TAC ATTACK





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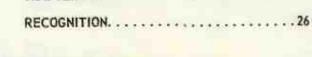
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COVER PHOTO:

Armarers charge guns on Colorado Air Guard F-100s during Puerto Rican training deployment.

Articles, accident briefs and associated material published in this magazine are non-directive in nature. All suggestions and recommendations are intended as helpful and remain within the scope of existing directives. Information used to brief accidents is extracted from USAF Form 711 and may not be construed as incriminating under article 31 of the Uniform Code of Military Justice. All names, dates and places used in accident stories are licitious. Air Force units are encouraged to republish the material contained happing however, contents are not for public release. Written permission must be obtained from Hc TAC before material can be republish then Department of Defense organizations. Contributions are most vestioned as are comments and criticism. We reserve the rimake any editorial changes in manuscripts which we believe will improve the material without altering the intended meaning. Direc respondence with the Editor is authorized.



General Pritchard on SAFETY



This is quite true and although our mission, on occasion, bears a similarity to that of general purpose forces, here is where the broad likeness ends. Our aircraft, ten different types, span an era of two decades. SAWC munitions, employed from external stations to bomb-bay, from podded 7.62 mini-guns to wing mounted 20mm cannons, and from target marking smoke grenades through three million candle power flares, are indeed a variety not duplicated in any standard Air Force unit.

Mix these unique ingredients with austere deployments to isolated areas without the luxury of our normal ZI maintenance and operational management systems, an obligatory need for cross-trained individuals, and the challenge for effective performance is crystal clear. Add to this mixture the fact that the image of the USAF and in fact the United States is reflected on a global basis by the professionalism, or lack thereof, of these troops and the need for successfully meeting the challenge is dramatically obvious.

The TAC Stan/Eval Program is our prime tool. There is no such thing as a privately developed procedure for "so called" faster, easier, more effective accomplishment of maintenance or operational tasks. Standardization of detailed job performance undertakings, regardless of aircrew duty or work center functions, is essential. A "by the numbers" procedure permits maximum cross training of our own people and assures earliest effective efforts of indigenous counterparts. Finally, such a program provides the responsible individual positive direction to cope with the challenge of the unique situation, which, within the special warfare environment, really is the normal.

To keep the system dynamic, it must be supported by every participant. Identification of a better methodology or tactic must be spelled out, properly tested and evaluated and then adopted or rejected for all. We plain can't afford the prima donna. To make the system work, it must be supported by actions as well as words from the top.

So, although our broad likeness to other TAC units is limited, the special likeness is mirrored in our corporate concern with such things as accidents, operational readiness rates, aborts and the like. A dynamic standardization system, with across the board support and participation, is the key to our common prime objective of the highest degree of mission effectiveness and combat capability.

General Gilbert L. Pritchard is a native of Redfield, South Dakota, who was raised in Beverly Hills, California. After graduating from high school, he served a three year hitch in the Army, then went to college. Next he entered the aviation cadet program graduating in November 1940. After spending two years as a flight instructor at Randolph, he entered multi-engine training andwas soon assigned to the 97th Bomb Group in North Africa. In July 1944, General Pritchard served as A-3 with the 5th Bomb Wing. He attended the Command and General Staff School in late 1944 and early 1945, then was assigned to the 52d Fighter Group in Italy. When the war ended in Europe, he transferred to the Pacific. Following the war, he was assigned to Headquarters ATC, attended Armed Forces Staff College, and served in the Pentagon as Chief, Flying Training Division under the Director of Training.

In June 1953, he went to Korea as commander of the 49th Fighter Bomber Group. He captained the Group's gunnery team when it placed second in the Air Force Gunnery meet in 1954.

He attended the National War College in 1956 and then commanded the Air Command and Staff School until 1959, when he went 'celand as Commander of the Iceland Defense Force. From there General Pritchard was assigned as Commander of the New York r Defense Sector, then to his present position as commander of the USAF Special Air Warfare Center.

His decorations include the Silver Star, Legion of Merit, DFC with two clusters, and Air Medal with 12 clusters.

angle of ATTACK

You are combat ready only if you can perform your missement without unnecessary destruction of your combat potential.

- USNASC



Colonel Jack W. Hayes Chief of Safety

Recently I read an article by Gen. A. R. Kier in the Aircraft Fleet Marine Force Pacific Bulletin which accurately sums up my feeling on safety. Like General Kier, I firmly believe that in times of crisis a tactical unit must rapidly transition from readiness to commitment. That we must respond to challenge and at the same time must occasionally step back from the activity and excitement to reappraise our needs, both individual and collective. Altho we must evaluate our requirements, in terms of men and material, we must also evaluate them in terms of attitudes and concepts when we gear for combat . . . materially, mentally, and spiritually. In the process, everything we change, add or discard must actually contribute to the transition from a training situation.

There are two concepts of safety which will cost their holders dearly in time of war... one is to avoid the extremes of performance, and be so cautious in our flying operation that neither man nor machine is ever asl for maximum output. In this concept, people avoid maximum maneuvers a precise minimums; they surround themselves with a margin of comfort which they are pleased to call "safety." They are brought abruptly face-to-face with their own naked unpreparedness when committed to combat, stripped of that margin of comfort.

There are others who pay lip service to a paper program. They miss the entire intent of instructions while complying with the letter of each directive. A safety program to them is a restraining harness, slowing the pace of training, dulling the fine hone of readiness, and demanding laborious accounting of mishaps. These people take contingency orders as a license to jettison their safety program like empty drop tanks at the start of a fight. In a combat situation they will pay a heavy price for their belief that training requirements, responsibility for maintaining readiness, and reporting accountability are only to be observed in peace time.

Commanders must continually remind themselves that the basic purpose behind their aircraft accident prevention program is to educate and conserve for efficiency; to employ the best techniques and procedures with a minimum loss of men and material. There is a critical need in combat to minimize losses by using techniques that exploit the maximum usefulness of both man and machine. Flying Safety is neither a refuge for the timid or a stockade for the aggressive. Our goals in TAC must be excellence in readiness and victory in combat. To achieve these goals, it is clear that the requirement for efficiency becomes greater every day.

This is Col Hayes final Angle of Attack...shortly after this issue goes to press he will move up the TAC staff ladder to take over as Information Officer. Altho this is a promotion, the staff genuinely hates to see Col Hayes leave the safety shop We will miss his firm guidance, varied practical experience and sound common sense approach to safety. Best of everything to you and your new job, sir.

ROCKY ROAD

 By Major Raymond L. Krasovich Hq TAC Office of Safety

s the number of F-4Cs grow in the TAC inventory, we've started hearing some dirty words, like stall, buffet, spin, and even post stall gyration. Mere mention of these words in some quarters is enough to cause a flight commander to wash out Green 16's mouth with soap, ops officers to ull what little hair they have left, uadron commanders to rant. rave and threaten, and wing commanders to pound desks and breathe fire and brimstone. This must seem like an unholy commotion for such seemingly innocent words but the record shows that several TAC pilots have been thru the mill of happenings associated with these words.

"Well now," you may ask, "what kind of a critter is this Phantom II that treats us pilots with so much disrespect?"

One answer could be, that all which glitters is not gold. With all its sparkling performance, the Phantom II has some dull areas. Another answer could be that the relatively slow pattern speeds of the F-4, when compared to other century series birds, tend to make pilots complacent and forget that this slow flying airplane can get to a stalled condition at seem-gly high airspeeds.

Let's take a fer instance. You are flying target for old Joe. He is making 90 degree beam intercepts and converting them to sidewinder attacks. Old Joe's been doing pretty good so on this pass you decide to louse up his conversion by taking some mild, "briefed," evasive turns. You have been tooling around at 20 to 22 grand keeping out of FAA's private domain and holding about 275 to 300 knots in order to get the required two hours on the bird, make maintennance look good, and fill all kinds of intercept squares to keep the ops officer smiling. Up to now everyone is happy.

