this distance they could see the tail number and TAC decal. They could easily detect attitude changes and even tho the light on the opposite side was visible when the leaders turned away from them, this posed no problems.

Night join-ups were almost as easy as in daytime. In weather, the greatest advantage of the new lighting is in medium density clouds. Testers reported they had a more complete reference to fly from, had less tendency to get vertigo and had no trouble at all with auto-kinesis. The light does give a halo effect (no pun intended) that is not disturbing.

However, all good things have their limitations and the light system doesn't do a cotton pickin' bit of good in dense cloud. It is obscured the same as the navigation lights.

At this writing, TAC tests are going full swing on the other aircraft, while the Thunderchiefs are presently being modified with the lights.





A GREEN aircraft commander was flying in trail off his instructor's F-4 as that worthy went thru a series of rolls, lazy eights and similar maneuvers. Approaching the top of a loop which was entered from 12,000 feet, 460 knots and full military, the student's bird buffeted - moderately he says - and went into an uncontrolled roll to the right. The roll terminated in an inverted right hand spin. He was holding the stick just aft of neutral with the rudder centered until the spin started, then he moved the stick forward of neutral. Both he and the aft pilot were hanging in the harness with their helmets jammed against the canopy. He held the recovery control while the bird went thru about two turns, then deployed the drag chute. About a half turn later, the aircraft commander felt positive forward pressure and the nose dropped from ten degrees below the horizon to about 50 degrees. The bird rotated about another half turn and the spin stopped. The aircraft then rolled 90 degrees and the aircraft commander completed the roll, noted airspeed increasing thru 220 knots and retarded throttle as he leveled the machine. They recovered at 8000 feet after entering the spin at about 21,000 feet. The bird was configured with two empty 370 gallon drop tanks and an LAU-17 pylon.

The aircraft commander had been briefed on post stall gyration, spin and recovery techniques and had seen McDonnell's spin test film. He said all of this

helped him effect the recovery.

Incidentally, if you should accidentally get into a spin this low, the Navy F-4 experts recommend using the drag chute a little earlier than this lad did - like right after entering the spin.

Reminds me of the time a troop about my size and cunning was flying the ninth Mustang in a 16 ship in-trail rat race. The leader pulled around into a loop. I wasn't sure if it would be a loop or an Immelmann and eased off back pressure on top to have a look-see. WHOP! SNAP! Ugh, and down thru the whole deal spun TAT. I recovered just in time to slide back into position as if 'twas planned.

This F-4 lad was surprised because his bird went into a spin without getting heavy buffet or wing rock. With the speed he had on top of this loop, he would not get very much buffet . . . the bird just didn't have enough energy.

The big boys tell me that this phantom bird is a real straight forward aircraft . . . honest as a country maid. This, I think, elevates it to the ranks of the Spitfire, Mustang, F-86 and other superb combat aircraft. However, there always seems to be those who'd take advantage of a virtuous country maid. Needless to say, they usually get slapped for their indiscretions.

"TAT," THE BOSS growled, "this F-105 accident you briefed in the Analyses Handbook . . ."

"But, sir . . ."

"You say he started his run at 10,500 feet at between 240 and 260 knots, speed brakes extended, in about a 45 degree dive . . ."

"Ah . . ."

"He started to recover at about 3600 feet and about half way thru his recovery saw it was going to be close so he increased G from around four to seven, applied full military power, and retracted speed

brakes, then rushed into the trees."

"Yes sir, but..."

"Unless someone just recently repealed some of the laws of aerodynamics, he should have pulled power off and left his speed brakes out to improve his pull out."

"I agree, sir, but..."

"How come you didn't mention it in the lessons learned?"

"Because I didn't write it, sir. Flight Safety writes the briefs for that book...however, I admit to reading the thing and not catching that point. Worse, it has been in the analyses handbook for quite some time without anyone noticing it."

"Harumpft! Well, see that you get something out to the troops."

Awright you guys. If you misjudge and get too low on an air-to-ground ordnance run and are at or above the normal release airspeed, PULL OFF power and extend the boards to slow the bird as you bring Gs to max.

At normal dive bomb speeds, you are fast enough to overstress the bird. By slowing, you can decrease the turn radius without overstressing.

The boss is right...it worked for the F-80 and it still holds true for the Super Hog and other fancier hardware. Clean up and add power AFTER you've missed the trees.

THIS TATTERED CAT spent a weekend in Boston with troops in the 102d Tactical Fighter Wing. Big rush packing for the jaunt, so I arrived minus a tie for one each uniform. Have you ever tried to buy a blue tie on a Sunday morning in Boston? Finally borrowed one. Reminds me I gotta bug SEG to see if they have a checklist for packing ye olde kit bag.

The 102d is in the process of phasing out of their trusty F-86Hs into the 84F. Yes, but with more enthusiasm than you'd expect. In fact, they held a dining-in to say farewell Sabre, hello Hog and TAT helped, to some extent, by making no small dent in the refreshment stockpile. Regardless, I managed to recall some impressions I'd like to pass on. The 102d is a Guard unit with the spirit and drive I've found typical of the Guard and Reserve Forces. Without exception, these troops like to fly aircraft.

Let me put it this way. I asked one troop about deer hunting in the Bay State. "It's real good...but I don't get out any more." He inclined his head toward the parking ramp, crowded with both 84s and 86s. "This takes too much of my time."

"I gather flying takes the place of hobbies, then."

He frowned slightly. "I guess you could call it that. At least darn few of us have time for golf or other forms of recreation. In fact, my wife would shoot me if I stayed away from home any more than I do now."

I sensed he unconsciously resented the inference that his Guard work was a hobby. He should. Today's Reservist is just as professional as his regular forces counterpart. He meets the same criteria both on the ground and in the air and occasionally gets hit with extended TDYs. All of this added onto a full time civilian job. The 102d, for instance, deployed TDY to Europe during the Berlin Crisis. A TDY that lasted nine months. Imagine the effect this had on that other full time job!

"You gotta have an understanding employer." Each man understated with a grin. Yep, you gotta have that and more.



Talk airplanes and each of these men is immediately interested. Most know the latest problems facing every fighter in TAC's inventory. There's a heap of very jealous wives around any Air Guard town... jealous wives that don't know how to compete against a chunk of metal that flies!

A lot of people treat professionalism the way the Puritans treated religion. They seem to think the pro must go at his work in a cold detached humorless way. Nothing could be further from the truth. In the past 22 years I've been fortunate enough to encounter some of this country's top ranking fighter pilots. Almost without exception each seemed to thoroughly enjoy flying and most had great zest for living... and

by golly I don't think they were less professional for it.

So if you're one of those who think the Air Guard is little more than a flying club, I challenge you to drop by a Guard unit and study these men... find out how far some travel for the privilege of flying... find out how much time they put into ground and flight training... compare their gunnery scores and bombing scores... then find out what most of them do for a steady living and you will get an entirely new perspective on the week-end warriors... both Guard and Reserve.

Scratch below the surface and you'll invariably find hard core professionals who are thoroughly dedicated to this business of defending freedom. I tip my old hard hat to every blessed one of 'em.

JUST AFTER RETRACTING flaps on an AB take-off, an F-4C troop saw the left fire warning light come on. He hit the test switch and it glowed brighter. He retarded throttle and the light went out. He leveled at 3000 feet on a wide downwind, dumped fuel and made an uneventful single engine landing.

Another F-4C troop observed a right fire warning light glowing dimly as he cruised at .9 mach at flight level 400. He pulled power to idle and the light went out. He increased power and it glowed dimly again. He shut down the engine and brought the bird home for a precautionary landing.



Let's play the old shell game. Which bird had the fire and which had a faulty fire warning system? Can't tell, can you? They both acted pretty much the same. Actually, the first troop's bird was telling lies due to a short in the fire warning system while the other troop had a damaged gasket in the BLC collector box and engine bleed air was being squirted onto a

fire warning element for a potential fire.

With two engines to rely on, the F-4 and F-5 troops don't have the terror factor that goes with a fire light - false or not. However, false lights are a serious problem if for no other reason than the effect they have on a pilot's confidence in the warning system.

Reminds me of a movie I watched recently where a supposedly well experienced pilot shut down a failed engine on a two jet transport, spilling coffee all over the place as he did so. Moments later the radio went dead followed by a fire light on the other engine. He shut that one down and perished in the crash landing attempt. The rest of the movie concerned itself, between flashbacks, with the accident investigation. A real postman's holiday.

"I thought that was a real good movie," the wife observed.

"Grumph!"

"Do I detect a slight disagreement?"

"Well, other than knowing that cup of coffee was going to induce the crash practically from the moment the stewardess gave it to the pilot and aside from a few technical errors, I guess it was OK."

"Technical errors?"

"Yeah... I can see a pilot shutting down an engine because of a false fire light if he has another engine to rely on. That's just being intelligent. But no one would shut the other one down without checking the gages - especially when it's his last engine and he has to ride the bird down. No, he's going to get everything out of it he can. He has no other choice. Like with our single engine fighters, if an engine starts coming unglued on takeoff after it's too late to abort, the only thing a guy can do is hope it'll develop enough push to get him high enough to eject. He has no choice and his decision is already made for him."

She moved over to the far side of the seat, "That's the last time I'll go to a movie about airplanes... at least with you."

"Fine. How about going to that new French number...?"

A SAFETY OFFICER nosing around the airpatch noticed a dearming crew getting ready to dearm a transient fighter. Altho the machine was parked in the proper dearming area, he stopped the operation... the business end of the bird's Gatling gun was aimed dead on at three other aircraft!

Come off it troops! It doesn't take a trained safety officer to spot a blooper like this... and if a round had cooked off, everyone involved in this operation

would have picked up the tab.

Like the boss says, "Safety is everybody's business." To me, that means you use your head and imagination to determine what might happen and you don't wait for a supervisor or safety officer to point out hazards. You look for them yourself and you do your best to avoid them.

All hazards aren't as obvious as a loaded gun. And, until every darn one of us gets into the habit of looking for potential trouble, we will always be faced with stupid unnecessary accidents.

"**T**AT OLD CAT, I had one last night that might interest you. We stopped at Myrtle on an out and back, grabbed some chow while transient maintenance serviced the bird and were soon headed back.

"Everything was normal until I tried to pick up the wheels after takeoff. I couldn't move the handle. The other pilot and I discussed this, wondering if we should go thru the emergency procedure for raising them. I reasoned it wasn't an emergency, that we should leave 'em alone. That we should fly all the way home with the gear down and locked, and that if we retracted them using the emergency procedure, we might have trouble getting them back down."

"Who won?"

"I did. We flew back with them hanging."

My friend used his head. If he'd taken off in nasty weather and needed the wheels up to get somewhere that had better weather . . . then he may have wanted the wheels up bad enough to risk not being able to get 'em back down. This is a point too many of us are inclined to overlook in our zest to get the mission done. Had he been launching on a combat mission . . . well, that's another story.

THE CHIP DETECTOR light came on and the pilot wasted no time getting his machine back on the ground. With only one engine, who wants to take chances? Maintenance types removed the magnetic sump plug and found two chunks of metal that looked like gear teeth. They inspected the engine, made a penalty run and released the bird for flight. Once again the chip detector light came on in flight and once again the pilot hobbled home.

The maintenance experts found some more gear teeth and changed the engine. Bless my bones! Even James Bond would shy away from this operation! It would be foolish to fool around this way even with two engine hardware, let alone single engine machinery.



. . . So you'd rather fight than switch!

I haven't bothered reading the TO these troops quoted as their authority - excuse is a better word - for this little byplay, but I'd bet they stretched a point to get the book to cover them.

I have no quarrel with stretching a point in order to get things done . . . but I'd rather see points stretched the other way. One commander I know makes his troops change tires before they get worn beyond a level that isn't exactly according to the TO. But, he knows his birds will be operating on a lot of wet runways and he directed things to be done this way because the TO says you can change tires when they become unsafe . . . and slick tires ARE unsafe on a high performance aircraft when the runway is wet.

I look at it this way . . . if there is any doubt in your mind, stop and think how your decision will look if everything else goes wrong.

SPEAK F-4 PROBLEMS and someone will mention boundary layer control valve failure. This means flap-down operation until safely on the airpatch. However, one unit wonders what to do about external stores. The book has nothing to say about kicking them off with the flaps down. One troop wanted his off following a BLC failure. He flew over to the jet-tison area, picked up the flaps, punched off the stores and re-extended flaps.

Sounds reasonable . . . if you must get rid of the stores. Remember tho, the handbook advises to land as soon as practicable after a BLC failure. This means you do have time to get rid of excess fuel if that will lighten the aircraft enough and assuming the stores can be carried back home without sweat. If they can't, I'd say this lad has the answer - at least until someone does some flight testing.

By now, you should know that Air Route Traffic Control Centers (ARTCCs) are divided into two altitude strata: the low altitude stratum with federal airways extending to 17,500 MSL, and the high altitude stratum with its jet routes between flight levels 180 and 450 and its random radar navigation above FL 450.

Area Positive Control (APC) extends from FL 240 to FL 600 and is normally an IFR/radar environment. There are absolutely no VFR operations in APC. Further, only aircraft with functioning radar beacon transponder equipment may utilize APC. If a pilot experiences an in-flight transponder malfunction, the ATC controller, based on his traffic workload at the time, may either let him continue his flight and protect the altitude, or he may clear him to descend below the base of APC and proceed at an IFR altitude. Of course, once he is out of the confines of APC, the pilot may cancel his IFR flight plan and go VFR. Altho this tears up an extended cross-country flight planned at the higher flight levels for optimum fuel economy, the ATC controller usually cannot accept the aircraft in APC if he loses transponder contact because it creates too many hazardous situations. The reason is that the high altitude controllers usually monitor only secondary (transponder) radar targets. Normally, all traffic in APC is known, is radar identified, and at an assigned flight level, and the controller turns off his primary (skin paint) radar system to decrease the clutter of undesired returns on his scope. This eliminates all returns from traffic below APC, along with ground clutter and weather returns. All the controller wants to see is target returns from transponder equipped

Area Positive Control

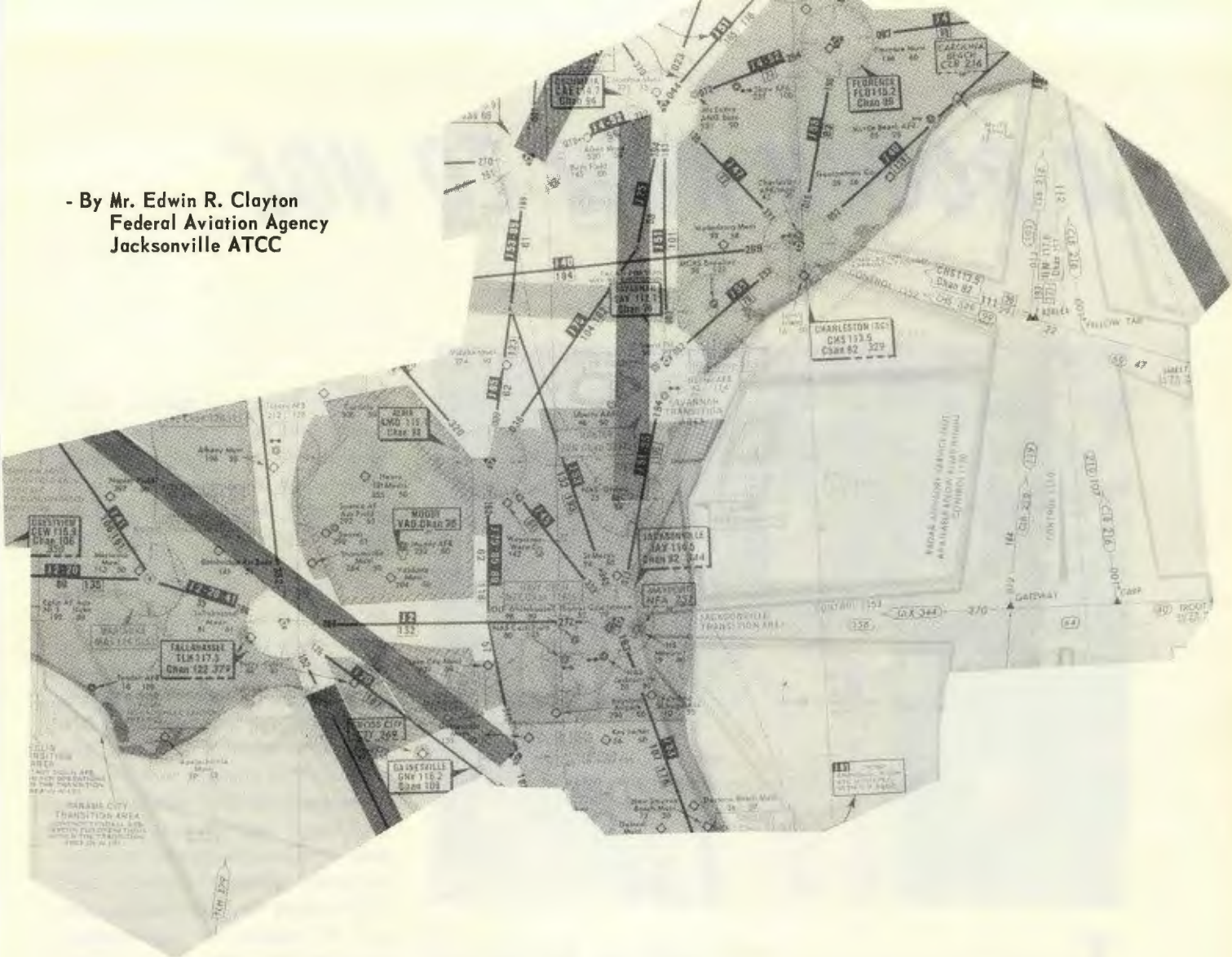
aircraft. The controller can refine these returns even further with different transponder settings depending on whether the pilot is climbing, cruising or descending. In other words, the controller can have him squawk a mode and code that indicates what he is doing. The pilot should never change his squawk - except for an emergency - unless the ATC controller requests it or unless he coordinates the change with the controller. This includes setting the equipment on low sensitivity. Again, the reason for this is that the controller is depending upon the transponder reply to separate his traffic. If the pilot reduces sensitivity or changes the mode and code and the ATC controller does not have his decoder set to monitor the new code, the radar target will disappear from the scope. More hazardous situations! Also, if a flight of two or more fly further apart than the normal spread formation, all should squawk the assigned mode and code unless the controller advises otherwise. The reason is that while the aircraft involved may or may not be provided ATC separation from each other, the controller must still provide separation from other traffic.

The airspace problem is really becoming critical for everyone...

for pilots, because you aren't able to get the airspace you would like to have for various missions, and for us controllers because we cannot spread the existing airspace thin enough to fit everyone in. For example, let me briefly illustrate some of the airspace problems peculiar to our area.

My map of the Jax area shows some of our problems. All of the shaded areas are set up for special use by military aircraft. There are 21 bases that normally fly in this area and their operations encompass every phase of high altitude flying... TAC F-100s, 101s and F-4s from Shaw, MacDill, and Myrtle Beach, ADC training at Tyndall and an operational unit at Charleston. The Navy's varied operations pretty well saturate the Jacksonville area and the Marines operate day and night from Beaufort. Moody, with its T-38s, requires a lot of airspace and SAC fills up just about all the space that's left with their refueling routes and other tracks. Civil jets and enroute military jets must be controlled through all of this other traffic. I would like to emphasize that only the special airspace above FL240 is shown. Below 240 things are even more crowded and we are usually between a rock and the hard place trying to find additional aerial real estate. The old

- By Mr. Edwin R. Clayton
Federal Aviation Agency
Jacksonville ATCC



law of supply versus demand prevails. Since the demand far exceeds the supply, this business is fast becoming one of the most complex in the world.