You just made a fuel check. Your drops are dry and about 11,000 pounds show on the gage when you spot old Joe coming in at about eight o'clock. As he swings around toward seven you begin a pretty brisk turn to the left. You push the power to mil and try to

reef it around. The bird begins to buffet, but this is normal, and the airplane has a fairly wide buffet boundary anyway. No sweat ... in fact some pilots don't even notice it. Boy you got him on that! He overshot. Now to reverse, pull her around to the right, buffet's a little worse, but still no sweat. Getting tired holding all that back pressure so a few unconscious flicks of back trim ease the load. Got him to overshoot again, another reverse, more trim, starting to get

a little wing rock ... check airspeed ... 200 knots. You decide to fix him and throw down the flaps. That smoothed the oldbirdout ... keep her coming ... can't give up now. What's this? More buffeting, wing rock, now she wants to roll to the right! Airspeed 180, still rolling to the right. What's the matter? This airplane can't stall at this speed! You fly the traffic pattern at 150! You are now entering a nose low right spiral ... but no sweat, airspeed's building. There's still a little buffet and tendency toward wing rock. You release a little back pressure ... check Joe ... boy, is he in the saddle now! Can't have that! More back pressure on the pole ... the bird keeps going down. Buffet and wing rock are still there but you don't notice them now. What's wrong with this airplane ... why won't it respond?

How did you get into this situation?

More important, how do you get out in one piece? This is the big question, the one that separates the men from the boys and insures a smooth career progression to a happy retirement.

Let's analyze this predicament and see what leads a pilot down this rocky road. You started with about 11,000 pounds of fuel and empty drops. This places the airplane CG aft, reducing the weak longitudinal static stability and increasing stabilizer effectiveness.

What does all this mean to a fighter pilot? Simply this ... relatively small longitudinal stick inputs produce large pitch rates. In extreme cases this can even require opposite control to stop this pitching movement. This condition is especially noticeable during a hard turn or on dive bomb and rocket recoveries with near full internal fuel which means an aft

CG. The airplane exhibits a definite tendency to dig in or over G at the start of your pullout. Of course the pitch rate generated is proportional to the control input rate so it follows that slow, smooth pullouts or turn entries will eliminate this particular situation. This is normally true, but there are times when you want and need rapid response and therefore should be able to use it without getting into trouble. The big thing is to be aware of this characteristic and realize that it is controllable. If you are ready for it, you won't get into trouble.

pitch attitude (angle of attack) the had been established. The airplan would eventually fly itself out on this condition if you just left it alone but this would obviously take more time and altitude than you have. What is needed is a positive stabilizer deflection to generate an aerodynamic force to decrease the angle of attack quickly so that you can fly her out.

A brief discussion of subsonic accelerated stall characteristics will complete the picture. The stall is characterized by light to moderate buffet, accompanied by wing rock (lateral instability) in-



Now let's talk about the longitudinal trim. You were stooging around at 275 to 300 knots ... a fairly low airspeed for F-4 operators. We can assume that you had the airplane reasonably well trimmed at the start of the action, which means some back trim was in. OK ... during sustained turns it's only natural to trim out some of the stick pressure. This means more back trim. When it came time to recover the beast, what did you do? You released the back pressure you were holding. This allowed the stick and stabilator to move to the trimmed position! Now this means that the aircraft was trimmed for some airspeed between 275 and 180 knots - probably around 200 knots. The stabilizer movement was in the right direction but at this low airspeed was not enough to overcome the creasing in magnitude and frequency, coupled with yaw and usually rolling to the right as the stall is approached. High pitch rates will increase the magnitude of the buffet, wing roll and yaw. Stall speed will vary with entry conditions and gross weight, but the stall will occur at a constant angle of attack. The recommended dash one stall recovery procedure is to neutralize aileron and rudder and position the stick forward of neutral (neutral being a position mid way between the full forward and full aft limits). Forward of neutral is the key to success in this case. This control position insures a decrease in angle of attack which is the way to get back into the flying business.

Now let's look at the wholbucket of worms. You are still in the nose low right spiral trying to

recover. So far you haven't given airplane a chance because you ave done nothing to decrease the angle of attack and break the stall. It's conceivable that if you continue to pull back on the stick you will fly into the ground without bettering your condition. So what's the answer? Ease the stick forward of neutral to decrease angle of attack until the wing is flying again, then ease into a recovery. Of course old Joe is still in the saddle and has you zapped good... but you're not walking home.

All the time this was going on the airplane was telling you that all was not right. You have to learn to listen and react to its warning.

Along this line much has been said about not needing to fly the airplane in this regime. Under certain stabilized conditions this is true, like doing exactly what is called for on your cardor mission briefing then heading right for home and an uneventful landing. But you are going to need to know the maximum performance capabilities of the Phantom in a hurry if some day the guy coming in at eight o'clock is not old Joe but some one who took his last stand check in a MIG-21!

Where do we go from here? We

get to know the characteristics and idiosyncrasies of the F-4 and learn to live with them and exploit them when it's to our advantage. We also learn to listen to its warnings and heed them - like buffet is not bad but it's a prelude to some unhappy situations; lateral instability is the next one and it means, "Watch it, Pops, from here on I get nasty;" yawing and roll mean you're right on the edge and when all of these are ignored. brother, you're in for a ride and possibly a walk that you won't forget.

So let's live and learn!

engine

Analyzer

One of the newest projects to improve engine liability is an airborne jet engine analyzer. The mplete system is known as the Aircraft Integrated Data System.

It looks like the thing to catch inflight problems that a pilot swears happened, but can't be reproduced on the ground. The main object of the current project is to determine if the analyzer will make it possible to forecast engine failures more accurately and at the same time, ease the maintenance workload. The end result will be more reliable engines.

Field testing of the engine analyzer was started last year when units were installed in two F-105s at Nellis AFB and two F-4Cs at Davis-Monthan AFB. Testers expect to record 1500 to 2000 flight hours on these four aircraft. An additional 40 engine analyzers are scheduled for field testing in F-105s and F-4Cs this fall. Tactical fighter aircraft were chosen for the test because engine performance requirements of fighter type aircraft are more demanding and result in reduced engine life.

The airborne components of the engine analyzer in TAC's aircraft weighs 57 pounds and are not accessible to the pilot. During engine build-up at the base engine shop, transducers are placed on the gine to sense any of 20 items... spool speed, if flow, engine temperature ratio, EGT, oil pressure, oil temperature, throttle movement, and oil



consumption are but a few of the things monitored. Info picked up by the transducers goes to a computer/display located in the bird where the maintenance crew can easily read it. The function of the computer/display varies with condition being monitored. It can measure parameters and immediately compare them to a fixed value. When a reference value is exceeded, a flag is triggered to tell the ground crew that a limit was exceeded.

If the maintenance crew is unable to immediately locate the problem, they can remove the tape from the airborne recorded and get a read-out from a ground computer. The read-out will tell them what limit was exceeded and when it was exceeded during the flight. This added to the other information from the tape will give a detailed picture of the engine's operation.



OUR OLD DAD just got soundly trounced in a couple of hard fast games of squash...young whippersnappers don't realize who dashes off their ERs. Really no sweat, I just took up the game a couple of months ago. To which someone is sure to snicker something about life beginning at forty. It does alright, ... it begins to take on new meaning.

A good friend can vouch for that. He was on a rather rough schedule, smoking heavy and on a hot dog, coke and coffee diet when he started getting pains in his chest that occasionally seemed to go into his left arm. Nothing real bad, just a nuisance. They occurred when he was active and quit when he stopped to drink a coke. He rationalized . . . and charged it off to heartburn.

He was flying one of our better little fighters in a demonstration for some 50,000 spectators. A half hour before takeoff he again noticed the pains . . . they extended into his left arm but subsided to a dull nagging ache once he strapped in.

Takeoff was normal and he joined with four other fighters, made a .9 pass across the field and pulled the bird into a max climb. At this point he was aware of severe chest pains. Altho the pain persisted he joined with the other aircraft and completed a second pass across the field before he broke out of formation and landed. He looked pretty pale, so a friend coaxed him into going to the hospital. An EKG indicated a severe anterior septal infraction . . . heart attack to you non-medical types.

I don't need to dwell on this one... the lesson is obvious ... particularly if you are getting on toward 40. Chest pains that relate to exercise or exertion should not be taken lightly...particularly when they radiate into your left arm. No amount of flight pay is worth the risk of flying with a potential heart attack.

was reading an incident report on a C-119 which limped home after one engine failed. This is not so unusual, but what bugged me was . . . the engine failure was ANTICIPATED!!! Engine oil analysis indicated it was failing, so the unit REMOVED THE BIRD FROM THE CROSS-COUNTRY SCHEDULE AND RESTRICTED IT TO THE LOCAL AREA!

The following is a highly censored version of my reaction . . . surely this unit is not so hard up for flying time they must use a sick engine until it fails. If they are, I predict they will enjoy a high accident rate. Decisions such as this are guaranteed to cres accident situations. All it takes is an additional failu or a miscalculation and this always seems to happen.

AN ARMAMENT TROOP, not from TAC, ended up in the hospital with shrapnel wounds in his shoulder and abdomen when a 20 mm round fired as he was arming a bird for a gunnery flight. Despite warnings from his buddies, he was not following the approved arming procedure for the particular gun.

His supervisor didn't know he was short-cutting the procedures, altho he'd been living dangerously for over ten months.

What I can't understand is how he could disregard safety rules for this length of time without his supervisor finding out about it. Sounds like the supervisor was sticking too close to paper work and his desk. Also, sounds like his buddies have some childish ideas about ratting on a buddy.

Leave us face it, when you handle explosives you have a right to expect your fellow workers to follow proper, safe handling procedures. If one of 'em insists on being careless, you take action to bring him in line even if it means grabbing him by the collar and hauling him in front of your boss. I admit that this particular character was the only one hurt and probably served him right . . . however, this usually isn't the case.

CLIMBING THRU 19,000 feet, a senior pilot with er 3000 hours of flying time noticed symptoms of nypoxia. He told the copilot about his problem, and continued to climb. He passed out at 25,000 feet. The copilot brought the bird down to 10,000 feet and the pilot regained consciousness. He had a sticking valve in his mask . . . caused by leaving his helmet and mask in the cockpit while the bird sat four days on the hot ramp. This, of course, is no way to treat an oxygen mask. No man in his right mind would continue to climb an aircraft when he knows he's having oxygen problems. I can understand why this pilot might. Hypoxia is an insidious enemy that spoils a fella's judgment, and this pilot undoubtedly was not in his right mind. But how about his ever lovin' copilot??

If these words seem harsh it is because I have very strong feelings on this subject... several acquaintances and one very good friend are no longer with us because they were most likely (how can you PROVE hypoxia in a fighter?) felled by this killer.

Actually, all of us should be disciplined on this subject to the point that we instinctively go 100 per cent, deliberately control our breathing, and start DOWN even tho we get slightly befuddled before alizing we have a problem.

AN F-105 PILOT noticed a slight vibration climbing thru flight level 180. The engine had checked out OK on runup and the vibration was slight, so he monitored engine instruments a bit closer and pressed on. A few minutes later a knocking vibration went thru the aircraft. It subsided after 15 or 20 seconds, but was strong enough the pilot decided to abort.

After heading for home he checked the variable air inlet switch and had his wingman look over the bird. Everything looked normal, but when he reduced power the vibration got worse. It smoothed at 94 per cent, so that's what he held. Fuel flow was fluctuating about 1000 pounds per hour.

He didn't want to risk playing around too much, so dropped his tanks in a nearby wooded area instead of the regular jettison area, and pulled up onto a right base leg at 3000 feet, about four miles out. Airspeed was about 350 knots. He slowed to 250 using speed brakes and descended to 2000 feet, lowered leading and trailing edge flaps ... all without throttle changes.

He overshot his turn onto final and dropped the gear while angling back onto centerline. He held about '0 knots until about a half mile out, then reopened eed brakes and was over the overrun at about 220 knots. This was faster than he wanted, so he reduced

power to idle and simultaneously started rotating to ease the rate of descent... no soap! The bird continued to drop even the he rotated to an abnormal pitch attitude. It hit hard, aft section first, about 216 feet from the approach end then slammed down onto the main and nose gears.

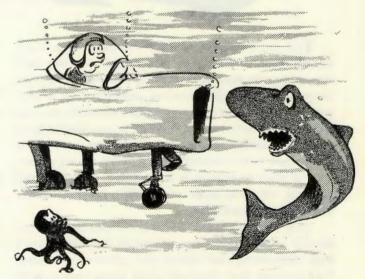
With gross weight at over 38,000 pounds the hard landing resulted in some 9000 man-hours of damage.

They haven't completed engine TDR at this writing, so I don't know what was coming unglued in the engine . . . but the board handed this one to the pilot because he didn't follow the recommended procedure for landing at heavy gross weight.

There are some other factors . . . high trees on a hill some 3/4 mile from the runway, overrun construction and terrain that slopped down toward the overrun all added up to a steeper than normal final approach . . . Also, the bird didn't have an angle of attack probe.

I doubt if this troop has made very many overweight approaches, so the combination of all these things fooled him. The steeper than normal approach that didn't look too steep because of the terrain, the bird that was heavy and needed more power to maintain speed and which decelerated much faster than expected.

You can file this episode in your think tank and resolve to be less aggressive about yanking off power during a heavyweight approach . . . or better yet, to get speed and descent rate stabilized earlier on final and hope the unit keeps delivering thrust.



ANOTHER BIRD was on the runway, and shortly after an F-86H pilot shoved the throttle forward to abandon his landing approach, his engine quit. He touched down on the last 3000 feet and promptly

ended up in the overrun. I say "in the overrun" because the overrun was 20 wet feet deep.

The bird promptly sank. The pilot tried to open the canopy electrically. No go. He pulled the emergency hand releases and it opened enough to let water rush in but not enough to let him out. He grabbed the canopy breaking tool with both hands and struck upward, breaking a large hole thru the thing. A second lusty blow enlarged the hole enough to let him get out. See, that thing does work, just like the safety people have been telling you!



THE CO-PILOT made the landing, which was a normal one, and shortly afterward, the big bird swerved most abruptly. Naturally, the right wing rose majestically and the machine seemed about to pirouette on its number one engine pod when the aircraft commander took control and got things headed back down the runway. It actually scraped the number one pod before he succeeded. The report blamed a sudden gust of wind coupled with a relatively inexperienced co-pilot who was slow recognizing the fact that a problem was developing.

They recommended aircrews be told to stay constantly on the alert for wind gusts that are greater than those being recorded on wind measuring devices. TAT seconds that comment about being constantly on the alert. It pays to stay ahead of the hardware. I'd guess that this pilot quit flying stick and rudder shortly after touchdown ... which is courting trouble whether you fly a U-6 or drive a multi-engined flying

dinosaur. After reading an account like this I wone why we ever phased out the T-6. Seems to me, I did nothing else, the T-6 taught pilots to stay alert and that the money we spent fixing T-6 wing tips, landing gear and props was akin to paying insurance premiums on our tactical birds.

THE BLUE CANOE pilot had trouble inserting the oil dip stick in the number two engine so the crew chief installed it for him, being very careful to lock it under the phenolic block. The pilot checked it and was soon on his way. A couple of hours later, the U-3 crew was cruising their little bird at 10,000 feet when number two oil pressure dropped to zero, the engine began vibrating and the prop surged. They shut down the engine and feathered the prop.

Unable to hold altitude, they started a gradual descent, advised center of their problem and requested terrain elevation along their route of flight. Center informed them it went up to 7900 feet. By this time, they were at 8000 feet and still descending. Gulp!

They asked for the nearest emergency strip and were advised of an abandoned airfield that was usable but unlighted. The center said they would have the state police light it with their patrol cars and scribed the runway and overruns.

After some delay...the place was fenced off and the police had to break in...they managed to make a successful emergency landing into the lights of a patrol car. It didn't take long to find out what happened. The oil dip stick had come unlocked, and oil was last overboard.