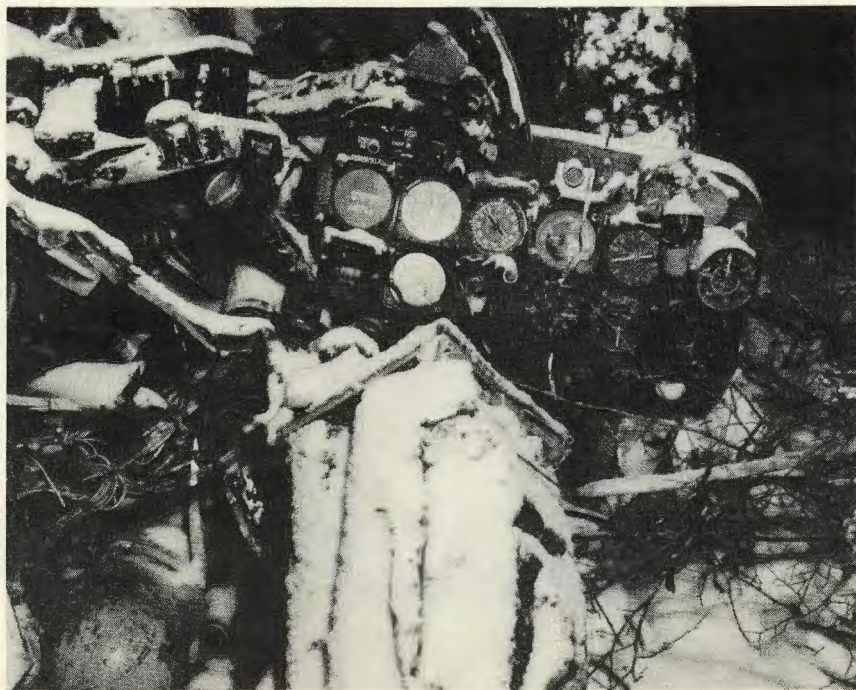
I hope that this gives you an

idea of why you may not always get what you ask for, altitude-wise, from ATC when you launch. Although I have illustrated the local situation, I am sure that similar problems exist throughout the

country. Basically, however, the problems are the same from the ATC standpoint . . . despite the lack of adequate airspace we must keep the aircraft, in the airspace we do have, flying safely. ➤

High altitude operations demand coordination and cooperation between pilot and controller. While most readers are familiar with the way the system looks from the air, few of us understand what is going on down at the Center. Ed Clayton has been in the air traffic control business since 1952 and is presently a high altitude controller for the Jacksonville ARTCC. We asked Ed to give us a controller's eye-view of operations above FL 240 and we're pleased to present his article.

A ROUGH ROW TO HOE



The weather at Homeplate was sour. Below minimums. The leader of a flight of three F-86Hs requested the latest weather at his alternate and was advised that it was 3000 obscured with seven-eighths of a mile. He requested clearance to the alternate and the flight was soon making individual GCAs. The first two pilots found the weather better than expected. They could see the strobe lights at three miles and the runway lights at two. The third pilot crashed about three and a half miles from the runway, on centerline. He was a good solid instrument pilot and disorientation was not a factor. The controller said the approach looked good . . . real good, until

four miles out, then the bird started dropping until it went off the scope.

Fuel wasn't a problem. He should have had around 1500 pounds, had given his fuel state shortly before leaving altitude, and the wreckage indicated plenty of fuel on board at impact.

Investigators are pretty sure his engine flamed out. Impact damage verifies this. After checking cockpit switches and the fuel regulator they found he had hit the gang start switch to select the emergency fuel system.

On the surface this looks like a simple straight-forward accident. It is, and it isn't. . . let's go thru the critical phase:

A good head is flying a night

weather GCA in a bird he knows as well as anyone could know a bird . . . he has over a thousand hours in it. He's on speed, or darn near on it because he's a sharp instrument pilot . . . gear and flaps are down and speed brakes are extended. He's concentrating on speed, heading and rate of descent since the controller started him down glide slope twenty seconds earlier. Perhaps he adjusts throttle to correct speed or rate of descent when it happens. The engine noise changes and the rate of descent starts to increase. Unless he is super human it would take a full second to overcome the surprise and transition from flight instruments to engine instruments and to realize the significance. FLAMEOUT! The voice in the headset is extremely loud, "going thirty feet below glide path, two three zero, going FIFTY feet below glide path . . ."

Like most fighter pilots, he had already decided on a course of action for this type of emergency. At flameout, the bird was about 860 feet above field elevation. Now it is lower. He hits the gang start switch and waits for the rumble . . . by now I'd guess his airspeed is dangerously low, perhaps a shudder warns him of impending stall. He lowers the nose to pick up speed and, since there is no rumble from the engine he starts to go thru the rest of his plan. He reaches for the ejection handle. But wait . . . the rate of descent

is over 5000 feet per minute and he is low . . . instinct tells him he is too low. He follows the only course of action left. He sticks with the aircraft and tries to spot the ground in time to break the descent, hoping to survive the crash.

What went wrong with his plan?

I don't know if you have ever considered this - I didn't realize the full significance until after studying this accident - but an engine failure on GCA final is extremely critical. The aircraft is dirty - everything is hanging - and speed is low, some 20 or 30 knots below best glide speed for the con-

figuration. Therefore, it will have a much higher rate of descent than you normally associate with a flameout. We calculate that this pilot had less than ten seconds after the engine quit. This isn't much time when you consider weather conditions, the element of surprise and other factors.

Rate of descent would have been close to 5000 feet per minute. At this rate, he would have needed almost 500 feet to assure a safe ejection. Remember, he had no excess speed to use for zoom and no rocket seat. I mean he must pull the handle at 500 feet, not just

DECIDE to pull it. In other words, he had very little decision time. Small wonder he could only complete half the plan of action most of us have reserved for this emergency.

Think it over. In most fighters you will have a choice of two actions should the engine quit once you are on a GCA final with the bird configured and on speed. You can try for an airstart or you can eject. If you elect to try for the airstart and don't get it, you are committed to a crash landing and this is a rough row to hoe.



circuit analyzer

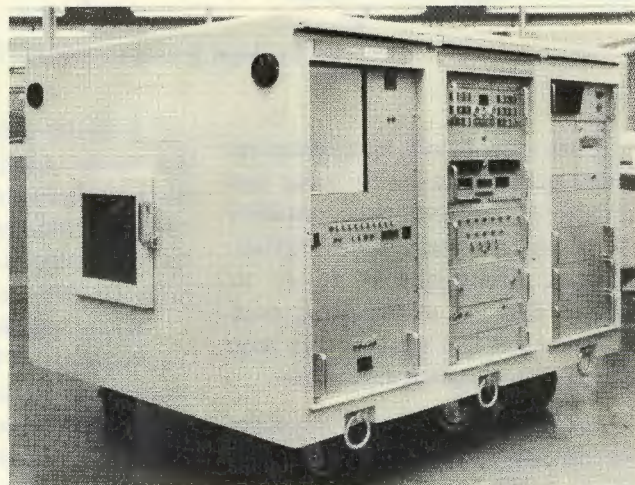
The 354th Tactical Fighter Wing is currently testing an automatic circuit analyzer to see how valuable it will be as field level maintenance test equipment.

The unit is called a Flexible Automatic Circuit Tester (FACT) and it plugs into cannon plugs of the aircraft electrical circuits using special adapter cables. The unit will check circuit resistance, leakage and unintentional cross connections.

Unlike most circuit testers which are controlled manually or which use complex patch cord control, the unit being tested uses a deck of IBM cards which can be inserted in any sequence. These cards are punched to match the circuit being tested. If a mod comes out that changes the circuit, all they have to do is punch a new card that incorporates that mod. Local technicians can construct these cards; however, this is normally done by the depot.

Each card in the program is assigned to one complete circuit checkout. Once it has been properly punched, the card can quickly patrol its circuit . . . In fact, the tester can make 90 continuity tests per minute. Each card contains all pertinent info on the circuit, including the from and to connectors and pin numbers of the wire.

At the end of the tests, each card is automatically classified, based on test results. It comes out continuity fail, leakage fail or test OK. Also, when an



error is detected, an automatic visual print tells the type of fault . . . short, open, leakage, defective insulation . . . and give the test terminal involved.

The unit can also be programmed to read resistance values, to operate relays, solenoids, actuators and even panel lights. The unit can automatically verify its own integrity and will count cards to assure that all programmed tests are run.

At present, TAC plans to use the tester on half the F-100 fleet at Myrtle Beach comparing results with the other half of their fleet. Tentatively, it will be used on the complete auto pilot system, many parts of the armament system, the gear warning system, anti-skid, nose gear steering, heat and vent, communication and navigation systems.

To date, no circuit that has been tested with this unit has developed a malfunction . . . which is good as you can get!



SOMEONE

Goofed



- By Major Martin O. Detlie, TAC Office of Safety

Just after liftoff, an F-105 pilot found his cockpit terribly hot and rapidly filling with dense smoke. He managed to make an emergency landing. Someone had failed to torque the air conditioning duct clamps and hot exhaust air was getting into the heat exchanger.

An F-4C pilot used opposite rudder and brake to keep his machine on the runway after the left tire failed on landing roll... someone had installed the anti-skid sensor incorrectly.

A C-130 crew made a successful three engine landing after a prop oil low level light forced them to feather number two... someone had forgotten to service the prop with oil after an engine change.

When number two started backfiring, a T-29 crew shut it down and made a single engine landing. Someone had improperly installed a spark plug lead.

Fortunately a 275 gallon drop tank didn't hit anyone after it fell from an F-100. The tank had not been modified as is required.

Mechanics had to change an engine on an F-100 after they found excess copper particles in the oil. Someone had installed the number three bearing carbon seal upside down during overhaul.

A weapons mechanic accidentally hit the jettison button when he was trying to troubleshoot an MN-1A malfunction. Three pylons and two tanks promptly fell off the aircraft... the right outboard did not jettison because it had been safetied... the aircraft had been refueled without safety pins in the pylons... the outboards had not been safetied prior to munitions loading... the MN-1A had been loaded before this guy started troubleshooting the malfunction and so on adnauseam.