A well handled emergency by all concerned. As a result, the U-3 oil dip stick has been declared a serious flight safety hazard and I guess it will eventually be fixed. The unit that owns the bird said they had dip sticks come out six or seven times before but SUSPECTED IMPROPER TECHNIQUE IN LOCKING THE DIP STICK. At this point, I'd like to hammer home a thought. Six or seven of these incidents in one unit is positive proof that this thing was poorly designed - regardless of whether it was installation technique or the cap itself!! When this many people have trouble with an item, something is wrong with the item itself and the only effective cure is to get busy and fix it. In fact, if this pilot hadn't made a special effort to get a mechanic to check this specific cap, the unit would probably rationalize that he hadn't checked it properly and would continue live with the problem. Is this the way professiona. treat professionals?

TAC TIPS

EXPECT FURTHER CLEARANCE

One of the best ways to get a good flight off to a bad start is to receive an ATC clearance for FL 210 when you filed for FL 380 . . . and were counting on a brisk tailwind to reach your destination. When you complain about it, you'll like as not be told that the lower altitude was assigned to expedite traffic movement (including your own), and that you'll be cleared to a higher altitude after departure.

"OK, fine . . . swell," you say as you fire up and taxi out, "What happens if the radio quits before I get the new clearance, or during a radar vector departure?"

A great deal of head-scratching has been going between FAA, USAF and other interested civil agencies over the last year in an effort to improve IFR lost-radio procedures. Numerous proposals were set forth, but analysis revealed that most of them placed severe restrictions on the pilot or the controller, and the decision was made to leave procedures pretty much alone. An amendment to Part 91 of the Federal Aviation Regulations goes into effect 27 May, rewording some of the procedures.

One item well worth noting shows up in every section of the radio-out procedure . . . whether you lose comm during climb, cruise, holding, radar vector, or what have you. In essence, it states that if you have been told to expect further clearance for a particular route or altitude, and then lose your radio, follow the route or altitude that ATC advised you to expect. When changing altitude, make the change at the time or place included in the expect-further-clearance.

It follows that it's very important to receive this expect-further-clearance bit. Remember, when ATC clears you at an altitude BELOW the highest route structure you requested, they should specify a time 'r fix where you may expect further clearance. If u don't get the expect-further-clearance time or place . . . ASK FOR IT!

CLOSE QUARTERS

Most users of Poinsett Range are aware that Shaw AFB is just a few short miles north. You probably brief it as an emergency field. Maybe you even mention the heavy traffic and the fact that student RF-4C crews, who are unfamiliar with the area, are training at Shaw. But that's about all the consideration traffic gets, until you turn base for a weapons delivery run and come eyeball to eyeball with someone making an approach to runway four at Shaw. Then you remember that all the instrument approaches to this runway go pretty close to the northwest corner of the range. And a troop who is a little southwest of track could get mighty close to your delivery pattern.

It's also pretty easy to wander too far north while watching other flight members, setting up your switches, and getting proper spacing for the next run. But the real problem comes when you enter the range complex. The east-west railroad just north of the range makes a good check point for a base leg; however, that happens to be quite close to the point where the Shaw troops turn initial. That could put you belly to belly with 'em, and you don't see bogies that way . . . you hear them.

EVERYONE IN THE ACT

The Navy Crossfeed has a tip for F-4 troops that applies to all multi-seat birds. An aircraft commander tells the rest of his crew what he intends to do so they can help monitor things. For instance, during a penetration he'll say, "I intend to level at 1500 feet."

If he descends below 1500 feet, the other people on board know something is wrong and sing out. We'll go one step further, the rest of the crew should monitor the radio and also sing out if the pilot is in error on his intended plan. For instance, in our example someone might say, "But sir, the controller cleared you to 2500 feet, not 15!"

FUMBLED FLARES

We waited a long time for someone to come up with a compact, light-weight signal flare to carry in our pockets. The pen-gun miniature flare kit which appeared on the market a few months ago satisfied the requirement and was approved for local purchase pending official evaluation and procurement.

It is now in use in most TAC flying units . . . and we are beginning to see accident reports where someone got hurt because they didn't understand the welcome little flare gun or just mishandled it.

Basically, it is not being treated as a gun! The compact design and pen-like shape make it too easy to slip into a flying suit pocket - LOADED!

In a recent accident, someone left a pen-gun in the pencil pocket of their flying suit and then left the suit in the BOQ. A fan blew the suit off its hanger and the flare gun fired, burning the flying suit and causing smoke damage to the room.

Another pilot, careful not to leave his flare kit in his pocket, placed it in his helmet before he left the cockpit. When a helpful refueling crewman picked up the helmet, the kit fell to the ramp and a flare attached to the pen-gun fired.



I'm sure these two troops (and many others) never thought of this handy signalling kit as a firearm, with an incendiary projectile which will travel 300 feet straight up and burn at 5000 degrees F. Who would carry a gun with this capability in their pocket - loaded - with no trigger guard and no safety?

Go ahead, put the pen-gun in your flying suit pocket, but put the flares - all of them - in another pocket. You don't want them rattling around loose in your pocket, so build yourself a canvas case or bandoleer which will hold the cartridges and afford some protection to the primers.

Think of it as a GUN!

Treat it as a GUN!

It is a gun, dad gun it!

GO-GO-WENT!

An F-104 pilot from another command was clos: the canopy when a strong gust of wind pushed it pasthe "hold open" position. He looked it over and compared it to another bird. Unable to find any damage with the canopy either open or closed, he pressed on.

With the internal lock handle all the way aft and the light out, everything went as planned until about two minutes after takeoff when - you guessed it - the left side of the canopy separated from the aircraft. He had no trouble landing, althoradio reception was a little garbled. . . . Yes, he had his visor down and chin strap fastened before the canopy problem occurred.

The incident report didn't say much about the fact that all this occurred away from home base on a navigation flight, but we can't help wonder if the good pilot's judgment was colored just a wee bit by presson-itis.

THINKING AHEAD

There is no secret formula for preventing accidents. All it takes is hard work and foresight... hard work doing the job right the first time, foresight to have a plan of action ready for the things that miggo wrong. For example, what action would you take you had to stopcock your aircraft on the runway at night? You realize, of course, that this leaves some birds such as the F-104 and F-4 without any navigation lights and that they would be a serious hazard to other aircraft.

QUIET BIRDMEN

With the freezing level up around 12,000 feet, most pilots don't sweat ice too much even when there's plenty of moisture in the air. On such a day, 12 T-bird troops were busily boring holes thru the murk. Eight of the twelve reported engine problems ... in fact, four actually flamed out. All trouble occurred between 16,000 and 20,000 feet at power settings between 80 and 85 per cent.

All recovered, tho one troop had to make five airstarts to do it. Rime ice on the main fuel control barometric aneroid was the villain. T-bird types will do well to avoid flying at these power settings in areas of moisture when temperature is between minus eight and minus 16 degrees centigrade. If you are unable to avoid the cold, wet zone and your engine gives problems, it should run quite nicely on the emergency fu system.

safety conference

As this issue went to press, safety officers from every unit in TAC were returning to their home dromes after three days of concentrated briefing and study at the First Annual TAC Safety Conference. Primary business of the

conference was to exchange ideas within the command through formal presentations and in seminars. The seminars were set up to study and make recommendations on nine general areas of the TAC accident prevention program. The conference leader, Colonel Jack W. Hayes, Chief of Safety, Hq TAC, set a high standard for the working sessions by calling for an ultimate goal of ZERO accidents through an accident prevention program fully integrated into all areas of TAC operations. A comprehensive conference report will be distributed to the field by the first of May.







ACTIVATED JULY 1943, AS THE 464TH BOMBARDMENT GROUP (H), THE UNIT ENTERED COMBAT IN APRIL 1944 UNDER THE 15TH A.F. IN THE MEDITERRANEAN THEATER.

THE 464TH FLEW LONG RANGE MISSIONS ATTACKING AND DISRUPTING ENEMY INDUSTRY
AND COMMUNICATIONS, ITS DECORATIONS INCLUDE
TWO PRESIDENTIAL UNIT CITATIONS.

REDESIGNATED AS THE 464TH TROOP
CARRIER WING IN FEB. 1953, THE UNIT WAS
ASSIGNED TO THE TACTICAL AIR COMMAND



WHILE CONVERTING OVER TO THE **G-130** WITHIN THE PAST YEAR, THE WING WAS HEAVILY COMMITTED FULFILLING NATIONAL AND INTERNATIONAL COMMITMENTS UNDER THE COMMAND OF COL. W. L.

DURING 1963 AND 64 THE 464TH THEN EQUIPPED WITH C-1235, RECEIVED THE YUTSTANDING UNIT AWARD FOR ITS SUPPORT IND ACHIEVEMENTS IN SOUTH VIET NAM.





summer fun

Being hit by a wild baseball is one summer sport hazard. Like most dangers that accompany summer activities, it is obvious and we can take necessary precautions by wearing batting helmets, catcher's masks and other protective equipment. However, the result of our contact with old Sol can be far more uncomfortable and lasting than a bruise from a wild pitch.

Sunburn and heat exhaustion are two of the more sneaky fun spoilers you must conscientiously guard against. Sombreros, surfing shirts, salt tablets, and suntan oil are all helpful protective equipment, but they are not nearly as effective as moderation and common sense.

get it on the ground

A student on a solo transition mission felt some yawing during positive Gs, which stopped when he turned off stab aug. He again noted oscillations during descent when he had re-engaged stab aug. This time the trouble stopped by itself SO THE INTREPID PILOT PROCEEDED TO SHOOT A COUPLE OF BUMP-AND-GOs. Suddenly the stick pulsated twice to the right! Some calm words from the RSU helped him get the bird on the ground.

Seems like we've heard this story before! I wonder how many times this tale has <u>not</u> been told because the pilot didn't walk away from the airplane. And this particular incident makes you wonder how often the instructor (who wasn't even mentioned in the incident report) and his student had taken the time to sit down and discuss reactions to 'minor' problems?

self disconnect

A couple of TAC troops were doing a snap-up to FL450 when the oxygen pressure went to zero in both cockpits of their F-4C, they had to use bailout oxygen during an immediate descent and landing.

A look at the LOX system revealed the flexible metal supply line to the converter was disconnected. It seems this line has a quick disconnect that unhooks from the converter for servicing. It takes almost a full turn of the quick disconnect to hook things up; however, some connectors do not have a positive lock. Apparently this line was twisted during installation which put tension on it, then turbulence and buffet caused the line to rotate and separate the connector which shut off the pilot's supply of oxygen.



headache pointer

If you've ever bumped into the sharp point on the aft end of a wing tip or elevator you'll appreciate this tip that was imported into Myrtle Beach by Colonel Coursey. Colonel Coursey saw them in use at Sacramento.

They are a simple guard made from 18 X 3 incl aluminum strips, rolled at one end to wrap around the tip (a hole is cut for the static arrester) and uipped with spring clips that hold them securely the wing and slab.

Spring clips are formed from soft aluminum and riveted to the guards. Forming the clips work hardens them enough to provide necessary spring tension.

A little conspicuous orange paint finishes the job to make the guards as obvious as a polar bear in a nudist camp.

five grand round

Someone opened the transfer unit cover after the M-61 gun had been preflighted. Some rounds fell out of the elements and the guy put 'em back but didn't get two of them installed right. When the pilot tried to fire the gun, these rounds became uncontrolled and the gun double fed. The explosion did over \$5000.00 damage.

The transfer unit could stand some redesign but until it is redesigned, best warn all hands that it takes a well trained armorer to work on this gun... in fact, armorers must be certified.

Incidently, the new auto-double feed device should also help correct this gun problem.

and left

A C-123 driver at an overseas base found his chariot pulling abruptly to the left on takeoff and barely missed ruining the day with some aircraft parked close to the runway. Investigation after landing showed that a nose wheel steering system valve was leaking hydraulic pressure to produce a left turn. Disassembly of the spring cartridge revealed an accumulation of dirt and corrosion was causing the valve to stick. The reporting unit will make a special inspection of nose wheel steering components at the next hourly post flight. Spring cartridges will be removed, disassembled, cleaned and lubricated. Good idea!

canopy caper

A mechanic went out to an F-4 to do some work on the radar. He climbed the aircraft steps and punched the canopy open button for the aft cockpit. The canopy opened normally for the first inch or two, then took off.

When the smoke cleared, they found the instrument ood had been improperly stowed and had caught on e seat mounted initiator. Someone left the ground safety pin out and ... boom! Off went the lid.

one sided

Comment from Marine safety publication... "We are up to here in the kind of message traffic that tells how this pilot or that mechanic managed to louse things up. We know this is not a fair picture of your operation. Isn't there anybody who wants to call attention to one of his people who has done something right? Give use some positive input along with all the negative!"

We second that one.

rub-a-dub-dub

A J-57 engine was removed for compressor repair when FOD damage was discovered. Further inspection of the compressor revealed extensive damage on the trailing edge of the tenth stage rotor. This was caused by the tenth stage stator shifting forward at the nine o'clock position and was not related to the FOD.

The records revealed that the engine had received recent hot section repair for compressor stalls. It's now believed that the stalls were caused by tenth stage interference and the hot section adjustment merely compensated for the deteriorating compressor.

Presently, disassembling the compressor section is the only way to detect this type failure. Three such incidents in one wing have lead to a study of recording engine coast down time as a means for discovering excessive internal engine friction.

you couldn't tell

You couldn't tell by looking . . . the missiles under the F-100s looked ready to go . . . igniters installed and everything. You couldn't tell from the outside that the igniters were dummies, installed after original takeoff time was delayed and rescheduled. You couldn't even tell from the aircraft forms . . . the last entries showed missiles loaded and ready to go.

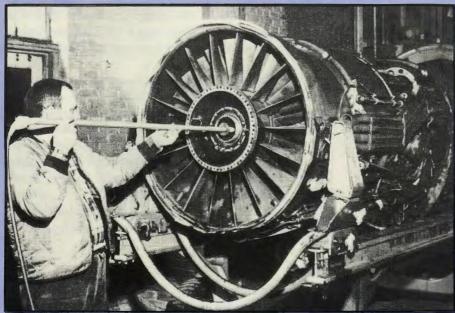
The only way you could tell that each of the three birds would fail to launch their GAMs would be to talk to the conscientious young troop who downloaded the igniters and installed the dummies when takeoff was delayed earlier in the day. He had a good idea . . . just didn't think to write anything in the forms about it.

No, you won't find him around the line today . . . he's in the training room with the rest of his load crew, being recertified.

RADIOGRAPHIC engine inspection

Another NDI technique that should save man-hours and money.

- BY MAJOR JESSE L. TRENT HQ TAC, DMEM



Wrapp gine

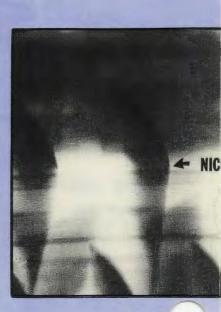
Radiographer inserts aluminum guide tube into hollow shaft of the engine.

he past few years we have been monitoring an airline engine inspection program which is performed by radiography. The airlines have been saving a lot of money with this program ... cutting man-hour costs and reducing their aircraft down time.

We can do the same. For instance, in the past six months we ran 288 J-57s through engine periodic, but only 181 of these engines generated hot section repair. Of 136 J-75s inspected

during the same period, only 20 generated hot section repair. With an average of 170 man-hours for a J-57 inspection and 197 man-hours for a J-75 inspection, we spent a tremendous number of man-hours just to find out there was absolutely nothing wrong with 223 of these engines!

Of even further interest, many of the J-57s that were repaired, actually were well within tolerance and could have been flown many additional hours before



Print from X-ray



on with X-ray film



Radiographer holds crank which transfers gamma capsule from safety vault into engine. During use, he moves the unit away from the engine, fully extending the flexible tube.