Some of these goofs could have ended with a major accident. Change the circumstances a bit, let the pilot make a slight mistake or have something else go wrong and we'd still be trying to figure out what happened. Others in this list cost us time and money... your time and our money. The answer is quality maintenance... that means taking the time to follow the TO and taking time to get things checked. In the long run it is time well spent. Don't YOU become the someone who failed to do his job right!

Letters to the Editor

Letters to the Editor

Dear TAT

Having been an admirer of the ATTACK for a long time, it pains me to find three things to complain



about in one issue. However, here goes:

* First, the picture on "Chock Talk" page 12, hoo boy! Seems that I remember things about protective equipment and full extension to remove the cart as far as possible from the airplane when refueling the liquid oxygen systems, or perhaps that's an oversized screwdriver the boy has in his hands.

* I will not say anything about the 4442d not being in TAC TALLY, since I understand that a very irate safety officer from that organization is planning a scalping party in your honor in the very near future.

* Reference the article, Page 14, by TAWC. As I recall, this organization is something less than two years old. Having participated with the 463d Wing in assault landings in the summer of 1962, I feel that organization deserves some little credit as a pioneer in the field as does the 314th Wing. During 1962 I also observed a Captain VanGieson, 314th Wing, participating in something that looked suspiciously like ground proximity extractions during July at the All American plant in Delaware. I don't deny TAWC's participation in refining and sophistication of these methods of delivery. However, a neophyte reading Colonel Read's article could come to the conclusion that this was all the brain child of that organization. Sorry to be such a nit-picker, but I feel that justice has not been served in this case.

Lt Col Paul L. Smith
839th Air Division
Sewart AFB, Tenn.

Dear Smitty

I'll duck number one, having explained it away elsewhere on this page. But your irate safety type will have a chore on number two. I haven't scalped easy since trading my comb for a wash rag. However, as I recall, the February issue was at the printer when we promised to include the 4442d in those units eligible for the Tally.

Thank you much for clarifying the article on TAWC. ATTACK readers of long standing - if there are any left - will recall your excellent articles and understand. Others I now refer to the back issue file to read SPECIAL DELIVERY in the May '64 ATTACK and LES MISERABLES in the Oct '62 issue. Defense rests.

TAT

Dear TAT

I think the article "Bad Example" by Lt Col Paul Smith, in the January issue, was to the point and very good. How often we hear people referring to THEIR accident as the other driver's fault. How often have both parties contributed their share, or failed to accept their individual responsibilities, as drivers?

Too many times I have had to visit with the parents and widows of our Air Force members, who have needlessly met an untimely death because of the very reason pointed out in this article. It seems

that facts and figures do not phase this type of driver. They keep "pushing their luck" until it's too late and then others are injured or killed too.

That fine line between slapping wrist or throwing the book at the individual is difficult to find. It would save the Air Force much time, effort, and money, if all supervisors would counsel their personnel and all Air Force drivers would drive like their lives depend on it . . .

DONALD L. BARSE
Casualty Services Officer
Clinton County AFB, Ohio

Dear Don

Thanks for your comments. We've passed them on to Col Smith, hoping to induce him into contributing another of his excellent efforts.

TAT

Dear TAT

The picture published on page 12 of the Feb TAC Attack shows a TAC NCO preparing to LOX an F-100 without the aid and discomfort of protective equipment, ref AFM 32-3 dtd 5 Nov 62, Page 7-10, par. 0703.1, Protection & Health Hazards.

Evidently we TAC (Gaining Command) Minutemen missed the rescinding of this requirement in TIG Brief. (smile?).

T/Sgt James J. Watts
191st TR Group
Inkster, Michigan

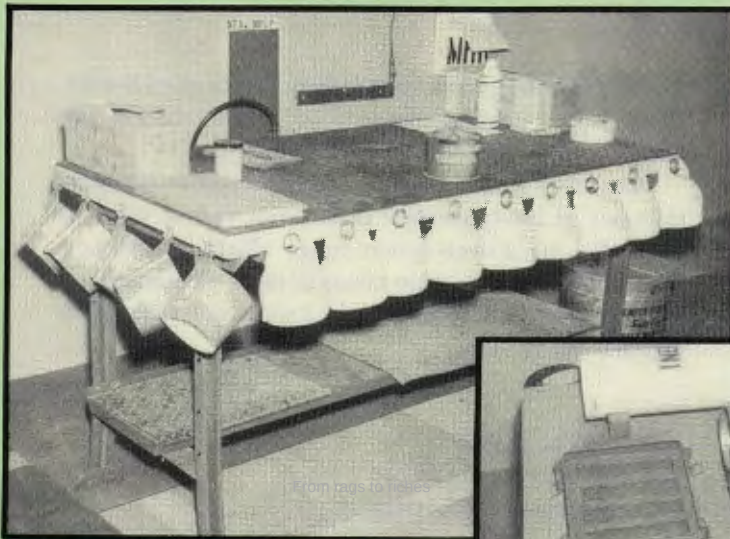
Dear J. J.

I welcome you to the ranks of the SESCO (Sharp Eyed Safety Conscious Readers). You caught me flat footed this time. I could try to dig my way out, hoping to stir up enough dust to cloud the issue, and say we printed the darn thing on purpose in order to draw comments . . . but the truth is that I didn't notice any of the discrepancies when I selected that photo. Said photo is now in the circular file and we'll try to be more careful in the future.

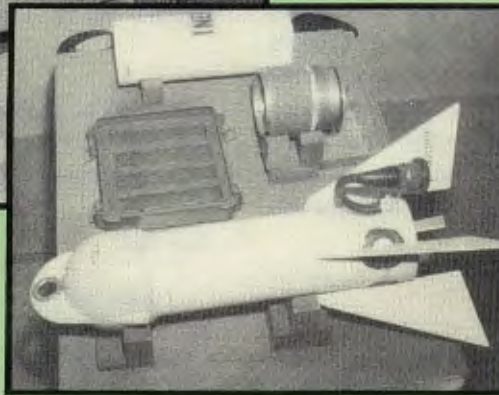
Many thanks to you and all the other readers who wrote and 'phoned in. The ATTACK staff appreciates such active interest.

TAT

TAC ATTACK



Center workbench with influence fuse covers, guidance and control unit dome covers and other working items.



One of two component benches with holders for guidance and control unit, warhead, and influence fuse.



SSGT Stevenson and Airman Sch while MSGT Van D

FROM RAGS TO RICHES

By - Captain Mickey O. Hagg
Missile Safety Officer
4453CCTW, Davis-Monthan AFB



Airman Schmuelgen molykotes warhead.

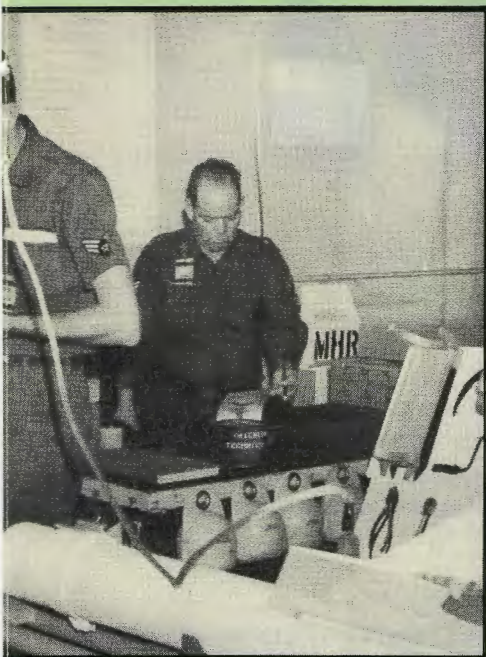
When the 4453CCTW moved to Davis-Monthan they found little or no facilities available for their missile build-up program and the 4453d Munitions Maintenance Squadron found themselves in a building previously used as an explosive ordnance disposal building.

The 4453d had to convert the building to meet their requirements. At first, the missile bay contained a single four by 20 foot workbench and all build-up work was accomplished on this table. The guidance and control unit and other components had to be kept on the opposite side of the bay, about 15 feet away.

No holders were available and one man had to hold components to keep them from rolling off the bench while another did the work.

Completed components had to be carried about 20 feet to the final assembly jig.

Dissatisfied with this layout, the airmen and NCOs of the section went to work and modified the bay to its present status. They removed the large workbench and replaced it with three smaller benches. Two benches were built from scratch, adding woodwork to hold the guidance and control unit, influence fuse, and warhead during build-up. This eliminates the danger of units rolling off the



muvelgen join influence fuse to AIM-9B
tyne reads off checklist.

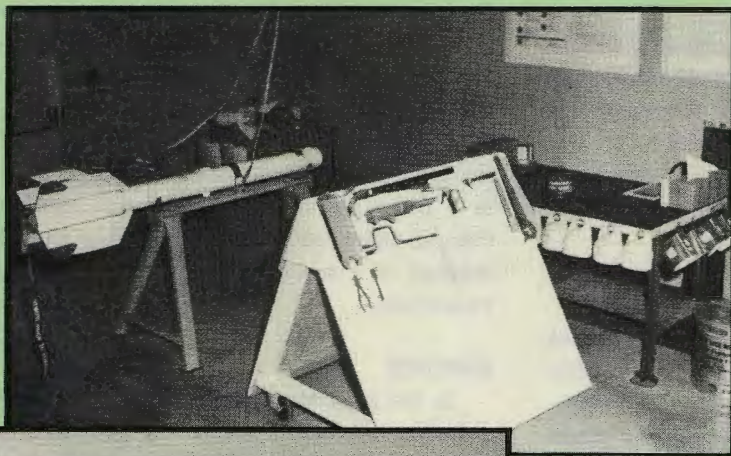
bench and allows one man to checkout the guidance and control unit. Envelopes on the side of these benches hold guidance and control unit O-rings and influence fuse O-rings where they are easily accessible.

The third bench was placed midway between the two smaller benches and was modified to hold nose covers, non-propulsive units, influence fuse covers and other small articles used in missile assembly.