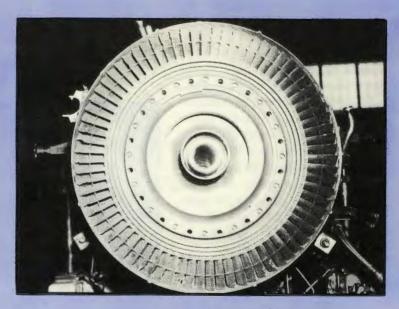
needing repair. With the engine already torn down for the inspection it is only good common sense to repair any defects, regardless of how minor they are. Since a radiographic inspection does not require an engine teardown, and can be accomplished far quicker

than a normal periodic, the potential benefits of this program seemed well worth studying.

We had an unserviceable J-75 available here at Langley, which had been removed from a crashed F-106, so we decided to use it for some tests to see how effective



ad blades and hidden wrench.



Nicked blades as seen after engine disassembly.

radiographic inspections are. We obtained a 30 Curie iridium 192 capsule, about the size of apencil eraser, contained in a special safety vault unit.

We removed the insulation blanket from the engine and took the front cover off the compressor shaft, then shoved an inch and a half aluminum guide tube into the hollow shaft of the engine. This tube is attached to a flexible guide tube that goes into the gamma capsule unit and is used to protect the iridium 192 capsule when it is positioned for the actual film exposure.

For our experiment, we placed a crescent wrench in the compressor section in such a manner it could not be seen during a visual inspection. We wrapped the compressor section with X-ray film and then cranked the radiation capsule out of its safety vault down the flex tube and into the guide tube. A gage on the crank unit told us when the capsule was in position.

About 70 minutes later, when the exposure was completed, we cranked the capsule back into its vault, removed the film from around the compressor and developed it.

The photo shows the wrench quite clearly along with the wire we used to retrieve it. In addition, you can see nicks on the compressor blades which show as small white feathers. Compare them with our photo of the actual blades that was made after we tore down the engine. We also wrapped X-ray film around the combustion cans and were able to locate cracks as small as 1/32 inch in length... well under the maximum allowed by the TO.

Altho our experiment was rather rough, it clearly indicates that we can find out all we need to



Interior of portable darkroom.

know about an engine using this technique.

With that in mind, let's compare the cost of a radiographic inspection as compared to our present system. Here's a breakdown on the radiographic technique.

* Gamma handling	
equipment	\$3,000.00
* Annual equipment	
maintenance	\$1,600.00
* Darkroom equip-	
ment	\$2,000.00
* Safety equipment	\$ 900.00
Total	\$7,500.00



Portable darkroom permits on-the-spot X-ray film processing.

Actually we already own quita bit of the safety equipme radioactive survey meters, lights, signs, and so on. By comparison, during a six month's period our current inspection procedures cost us \$81,948.00 in man-hours alone just to tear down, inspect and reassemble the J-57 and J-57s that did not need hot section repair.

Using radiographic inspections we could easily reduce our engine shop manning by 35 per cent! But there is another factor, even more important, which must not be overlooked. Every time we tear down an engine and put it back together, we run the risk that someone will make an error ... fail to properly torque a part ... install a spacer improperly ... misalign something. By reducing engine teardowns to an absolute minimum without inducing any unnecessary operating risk, we r duce the possibility for getti. maintenance induced errors.



High power X-ray machine can be married to darkroom unit.

Some experts believe that this aspect of the radiographic inspection program has even greater potential than the man-hour savings. They may be right, because a radiographic inspection after final assembly can also discover many assembly errors!

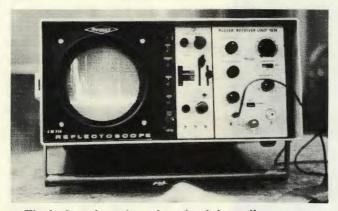
STITCH IN TIME

he last few warm days have changed my front yard into a green warning of what's to come. Reluctantly, I hauled out the rotary mower. After working up a sweat and uttering some unprintables, I got the old vibrator running. But the not-so-sharp blade smashed down more grass than it cut.

By the time I bloodied all my knuckles and got the mower blade off, Freddy Fixit from next door arrived. In his normal helpful way he told me how dangerous old rotary mower blades could be when fatigued and cracked. Then he borrowed the blade . . . so his buddy in the Non-Destructive Inspection shop could check it for cracks.

Later the NDI people called to come down and take a look at my blade. It appeared new except for a few nicks. The NDI people had sandblasted it clean to ake a good contact with the test probe. They placed drop of oil on the blade and transmitted an audio signal through it. The reflectoscope gave a visual picture of the blade... and a crack showed up clearly. With a ten power magnifying glass we could just barely make out the crack, and only because we knew where to look. It extended half way thru the blade.

Unfortunately, there are very few bases that have NDI equipment. And at present, it is impractical for them to check a large number of blades. However, as



The high peak on the right side of the reflectoscope shows a crack that is barely visible with a ten power magnifying glass.



The same type of signal used to check wing spars revealed dangerous crack in the rotary mower blade.

more bases get equipment and methods improve, NDI offers another means to prevent ground accidents, as well as flying accidents.

In the meantime if you own a rotary mower and don't want to hurt anyone, here are a couple of simple precautions you can take to cut down on the danger. First, I would suggest that you spend two or three dollars for a new blade every year...instead of half that to have the old one sharpened and balanced.

Secondly, most of the bits and pieces that cause injury come out of the opening designed to exhaust the cut grass. You can cover this opening with a metal plate. Many mowers are equipped with these plates for use as a leaf mulcher. But, if your grass is thick, this makes problems. The mower clogs and leaves great piles of grass on the lawn. A reasonable compromise is to use a moderately flexible deflector... a piece of old fire hose is perfect, it will deflect or at least slow down a hard object, but is flexible enough to let the grass spread out (how about a little help, base fire types?). A couple of holes drilled in the mower to fit self-tapping screws ought to do the job.

A couple of other tips . . . dry grass cuts better than wet, and remember, most lawn mowers are designed to cut grass, not concrete curbs. Finally, if you don't bother to take any precautions when you mow, let your neighbors know so they can get the kids inside or on the opposite side of the house.

Water Safety...



Photo of water skier Nancy Osborn, courtesy of Cypress Gardens Association Inc., Florida

s summer and warm weatl approach, the boating enthusiasts are overhauling their motors to see if they can squeak out another year of water skiing and fishing. Likewise, the sailors are mending their sails and stepping masts, while the scuba divers check their wet suits and tanks. Yes, all are preparing to go down to the water for another season of fun. Along with the increased aquatic activity will come an increase in drownings. Some of the victims will be non-swimmers, but many will be "strong" swimmers (whatever that is) who have overextended themselves.

There are many water safety tips the experts harp on year after year: swim in pairs, wear life preservers aboard ship, don't swim after eating, wear aski belt, be careful diving, know the water depth. For the most part, peop abide by these and other rul because no one in their right mind wants to drown. With this in mind, I would like to divide swimming, or just being in the water, into two distinct categories; swimming for enjoyment and swimming for survival.

Being in the water for enjoyment, surfing, water skiing, diving, and just swimming have one important thing in common - you are there because you want to be. Usually, a non-swimmer doesn't fall into this category unless he's in the bath tub. There isn't any panic. You are aware of your limitations and the environment.

If the current or tide changes enough to cause concern, you get a cramp or something else happens, you move into the second category . . . swimming for survival. So called "strong" swimmers become candidates for a

rvival situation when they overend themselves.

What is survival swimming? Basically, it is swimming to stay alive and it has an entirely different set of rules than being in the water for fun. Suppressing panic and conserving energy are of utmost importance, and take as much effort as keeping your head above water. This is your plight anytime you are in the water involuntarily: after falling off a dock ... dumping a boat ...