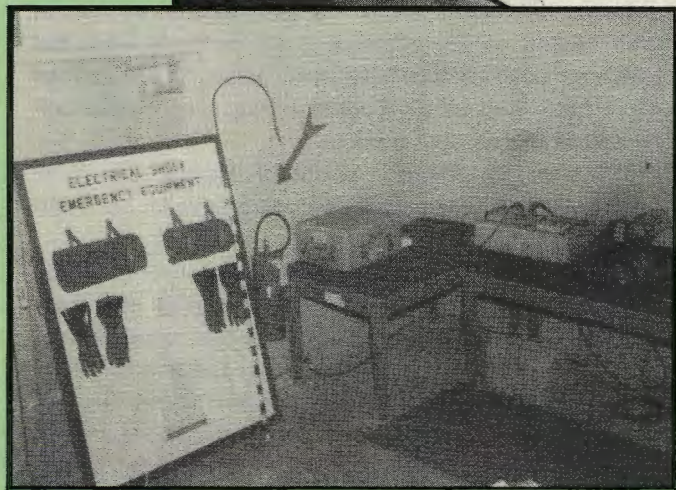
In addition to these benches, the missile maintenance men made a tool rack which they placed in front of the larger bench, making all tools and equipment easily accessible for build-up.

With this setup, the build-up personnel have a dual capability. The work supervisor can readily give close supervision to both build-up operations. These modifications have eliminated the major safety hazards and inconveniences encountered in the original setup.

The 4453MMS has replaced plastic covered tie-down cables with ratchet type cargo straps for transporting AIM-9Bs on MHU-12/M trailers. This eliminates missile damage once caused by the tie-down cable turn-buckle, while padding covers AIM-9B rollovers to keep them from being damaged by other missiles during transport.



Component bench, missile jig,
tool stand and center
work bench.



Emergency equipment board is next to guidance and control checkout table.



MHU-12/M trailer is used to transport AIM-9Bs to the flight line.

TAC TIPS

TAC Tips

FUEL FOLLY

One of our F-4 units reported two cases where aircraft were shut down in the refueling pit with the dump switch at DUMP! The pilot caught one but the other...well, about a hundred gallons of JP-4 sloshed over the ramp before firemen applied external power and placed the switch at NORMAL. The hazard is quite obvious. The unit submitted an 847 to add the dump switch to the after-landing checklist.

GOOD NEWS

TAC Aircrews at Cannon and Seymour Johnson have been evaluating improved inhalation/exhalation valves for the MBU-5/P oxygen mask. At present it looks like the new valves are the answer to an annoying problem...not one of the 240 test valves was reported sticking during the first three months of the test.

BELT TRICK

One of our bases has a new wrinkle for the seat belt program...they sell them at base security. This keeps a fella from wandering all over the base hunting for the ground safety office or whatever other agency handles them. Instead he can buy them when he gets his base sticker.

OUT! OUT! OUT!

Here's one we picked up from the Marines. Immediately after number three became airborne, his F-4 hit the turbulent wake of the preceding aircraft. He started a right clearing turn at a high angle of attack to try and fly out of the turbulence, but soon found he couldn't raise the right wing. At 100 feet, with 120 knots on the clocks and the gear still down, the pilot ordered the RIO to eject. The ejection was successful. The pilot then regained control and managed to land without further incident.

The report does not indicate takeoff interval or give other data...but a hard climbing turn at low

airspeed is not the answer to jet wash at takeoff airspeeds! Much better to fight your way thru the turbulence until the machine accelerates. The F-4 is a big bird with a big wake, and should be treated accordingly.

LOOK OUT BELOW

From an incident report...pilot selected rocket jettison instead of rocket fire. The results of this miss switching were predictable. When you fly around the countryside with all sorts of goodies hanging under an airplane, it's reasonable to expect that a few things are going to fall off. This is a hazard we have to live with and fortunately there is a lot more open space than there are houses and rarely do any of these miscellaneous objects cause much damage. But, there is a point where inadvertent releases become more than an inherent hazard, and going to rocket jettison instead of rocket fire is beyond that point. Let's be reasonable.

SHOCKED

In the past few months we've had two aircraft accidents that ended up in the ground safety files. In both cases, an airman was at the controls when the involved aircraft flew into power lines. The machines were both U-control models using steel wires attached to the control handle.

One of the airmen was electrocuted, the other received first and second degree burns on his right hand and foot.

The hazard has been obvious since Ben Franklin flew his famous kite. Altho you can't very well substitute some other material for steel wires on the higher powered models, you can check over your flying area to make sure the aircraft stays clear of all wires in the vicinity even should you move around...and you can keep your bird on the ground when thunderstorms are in the vicinity since they can be just as deadly as high tension wires.

UNWAVERING VACILLATION

From an incident report . . . during takeoff roll, the pilot noticed his canopy unlock light was on. He made several attempts to lock the canopy and then decided to abort. The report goes on to describe the damage to the gear doors that was caused by the barrier.

Come on fellas . . . let's be reasonable. Without even knowing what kind of bird was involved, you can bet there isn't any procedure that says, when you have a problem on takeoff roll, you play with it for a few minutes and then decide to abort. This is almost as bad as the time when the big bird driver brought the beast in, flared about half way down the runway, and then asked the co-pilot if he thought they'd make it.

Although there are only a few moments in any flight that really require a rapid decision, takeoff is one of those times. He who hesitates . . .

FSO GUIDE

TAC Pamphlet 62-1-1 is a Safety Officers' Guide for Air Reserve Forces. It's intended to give an inexperienced safety officer an outline of his duties and responsibilities and includes a few tricks of the trade. A recent look at distribution showed that most of these handy-dandies are still in the warehouse. They are a valuable reference for both regular and reserve . . . they're free . . . and they are available through PDO channels. Why not?

SHORT STOP

All systems on a local mission were go until the pilot of an F-100 rolled out of a turn and the control stick began to bind. Abnormal pressure was required to move the stick and he tried everything in the book, auto pilot, trim, circuit breakers; all to no avail. He made a successful emergency landing with the control stick binding. Maintenance personnel found a flashlight in the aft section under the torque tube pivot arm of the stabilizer actuator. Corrective action? Flashlight removed.

PHANTOM PHUN

The Navy Crossfeed reports an F-4 incident caused by water in the pitot system. The aircraft sat thru a very heavy rain and both the pitot and static systems were drained before it was launched on a cross country. Descending thru flight level 370 in weather, the angle of attack froze, airspeed indicated over mach one and the altimeter did not move.

The pilot noted that he had, "no control with the stick." The lad in the aft seat reminded him to dump

pressurization to permit using the cabin altimeter. He did, and leveled at 12,000 feet, still in the soup. He then climbed back to VFR conditions and recovered at a base holding VFR conditions.

They drained over a pint of water out of the pitot system. No cause for the "loss of control" could be found.

JACKPOT

A pair of F-105F drivers noticed the gear indicating unsafe. Their wingman checked and reported all three up and clean. Back in the traffic pattern, the front pilot put the handle down and was rewarded with three green lights and three red ones. He tossed the ball to mobile. Mobile eyeballed the bird and said everything looked OK.

Both tires blew shortly after touchdown, otherwise everything went no sweat.

Altho the pilot's handbook doesn't have anything to say about landing with both the red and green lights on, it does say that if the light in the gear handle and warning horn indicate unsafe when the gear handle is down and the green lights are on, the anti-spin system hasn't been deenergized and the pilot should pull the emergency extension handle and depress the brake pedals several times before landing.

Apparently this holds true for the red lights, too.



INTERESTING DISPLAY

Many PE shops have neat display boards that label all the goodies that are stuffed into a survival kit. Great idea, but a word of caution seems needed. Be sure that all hazardous items such as pyrotechnics have been dearmed, or use dummies. It's almost impossible to outrun a fire-ball bouncing off the walls.

ATTENTION PHANTOMS

A Navy F-4 pilot attempted to complete his take-off after the port tire blew just before he reached rotation speed. He was unable to maintain directional control using rudder, brake, nose gear steering, and body English and aborted about 1600 feet after the tire failed. As he aborted, the aircraft left the runway with about 130 knots speed. The port and nose gears collapsed during the trip across the boondocks.

A-1 CARBURETOR ICE

The Navy A-1 expert warns about carburetor ice. It's sneaky because the manifold pressure regulator automatically opens the carburetor throttle to com-

pensate for ice on the carb screen and you don't get any warning until the engine quits with the screen heavily iced. The only cure is educated pilot judgment and one eyeball on the carburetor air temp. Remember, you can get icing when the ambient air temp is as high as 15 degree centigrade.

I'LL BE CANNED

The TIG Brief tells of a pilot who spent 39 cold hours in deep snow and complained bitterly because there was no sleeping bag in his survival kit. A sleeping bag was in the kit; however he failed to recognize it in its vacuum pack. Go down to PE and have a look at the gear in your survival kit. Handle it and learn how to use it. ➤



Ol Sarge

Tommy eased the blue pickup into the formidable looking circle of crash rescue vehicles. As he set the parking brake and turned off the ignition, the Old Sarge looked over the center of attraction... an F-104, that reflected back the ring of angry blinking lights like some silver toy surrounded by a pack of huge dogs.

"He doesn't seem to be drooling any fluid," the Old Sarge remarked as he picked up the tensiometer from off the seat. He strode over to the cockpit of the idling jet. As he approached, the pilot pulled off his helmet.

"Control problem," the pilot explained, shouting over the engine noise. "You want me to shut it down?"

The Old Sarge shook his head. "No sir, let me check the stick breakout forces and then you can shut her down." After he finished his check, the pilot stopcocked and the howling engine expired with a lowering whine. As if this was a signal, the surrounding vehicles

backed up, one by one, and clattered away leaving the safety jeep and the blue pickup.

When the noise subsided Major Lewis asked, "What sort of trouble did you have, John?"

"Jammed aileron mostly, sir. The elevator seemed OK but I started a turn on auto pilot and it wouldn't return straight and level. I turned off the auto pilot and finally knocked it loose." He demonstrated, using both hands. "I had to hold it over here to keep the thing level." He shoved the stick about three inches left of center.