The rules for swimming to keep from going down the third time are few, but sometimes difficult to follow. The first is conserve your energy as much as possible. If you have fallen into the water unsuspectingly, roll onto your back and float. Tread water if you like, but this takes more energy and practice. Floating is pretty natural and can be done h a minimum of effort. At first,

trapped in your clothes will help you float. Don't worry about the current or tide until you have gotten your bearings. If you are about to go over a damor Niagara Falls, even an Olympic crawl stroke won't help, so good luck. Therefore, in most cases, floating is the best initial action.

Once your head is above water and you are looking at the blue sky, take stock of the situation... that's step two. How far is shore? Which shore is closest? What is the current and tide doing? Is help on the way? Can you find something to hold on to, like a capsized boat or flotation gear? When you have successfully completed these two simple steps, you have reduced two of the biggest sea monsters - panic and exhaustion.

When you have caught your breath and surveyed the situation, you are ready to correct the problem - like get out of the water. But if things should start looking grim again, follow the same steps and float for a while as you think things over. And remember, survival swimming is nothing more than a way to keep cool when you're all wet.

On the other side of the pool are the non-swimmers that enjoy being near water, but not in it. So they haven't learned how to swim. And once they get into the water...

after falling off a dock or boat...
survival depends on outside help.
A rope, seat cushion or hand from
a buddy is usually the first and
sometimes the last thing a nonswimmer looks for as he thrashes,
saucer-eyed to the surface.

Unfortunately, assistance isn't always successful or properly directed, so the non-swimmer would be wise to take along some self-help when he's going near the water. The buck and a half ski belt will do the job just fine, it hardly gets in your way and doesn't even interfere with sun worshipping. You America Cup hopefuls should also consider a ski belt when you're out solo, lest you jib and get belted into the brine by a boom.

One last thought before leaving you to large fish, ornery outboards, and luffing sails...if you come across someone in the water who needs help, don't be too quick to jump in ... unless you're a practicing West Coast lifeguard ... a rope, pole, life ring, or empty gas can ... handed or thrown to the victim will be a lot more effective than a tired and gasping once strong swimmer.

-Capt Joseph L. McDonald 836 Tac Hospital MacDill AFB, Fla.

Underwater Blackout

The lifeguard watched a young airman swim across the nearly empty pool with strong sure strokes. The young airman made some surface dives with practiced skill, which the lifeguard noted with approval. The next time the lifeguard checked the airman he was motionless near the bottom.

The lifeguard instinctively realized the airman was in trouble and went to the rescue. Altho he recovered the airman without delay, he was unable to revive him with the mouth-to-mouth ventilation technique.

This drowning appears to be a fatal incident of underwater blackout. It occurred to a healthy individ'l who was a reasonably accomplished swimmer.

previously reported cases, the victims were pracding underwater swimming. In each previous

incident the person involved was an expert swimmer with a lifeguard rating. After being revived, the others said they became unconscious with no sense of urgency or impending doom - only a sensation of "Gee, a breath of air would sure feel good."

In each case these swimmers deliberately hyperventilated (deep and rapid breathing) before they entered the water. This resulted in their losing consciousness before the desire to breathe was sufficiently strong to make them surface for air.

You are in danger of drowning if you hyperventilate and then attempt extended underwater swimming or other swimming while holding your breath. Lifeguards should caution others about hyperventilating prior to swimming and be especially alert for possible blackouts from even the expert swimmer.



SEGNEWS

4450th Standardization Evaluation Gp.

Know your Stdn Evaluators



LT COLONEL NELTON R. WILSON CHIEF, MAINTENANCE DIVISION

Lt Col Wilson hails from Saint Joseph, Missouri. He entered the Army Air Corps in 1943 and, after graduating from Navigation School in February 1945, was assigned to the 20th Bomber Command, navigating B-29 s from the Marianna Islands. Following pilot training in 1947, and a tour with the 56th Fighter Group at Selfridge Field, Michigan, he went to Korea in 1951 to fly 100 F-86 missions for the 4th Fighter Wing. Returning from Korea, he attended Maintenance Officer School at Chanute. Then five and a half more years at Selfridge as Field Maintenance Officer, Group Staff Maintenance Officer, Wing Maintenance Officer and Chief of Maintenance of a Consolidated Maintenance Squadron. From Selfridge he went to Air Command and Staff College before serving a tour in Europe with the 50th Tactical Fighter Wing and as Staff Maintenance Officer at 17th Air Force. Col Wilson came to SEG from the 23rd Tactical Fighter Wing at McConnell AFB, Kans.

SEG MAINTENANCE DIVISION

The improvement in aircrew professionalism and safety resulting from the present standardization/evaluation program has pleased the Commander, TAC to the extent that he recently directed a similar program be established in the maintenance field for active duty TAC forces. This requirement resulted in a maintenance division being developed within SEG.

The standardization/evaluation maintenance division is not something 'way out in never-never land.

Fourteen of 23 authorized people are now on hand. With generous help from TAC units in the field, they are developing grading criteria, master question files, data collection worksheets, and other manuals and documents familiar to the S/E flight examiners. All this has evolved a new animal for stdn/eval - the SEME, or Standardization/Evaluation Maintenance Examiner.

You SEFE's in the field can give your unit a he start in this program by briefing the maintenance

pervisors on the fundamentals of the present stdn/ al program. A short discussion of the manuals documents and finer points of stan/eval will be a lot of help to them. You may want to leave an extra copy of TACM 60-2, for the maintenance supervisors to look over. This will give them an idea of what to expect when the new maintnenance evaluator's manual arrives.

Lt Colonel Nelton R. Wilson, the SEG Maintenance Division Chief, says, "The most can be obtained from any program when the participants believe in its need to exist. I believe that once the basic standardization evaluation concepts are known, they will stand alone."

A CASE IN POINT

Recently, one of the Air Material Area Depots sent a message that said: "Information reaching this office indicates pilots are deviating from system operating procedures and in some instances are intentionally using ram air for comfort. Deviations from operating procedures are increasing the moisture problem which in turn generates corrosion. Increased system failure may be expected unless "therence to operating procedures is exercised by all rators." The message goes on to state that "every ort is being expended to resolve moisture problems in all series aircraft and constant surveillance is being maintained for possible additional improvements."

We are not trying to generate a discussion of the moisture problem in various TAC aircraft altho we recognize the need for a FIX to the moisture problem. But when you take it upon yourself to FIX the problem with a handy dandy it's-better-than-the-way-it-is systems and how they operate. They taught you all that in MTD. And very likely you did some extra studying on your own. And sure, you are the one who has to fly the machine and put up with the problem. But when you take it upon yourself to FIX the problem with a handy dandy, (it's better than the way it is) solution that deviates from established procedures, several things can happen, none of them very good. All too frequently the original problem is compounded and the deviation did nothing to cure the original problem. The AMA message is a case in point.

Perhaps you didn't know, but you should, the procedures in your flight manual were written by the manufacturer. They are, in effect, his warranty on a equipment. When you arbitrarily change or ignore ese procedures you are, in effect, excusing the manufacturer from the obligations of his warranty.

If a piece of equipment does not work as the manufacturer claims it should, he has to fix it. If the equipment does not work but you are not using it as stipulated, then it is possible the malfunction was caused by the incorrect operation. For example, was an unforeseen moisture problem, or the deviation from system operating procedures the actual cause of corrosion? There will be no question if you stick to the established procedures.

Another unpleasant aspect of deviating from procedures is that someone may tell on you. The funny part is you'll probably tell on yourself. Tech Reps are available for all TAC weapon systems. Usually when a weapon system is having problems, a team from the prime AMA is called to the scene. These people help determine the cause of malfunction and come up with a fix. Let us assure you that the first thing they check is how the equipment is being used. As you well know, all equipment is tested, retested and tested again. It must meet certain specifications in each test before being accepted. It is only natural that when things go wrong the experts first question the operator.

Of course you want to be helpful, we all do; and you feel you have the solution, at least from your point of view. Naturally you want your solution considered, since you are the one who uses the equipment and you see the results first hand. All too often, suggestions are misunderstood or misinterpreted. Evidence the quotation from the AMA message. We are not telling you to withhold information from the investigators. Tell them all you know, but do it in the proper manner. Write the discrepancy in the DD Form 781a, or use the Unsatisfactory Report - that is what it is for. Your complaint is then a matter of record and will receive proper attention.