"It had a slight aileron nibble of about one or two degrees a second and the control felt like there was no neutral. I declared an emergency and brought it in using a straight-in approach."

"Good work. We're impounding the bird until we finish going over it. If you'll knock out a statement for me, I'd appreciate it."

Later, Major Lewis walked into the maintenance office. "Hi, I hear you found something." ➤

The Old Sarge handed Lewis a magnifying glass. "Yes sir, take a look. It seems to be pieces of aluminum and bits of gasket. We found 'em in both actuators."

Lewis whistled, "No wonder he had control problems. Any idea where this stuff came from?"

"Not yet, sir, and it'll take time to track it down."

Lewis nodded. "These hydraulic systems are quite sensitive, aren't they?"

"They sure are. All it takes to mess 'em up is a little dirt. You know, this is a lot tougher problem than most people think. An outfit can stress keeping the systems clean and insist that lines be kept capped and do all the other little things that mean so much and save so much work in the long run... but, if one man gets lazy because we failed to impress him with the importance of all this... well, he can undo all the good work. All he has to do is leave a line uncapped during maintenance, cap it with a dirty cap, wipe off a fitting with a dirty rag, open a can with a screwdriver and service the bird from it... all he has to do is just one of these things, and he undoes all the good work the rest of the people are doing." ➤



CHOCK TALK

false fire lights

Fire warnings systems give trouble on most of our aircraft and the F-4 is certainly no exception. The company that manufactures components for the F-4 warning system got tired of being bad mouthed and has jumped into all phases of this system - including those generally thought to be the airframe manufacturer's problem.

As a result, some changes are being made. First, they've reworked the flex lead that has been catching on the nacelle doors, using a flared fitting at each end to relieve strain and sheathing the lead with a coiled spring that guides it away from the doors.

In the past, corrosion has been blamed for many false lights altho the system is built from non-corrosive materials. What happens is that someone forces a slightly misaligned fitting. This cracks the ceramic insert and salt and moisture collect in the crack to short it out. Or, sometimes the pin shaves off part of the insert and this induces the short.

The manufacturer reworked the ceramic inserts to make them easier to align. They also eliminated the small tabs on the inserts since these tabs were easily broken off, which also shorts the system. Next they reworked the pins that fit into the ceramic inserts so they wouldn't shave off bits of metal. In other words, they cleaned up the whole system to make it easier to work on.

One problem remains. Our mechanics have no torque wrenches to fit these fittings and must guess at the proper torque. Eventually this too will be solved.

battery bomb

A U-10 crew was flying along at 2500 feet minding their own business when a loud explosion shook their little bird. All instruments were normal except that the ammeter was pegged. The pilot turned off battery, generator and other electrical switches and brought the bird in for an uneventful landing. Seems someone installed a 24 volt NICAD battery in the bird without unplugging the ventilation ports. Arcing from a loose terminal ignited hydrogen trapped in the battery case and, BOOM!

This is a potential problem with all NICAD batteries, and maintenance people will do well to regularly check for plugged vents and loose terminals.

shocking story

Recently a crew chief leaning against an MA-2 casually laid his hand on an F-100 drop tank and received the shock of his life. The external power receptacle grounding pin was no longer performing its intended function, but the unsuspecting crew chief served quite well as a temporary ground. Other incidents of this nature have resulted in jettisoned tanks, pylons and such.

Better ground power maintenance can eliminate this shocking situation, but a sure way to be sure you don't get jolted is to park the "Deuce" far enough from the aircraft that the average bear can't touch them both at the same time.

process of elimination

The test hop was for an engine change and it went smoothly enough until the test pilot reduced power to descend from altitude. Then, the engine ran quite rough. The instruments were steady, except for fuel flow, but even it was in limits. Anything above 90 per cent smoothed things out so the pilot held 90 per cent while making a precautionary landing.

Back at the ramp, maintenance experts figured the tailpipe might be out of alignment so they rechecked it and then tested for vibration between 55 and 100 per cent. Everything was within limits. The next test hop ended with another precautionary landing because of engine roughness below 90 per cent.

This time the maintenance people removed the engine and had a look-see. Three first stage turbine blades were bent. One had a fourth inch crack in it. There was no indication of compressor damage so they ran a records check. The engine had been removed at another base for vibration 20 hours after its second PE and the number three bearing replaced as corrective action. The engine went from there to flyable storage without benefit of a test cell check.

poor joe

Joe didn't worry about the safety pin,
The crew chief HAD to put it in.
He lifted the handle without a care,
But what's Joe doing up in the air?
The hangar roof needs straightening a bit,
If you look close you'll see where Joe hit.
You can also see where Joe came down,
Don't look for Joe, cause Joe's not around.

AFLC Safety Tips

cause and effect

A tiny airliner crew from another command brought their T-39 in after one engine quit and refused to restart. Maintenance troops checked it over and found a broken tube assembly between the fuel control and the pressurizing and dump valve. They replaced the tube. The bird flew about 20 hours before it came back with the new tube broken. Maintenance again replaced the tube using three support brackets instead of two. About then, someone from the AMA advised that the tube wouldn't break that quickly unless the engine had a broken rotor blade . . . that this had happened before and the vibration fatigued the tube.

They changed the engine; however, the report didn't say what they found when they tore down the engine.

uncertain gear

The gear didn't retract when a TAC F-4C pilot raised the handle. All he got was a red light. He put the handle back down and tried again. The gear started up then went back down. It continued to cycle from part up to full down until he put the gear handle into the emergency down position. Then, it went full down. He landed without further problem. The emergency air selector valve lever was holding the valve part way open, causing air pressure to act on the hydraulic fluid and induce the cycling.

Mechanics milled the levers as per TO 1F-4C-2-6, figure 4-22, to permit free travel and this corrected the problem.



power without power

A master sergeant had difficulty starting his rotary mower. After setting the switch to "crank" and winding it up, he hit the starter button but the mower failed to turn over. He disengaged the spark plug wire and turned the machine over on its side and tugged on the blade . . . the starter decided to work, and the blade spun around mangling two fingers.

technique

Trouble getting the parking brakes on your auto to hold? Try holding the foot brake the next time you set the parking brakes. This insures firmer brake contact, particularly on some of the newer cars.

amateur hour

While preflighting one of the newer birds, an aircrew from another command noticed molten metal on the outside of the afterburner eyelid and boat-tail liner on the port engine. They hadn't noticed any overheat warnings on the previous two flights . . . or any other indications of trouble for that matter.

With the aft section removed, maintenance troops

found 17 inches burned off the engine support track and extreme heat damage to engine blankets and the firewall of the boat tail. The fire detection system sensing element had molten metal clinging to it.

A loose - UNSAFETIED - B nut fastening the fuel line to the pilot spray bar explained the source of fuel for the fire. The bird was equipped with an improved detection system, but someone didn't follow the TO when they installed it. With this kind of maintenance, who needs any enemies?

undertorque

An F-105 pilot from another command noticed the P-1 flight control system pressure fluctuate between 500 and 2850 psi while he was in the GCA pattern. He declared an emergency and wasted no time getting the bird on the ground. The jam-nut that secures the P-1 pressure line to the rudder servo actuator was loose. Hydraulic fluid had spurted into the aft section and drained thru the fuselage former into the compartment housing the rudder actuator, where about two and a half inches puddled. The drain hole was plugged.

After the aircraft was towed to the parking ramp, investigators found another leak at coupling P/N NAS 424-6D. Again, the jam-nut was loose and could be backed off by hand.

The O-ring seals had a like-new appearance, and this was the bird's first flight since its arrival from the depot.

flutter bird

A U-3 pilot brought his blue canoe back for an emergency landing after it started vibrating right after takeoff. Seems the battery box access panel came loose at the forward edge, bent out into the slip stream and disrupted airflow across the left stabilizer. Apparently one or both front dzus fasteners were only half hooked on the engaging wires. At least one locking lug was bent out of alignment.

A half hooked dzus looks properly fastened and normal panel thumping won't cause it to come loose; however, repeated thumping that flexes the panel will cause it to pop out. But, don't dent up the panel by thumping too hard.

fresh paint

The pilot chute was stuck to the paint on the inside of the drag chute door...someone painted the drag chute compartment with a lacquer that gets tacky when heated. Stick with the specified paint and don't get stuck with a paint removing chore.

cut and try

0800 hours...number four engine refused to restart after they shut it down as part of a transition mission. Maintenance cleaned the ignitor plugs and the engine checked out OK. 2030 hours...same bird, same engine again refused to restart after a practice inflight shutdown. This time mechanics changed the propeller valve housing which apparently cured the malfunction...at least it didn't show on subsequent reports.

keep them clean

While climbing thru 15,000 at full military, an F-100 test pilot saw the fire warning light flicker. He pulled power back to 80 per cent and after flickering a couple of minutes the light came on steady. There were no other indications of trouble, so he brought the bird back for a precautionary landing. A short piece of safety wire was lodged across the cap on one fire detector. This shorted the leads and caused the false warning.

dirty work

... Investigation revealed metal shavings in the stick well area caused a short which resulted in runaway trim. The shavings had not been cleaned out after a rewiring job during the last periodic.

frozen stiff

After flying ten minutes at FL 450 in altitude hold, an F-4 pilot switched to mach hold and reduced power to descend to 370. Descending thru 430 he disengaged the automatic flight control system and immediately noticed the control stick was extremely stiff in pitch, requiring about 40 pounds to move it fore and aft. He tried trim and was able to get the pitch attitude he wanted. The bird started oscillating when he disengaged stab aug, so he re-engaged it.

Stick forces started to lighten passing FL 230 and were completely normal at 15,000 feet, so he had no difficulty getting the machine on the ground.

Maintenance experts inspected and tested the control and artificial feel systems. They found a small grease spot on the bellows shaft and a slight leak around the viscous damper shaft. The viscous damper was slightly oversize...but even complete seizure will not produce stick forces this high.

After cooling the stabilizer control valve assembly with carbon dioxide, they found stick forces appreciably higher than normal and suspect that this valve was binding.



FOUL PLAY

"Ah sir, he's not fouling. You know it takes a couple of seconds for the sound of his guns to reach us, and the bullets hitting target make the same kind of noise and, well, you tend to confuse the . . ." His voice trailed off as he realized I wasn't buying his yarn.

"When do you think I was born? The speed of light is somewhat faster than the speed of sound and the smoke from that man's guns is a positive indication of when he's firing. On that last pass I could see smoke half way between the foul line and the target. You are not doing him a favor when you refuse to call a foul. At best he's going to pick up ricochet damage, and at worst he's going to spread himself all over the range."

Earlier, I'd talked to the unit commander about his operation and he'd been telling about all the safeguards they had in effect. One was a well qualified range safety officer who critiqued each pass on a special form. I couldn't help wonder what the commander would

have said had he been with me the past few hours.

In addition to the hard pressing flight leader I had watched another member of the flight plow furrows short of the target as he made flat pass after flat pass. When he left the range I glanced at the special log. It was blank except for time on the range and time off. This pilot is probably still wondering why he can't get any hits.

I watched another pilot overshoot his turn to final on each of his rocket passes. He'd end up angled toward the range tower. Very uncomfortable to everyone in the tower, yet no one called him on the radio and the range officer didn't make any comments in his log.

To me, this episode is indicative and typical . . . a commander and his staff establish what they consider an excellent operating procedure with built in safeguards and a feed-back system to highlight errors and provide the information that will help their people correct these errors. They turn it over to the operating people and, too often, sit back thinking that they've done their part and that the operation will go smoothly as planned.

Unfortunately this is not always the case. Perhaps the commander fails to abide by his own directives or doesn't insist on his key staff officers following them . . . or perhaps portions of the plan are impractical and his men start to compromise and end up gradually drifting away from all parts.

There is only one answer. A commander must set the example for his men, he must demand that his staff set a similar example and both he and his staff must constantly follow up to insure that all procedures are practical and followed.



The flight leader was really pressing . . . after watching him foul two straight passes, I turned to the range safety officer: "Aren't you going to call him for fouling?"

During the last ten months of 1964, TAC units reported 169 attitude indicator failures in the F-100. That's a bunch! It is even more alarming when you consider that 150 of these failures gave no OFF flag warning. The only warning the pilot had was the indicator's erroneous movement. Some indicators were erratic, jumpy, rotating, sticking or frozen, but

ation would be to find a VFR base and land. If that wasn't possible you would locate a friendly wing tip light to stare at through the murk. After all, wing approaches and landings are a common occurrence. Maybe as a last resort you would even consider an IFR approach without an artificial horizon, depending on the weather, the turbulence, the bird, and your partial panel proficiency.

during roll-in and roll-out. Once a turn of less than 30 degrees is established and there isn't any rolling movement, the turn needle can be used to maintain a fairly even rate of turn. In spite of its limitations, when you combine the turn-and-slip indicator with a clock, you can perform accurate timed turns.

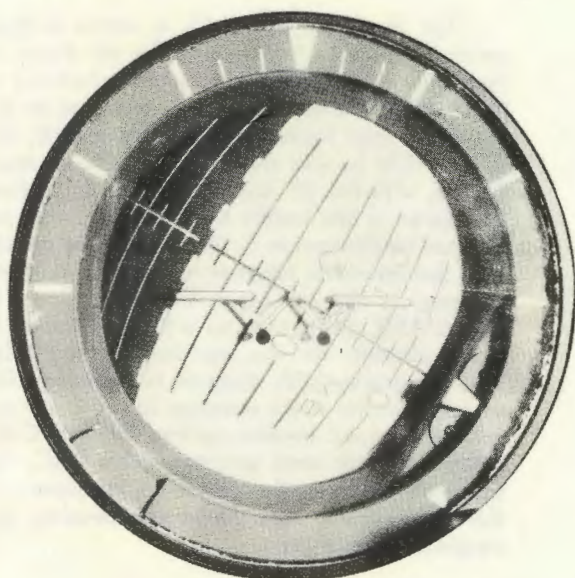
Even if you never have to use partial panel to make an approach, there is still much to be gained from practicing it. Recovery from an unusual attitude isn't very likely on the needle, ball, and airspeed; however, you may be able to detect a no-warning attitude indicator failure before it becomes an unusual attitude. Other side effects of practicing partial panel are a faster cross check and a little more confidence in your instrument flying.

There are other instruments, such as the LAB's indicator in the F-100, that can be used to supplement your partial panel instruments. The LAB's vertical needle in most D/F models will accurately indicate up to about eight degrees of bank. It can be of great assistance during a straight-in approach or on GCA final where your main concern is maintaining straight and level with minor corrections.

It will pay you to look over what's available in your cockpit when the artificial horizon is inoperative. This and a little partial panel practice may save a lot of thrashing around if you get caught IFR or above an overcast. Fifteen minutes under the hood with the attitude indicator covered by a piece of cardboard will give your cross check a real workout. Considering the number of artificial horizon failures this year, it will be a quarter of an hour well spent.



YOUR ATTITUDE ??



many failures were just plain hard to spot precession. The standby indicator and each system modification have helped reduce this problem, even though the newer attitude indicators with the bank indicator and indices on the bottom may take a little getting used to. However, it seems that regardless of how sophisticated the artificial horizon, some occasionally fail ... and then, nothing but your skill and ingenuity will get you back on the runway.

A sound approach to this situ-

Partial panel instrument flying seems almost too antiquated for today's high speed aircraft. But actually it can be very useful as both an exercise and a means of aircraft control. The altimeter, vertical velocity, and airspeed will give you good climb and dive indications if you take their errors and lags into account. Getting around corners without an attitude indicator presents a more ticklish problem. You have undoubtedly noticed that the turn needle in most jet aircraft is next to useless



SEG NEWS

4450th Standardization Evaluation Gp.

SEG News Know your STDN Evaluators

Know your Stdn Evaluators



TSGT ROGER M. BJORND AHL
C-119 LOADMASTER FLIGHT EXAMINER

TSGT Roger M. Bjorndahl, a native of Montevideo, Minnesota, enlisted in the Air Force in September 1952. Following basic training at Parks AFB, California, he was assigned to the 1st Aerial Port Squadron at Donaldson AFB, SC. In May 1954 he was transferred to Chateauroux, France, with the 4th Aerial Port Squadron where he worked in the freight terminal and as an instructor loadmaster in C-119 aircraft. In August 1956 Sgt Bjorndahl returned to the U. S. and was assigned to the 2nd Aerial Port Squadron at Sewart AFB, Tennessee, as a flight examiner in C-130 aircraft. He was assigned to the 4450th SEG at Langley AFB, Virginia, in December 1961 as a loadmaster flight examiner in the C-119 aircraft and helped develop and implement the C-119 loadmaster stdn/eval program within TAC. Sgt Bjorndahl and his wife, Ethel, are the parents of three children, sons David and Douglas, and daughter Melanie Jane,

THE OCTOPUS AND THE BANANA

Ditching most aircraft in open water is a pretty touchy situation even under ideal conditions. In the case of the C-119, a successful ditching is even more doubtful, due to the aircraft's high wing and rather weak cargo compartment. Therefore, if you find yourself overwater in a C-119 that refuses to fly, you should plan to have everyone parachute out of the aircraft instead of trying to ditch. Altho each individual will have a personal life raft, survival chances are increased if a multiple man raft is available. This is why the C-119 flight handbook requires you

to carry at least one twenty-man life raft for every 20 passengers.

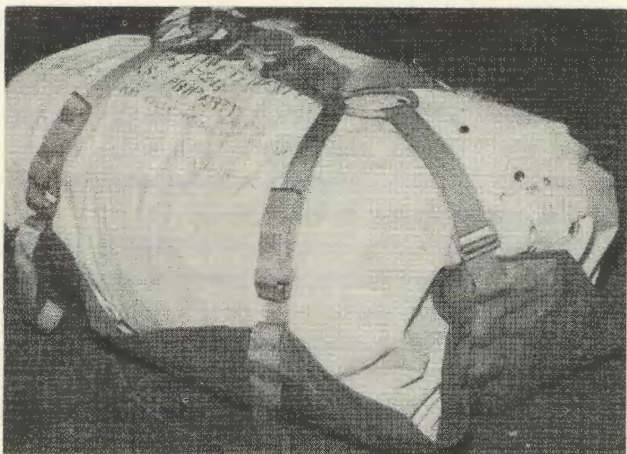
Since ditching is so risky, this brings up a problem. How are you going to get the raft into the water? The flight manual says to strap a personnel parachute onto the raft and drop it in to the people who have already jumped. But, it doesn't tell how to secure the parachute to the raft. Most crews plan to use a tiedown strap. Have you tried it? After many turns of the strap, grunts, knots, and much struggling, you probably ended up with something that resembled a medium size octopus wrestling an over-

size banana.

Like most of us, you then hooked the octopus-banana contestants to the aircraft with a sort of static line and dumped them in the darker recesses of the cargo compartment to continue their struggle.

Should ringing bells and much shouted instructions announce an emergency bailout, you'd open the doors, march everyone out into heaven knows what and then rudely thrust the combatants after them. Once in the water among the floundering passengers (an accomplishment in itself), the combat takes on a different light. All of a sudden the banana is everyone's hero and is receiving help from all sides. But the octopus is in his element; the water has renewed his strength (the knots have become swollen) and he clutches the banana with ever increasing tenacity. After a while the help subsides due to numb fingers, frustration, and fatigue - the octopus has won and help sinks out of sight.

Have heart, dear reader, for the side of right may yet triumph. The 302d Troop Carrier Wing at Clinton County AFB in Ohio, has come up with a suggestion to stack the cards against the poor unsuspecting octopus and provide the needed banana. Instead of cargo straps, they use the inner carrying sling of an A-21 container, along with its tiedown straps and a quick release. When the raft is configured as we show



in the photo, it is much easier for downed personnel to release the raft and put it to use. The 302d suggests G-1, G-1A or MA-1 parachutes with this lashup. Another plus is that the rafts can be rigged by PE and issued ready to go. All in all, this looks like a good, simple system and a definite improvement over the catch as catch can system of the past. Although you may never have to use the twenty-man life raft, it would be nice to have a better than even chance to get it opened if the time ever does come.

TAC ATTACK

PHANTOM REFUELING

The F-4C will introduce many of you drogue probers to boom refueling. You may have heard that all you have to do is fly into the general vicinity of the boom with your receptacle open and wait for Speedy to hit you and start transferring fuel. Unfortunately, it's not QUITE that easy.

With the Phantom's air intercept radar, rendezvous is a piece of cake, even in the soup; however, don't concentrate on the TV tube to the exclusion of your other aids. Cross check with ground radar, UHF/ADF, inertial navigation and TACAN. Mistakes can be embarrassing and besides you won't get much fuel from the night coach to Miami.

Once you're joined with the tanker and are cleared to refuel, it's up to you to impress the boom operator with your precision formation flying. When you're in the proper position for contact, the key word is "stabilize." Crew coordination is particularly important here. The pilot in the back seat can help you obtain the proper position. When the wings on the boom are directly above his head the aircraft should be in proper fore and aft position. At any rate, follow the boomer's directions and stabilize when he gives you the word.

After hook-up, your buddy in the back seat has other duties besides applauding your superior airmanship. He should watch the colors on the boom to alert you for forward and aft movements. This will allow you to anticipate small power changes. Another word of advice, fly the pilot director lights even in the noonday sun. The practice will pay off when you're out over the Pacific at midnight. They're your ONLY good reference for position when it's black.

Unlike some other aircraft, the F-4C has no slipway to help the boomer slide his boom into the receptacle. This makes his job more difficult, but there are some plus factors for the F-4C. These are its tremendous power range and response, and its ability to fly well at any tanker airspeed. A professional fighter pilot should be able to hold the F-4C in proper position under almost any refueling condition. How are YOU doing?

FUEL RESERVES

TAC Supplements to AFM 51-40, Vol III, air navigation, clearly define MINIMUM FUEL RESERVES for conventional and turbo prop aircraft. Basically, the minimum reserve is divided into the enroute reserve and the terminal reserve.

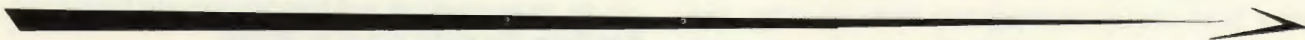
The enroute reserve has two subdivisions. One for unforeseen conditions such as an adverse wind

factor, unforecast icing conditions or (remote possibility as it may be) navigation errors. This consists of ten per cent of the estimated time enroute from departure to destination or alternate. Fuel should be computed at cruising altitude and airspeed and the reserve will not be less than thirty minutes, nor more than one hour.

The second subdivision of the enroute reserve is for foreseen conditions such as a period of forecast icing conditions which will require additional power, and fuel for heaters and such. This fuel is con-

sidered as miscellaneous fuel and should be computed as required.

The terminal fuel reserve also has two subdivisions. One for holding when using the alternate airfield waiver in TAC Supplement 1 to AFR 60-16. This holding time will be a minimum of one hour computed at cruising altitude and air speed. The other subdivision is the 30 minutes reserve for approach and landing using the same criteria. Holding fuel requirements will also be considered when the destination is in a congested area. ➤



RECOGNIZE

RESOLVE

REACT

Recognize Resolve React

It was a good formation takeoff...until they reached 700 feet above the ground and number two dropped back reporting, "I've flamed out."

"Try an airstart!" was the response. Eleven seconds went by before Two replied he had. About 32 seconds later Lead said Two jettisoned the canopy in a nose low attitude. Ten seconds later: Impact.

This is an unpleasant example of a situation that needs accurate and rapid action. Each emergency requires three common steps. The first being to recognize that an emergency exists. For the most part, it doesn't take very long to complete this phase. Most of us are primed to recognize malfunctions... a sudden glow from peek-and-panic warning lights, a flicker of the instruments, a change in the steady

hum of the engine, and strange odors are instant clues.

The second step, resolving the emergency, is the phase that uses valuable time. Unlike the first and the last steps, it requires formulating a plan and is not mechanical. The last step, the reaction phase, is really nothing more than applying selected procedures. The bold face steps should be rote once we have resolved which ones to use. Thus, the time between recognition and reaction is where we must consider the variables. Altho this resolving process is time consuming, it remains our distinct advantage over a black box.

An emergency at low altitude, regardless of the type, leaves little time to grope for ideas. Takeoff and landing airspeeds further reduce the time available to apply the gray matter. During low level navigation and weapons delivery, airspeed can be exchanged for altitude; however, a little backpressure will not always result in extra time.

One way we can produce extra time is to have part of the resolving completed before the emergency happens. This can be done almost anytime and any place by mentally reviewing critical areas of flight. For example, while number one, or just before rolling, consider what are your go, no-go conditions... your minimum airspeed or altitude for an airstart, ejection or abort. These factors sound basic, but if they are well established in your mind before the situation gets terse, the resolution time will be reduced. This leaves you more time to react or accomplish corrective action. Perhaps a well established plan before takeoff would have made the opening narrative read... number two ejected shortly after takeoff. When he was picked up by the chopper he said the bird flamed out and would not airstart. ➤

PILOT OF DISTINCTION



Major Thomas E. Newton of the 50th Troop Carrier Squadron, Sewart Air Force Base, Tennessee, has been selected as a Tactical Air Command Pilot of Distinction.

During an approach for landing Major Newton lowered his C-130's landing gear. The two mains indicated down and locked; however, the nose gear hung in an intermediate position. He immediately executed the published emergency procedures without success. Then, Major Newton turned his aircraft toward home base where maintenance and technical assistance were available. Enroute, he directed a hole be chopped through the bulkhead so the nose gear actuating cylinder bleed plug could be loosened one and a half turns. This allowed the gear to move slowly to the down position. Major Newton then applied positive G and the nose gear indicated safe. The nose gear was then chained down and Major Newton accomplished a successful landing.

Major Newton's thorough knowledge of his aircraft and its system, combined with his professional handling of an unprecedented emergency, qualifies him as a Tactical Air Command Pilot of Distinction.



BLUE GHOST

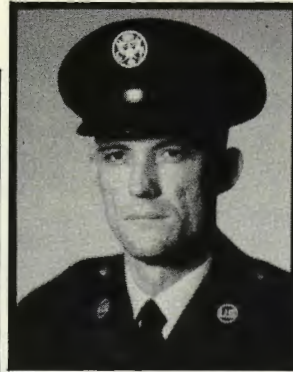
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Winners of the first Blue Ghost competition are Captain David L. Hrdlicka, Captain Albert L. Logan, Captain Ken C. Schow (Team Chief), Captain Robert Reed, and Captain James M. Rhodes, Jr., of the 23d Tactical Fighter Wing, McConnell AFB, Kansas.

Blue Ghost I was held at Nellis Air Force Base, Nevada, where teams from three F-105 wings competed in radar navigation and weapons delivery.

MAINTENANCE MAN of the MONTH

Master Sergeant William H. Decker of the 4514th Armament and Electronics Maintenance Squadron, Luke Air Force Base, Arizona, has been selected as a Tactical Air Command Maintenance Man of the Month.



CREW CHIEF of the MONTH



Staff Sergeant James J. Davis of the 4528th Organizational Maintenance Squadron, Nellis Air Force Base, Nevada, has been selected as a Tactical Air Command Crew Chief of the Month.

TAC TALLY

A COMPARISON OF TACTICAL AIR COMMAND ORGANIZATIONS

FEB TALLY

UNIT	MAJOR	MINOR
4520CCTW	1	
474TFW	1	
354TFW	1	
355TFW	1	
479TFW	1	
3TFW		1
102TFW	1	
140TFW		1
127TFW	1	

ACCIDENT FREE

MAJOR & MINOR

JET

ACTIVE	MONTHS		ANG
12TFW	21	18	123TRW
363TRW	9	15	117TRW

CONVENTIONAL

ACTIVE			RESERVE
4500ABW	44	99	434TCW
4442CCTG	27	60	435TCW

MAJOR ACDNT RATE

TYPE	1965*	1964
ALL	15.7	10.5
F-4	0	4.9
F-105	8.7	26.7
F-104	18.9	12.1
F-101	0	20.1
F-100	10.4	18.8
F-86	122.0	0
F-84	0	21.6
B-66	0	0
B-26	0	76.0
T-39	0	0
T-33	0	0
T-29	0	0
C-130	0	1.2
C-123	0	8.6
C-119	0	1.9
A-1E	57.0	10.7
U-10	0	28.6
T-28	0	0

*1 - 28 FEB 1965

We started off the new year with one of the best January rates on record. Then, after over thirty straight accident-free days, the bottom fell out and we finished February with seven majors and two minors.

The brakes failed on an RF-84F and it ran into the aft section of the lead aircraft as the pilots slowed to hold in the number one position. Judging from the wreckage, the pilot of an F-86H tried an unsuccessful airstart after an engine flameout during night weather GCA. The aircraft crashed three and one half miles from the runway on centerline. An F-86F pilot, enroute to a gunnery range, ejected when his engine flamed out, the controls froze, and pieces were observed coming from the aircraft tailpipe.

As a flight of two F-100s approached a low level nav target, the wingman was seen to pull up, nose over and crash in a nose low left turn. Another F-100 pilot ejected on takeoff when throttle movement, emergency fuel, and airstarts attempts didn't correct a power loss to 70 per cent.

An F-100 received minor structural damage when it hit guy wires from an electric power line tower during low level navigation mission. Two other F-100s received minor damage when the lead aircraft's brake and nose wheel steering systems failed during a formation landing.

An F-104 pilot successfully ejected after two airstart attempts failed to correct a loss of power that followed an explosion during recovery from a dive bomb run.

An F-105 on a practice penetration flew into an H-21, killing all three crewmembers of the H-21. The F-105 pilot ejected successfully.