If you think you have a better procedure that will make a deficiency acceptable, by all means present it. But present it in the proper manner. Use the AF Form 847. Your idea will get full consideration and if it is accepted you will get the credit. If it is not accepted, you will receive a full explanation and be recognized for being interested enough to submit a suggestion. (And by the way, that AF Form 847 is not the exclusive property of your stdn/eval examiner; it is for everyone).

It should be obvious to you, from the quoted message, that word of mouth, no matter how well intended, is not the answer for you, us or anybody. This particular case came back, not as a FIX, but as an embarrassing admonishment.

Letters to the Editor



Dear TAT

Reference the "Tilt" article in the March TAC TIPS section. I believe a "combination GCA and ILS" approach is somewhat misleading. An ILS with a GCA monitor or a GCA with the pilot cross-checking with the ILS would be more appropriate. For example, a few months ago a T-29 requested GCA to this base with weather at minimums. On final approach the target zigged and zagged all over the azimuth scope resulting in a missed approach. While on downwind for another try the pilot was advised that a previous aircraft with instrument trouble had reported erroneous indications from the ILS, but a check by maintenance indicated the ground equipment to be normal. He replied, "I'll disregard the ILS this time." A check by the base flying safety officer revealed that the pilot, altho requesting a GCA, was actually flying the ILS. I suggest if a pilot wants an ILS or ILS radar monitored approach, he should request it. If he requests a GCA, he should fly it.

TSGT Ray M. Short 1999th Communications Sq Sewart AFB, Tennessee

Dear Ray

I agree with you.

TAT

Dear TAT

The "Blue Canoe" article from the March TAC ATTACK states: "... I can climb on one engine at over 100 FPM with gear and flaps down at my max gross weight on a standard day, ..." I believe this to be misleading and contrary to fact, as follows:

TO 1 U-3A-1, page 3-2, last paragraph ... "This

speed (reference to the previously mentioned single-engine airspeed) will provide excellent dir tional control and over 100' per minute rate of climulated gross weight on a standard day at sea level after the landing gear is retracted and the propeller of the inoperative engine is feathered."

Reference TO 1 U-3A-1, page 3-7, paragraph Go-Around (Single Engine) ... "With one failed engine and the aircraft in a landing configuration (gear down, flaps extended 45 degrees), level flight is not possible under any condition."

Please take whatever action you think is necessary to advise our compatriots in TAC that this casual article is just a little too casual.

Major Leon M. Mesropian Base Operations Officer Stewart AFB, New York

Dear Leon,

Looks like you caught me with gear and flaps down for sure! No point in pinning the rose for this one on the proof-readers, layout man or anyone else. The original copy real "gear up" and some how got scrambled while being transle into print . . . might say this is the kind of over-relaxed or sight Steve Squires was writing about!

Yours for zero defects . . .

TAT

Dear TAT

I'm on the 50th Tactical Fighter Wing Reunion committee and am trying to update our locator file. Would you ask all former officer members of the 50th to send me their present address along with the address of any ex-50th troops they're in touch with?

Capt Mack Angel 3505 Marlborough Las Vegas, Nevada

Dear Mack

As an ex-50th troop, how could I refuse?

TAT



FLAMES OUT

After the morning meeting, Sideslip suited up for his instrument mission and came back into ops still tugging at his G-suit, getting the last wrinkles out of the flying suit under it.

Chase briefed him on the flight ... routine instrument ... very thorough briefing, which included checking in with the Command Post as soon as the flight was on top, to remain on their channel during the airwork.

"And don't forget, if anything goes wrong ... anything out of the ordinary, be sure that you tell the Command Post about it right away." Sideslip rogered with a nod of his head.

The flight started out smoothly
... preflight and takeoff were
routine ... well, the engine chugged
bit on the acceleration check, and
ain just before the burner lit, but
he climb out had been a beautiful
piece of precision instrument fly-

ing. And Chase had played a very unobtrusive, silent part so far. As they broke out on top at eighteen thousand, Sideslip called Departure Control.

"Hello, Departure ... Sideslip Two is VFR on top at 180, request to leave your channel."

"Sideslip Two, Departure ... your expected approach time will be one-zero-five-five ... cleared to contact Ivory Tower at this time."

He glanced back at Chase, got a nod, and punched the mike button again.

"OK, Chase, let's go to eight."

Chase clicked his mike twice in reply.

"Chase's on ..."

"Rog, Chase ... Hello, Ivory Tower ... Sideslip Two Flight, over."

"... Ivory Tower, this is Sideslip Two on eight."

"Station calling Ivory Tower, say again your call."

"Ivory Tower ... Sideslip Two, a flight of two. Local instruments for one plus one-five ... will remain your channel, over?"

Ivory Tower 'lowed as how that would be all right, and they proceeded as briefed.

Sideslip thought that the engine was acting a bit sluggish when he was changing airspeeds, bending the throttle, but dismissed it to a combination of his limited time in the bird and a bit of apprehension over the chugs on takeoff.

He was actually surprised when it flamed out!

And Chase looked surprised as he slid up abreast of Sideslip, almost passed him and then started to fall back into formation.

Got lots of airspeed...and just barely 23 thousand feet, doesn't look too bad. Now, let's see ...

It worked! He had the rpm increasing before Chase had a chance to call and ask him what the trouble was!

"Little bit of flameout action here, Chase," Sideslip tried to make it sound unimportant.

Whatever it was that Chase had on his mind at the time was blocked out by someone else on the channel.

"Say again, Chase, you were blocked out," the Slip reached down and turned off Guard.

"Sideslip Two, are you ... pfsszt ... zsshrrrr ..." Stop blocking the air, whoever you are, thought Sideslip. Then he realized that it had not been Chase calling him.

"Sideslip Two ... Ivory Tower, are you experiencing some difficulty?"

"Sideslip, this is Chase, looks like you've got it burning again. Let's bend it around toward the patch and go back to approach."

"Sideslip Two, this is Ivory Tower ... may we be of any assistance, over?"

"Thanks, Ivory Tower, Sideslip, looks like we have it relit, just a quick flameout. Sideslip Two flight will be going back to Approach for a descent," Sideslip was hoping that they wouldn't want a complete description of what happened right on the spot...he wasn't sure himself!

He looked over at Chase and punched the mike, "You ready to go back to 15, Chase?"

"Sideslip ... this is Major Wrong, what's your position? I'm in the vicinity of the TACAN, give me your altitude and I'll look you over."

"I'm reading 12 miles West, inbound, at 220 right now, Major."
Sideslip wanted to tell him that he had Chase, a good old head, right there on his wing, but decided not to.

"OK, Boy, just drive right in there and I'll catch you...just take it easy, understand that you got a good re-light... was it in normal or emergency fuel when it re-lit?"

"Sideslip Two, Ivory Tower, the commander wants to know if you are planning to stay with the airplane... understand that you have a flameout, is that correct? Over."

"Negative ... uh, Roger ... n - no, Ivory Tower ... I am not getting out of this thing right now ... I DID have a bit of a flameout, but it's all re-lit and everything, and we're trying to get ourselves a letdown."

He saw that Chase had moved up abreast of him again and shot a

quick, apprehensive glance at the engine gages ... still looked good! Then he realized that Chase was making some kind of gestures at him ... a ONE and a FIVE ... oh, yes ... and he twirled in channel 15.

"Look, Chase, this is Sideslip, before the rest of them get over on this channel ... this thing chugged a bit on the run-up and then flamed when we came back on the power a bit ago ... it's running fine on the emergency system right now. Just a bit hot, I'll be a bit easy on the power changes."

"OK, Dad, press on ..." and Chase gave him a couple of vigor-ous nods of the head.

While the radio was quiet, he tried to think if there were any other procedures that he should have gone thru and decided to let well enough alone. The thing was running, wasn't it?

"Approach, this is Sideslip Two over the TACAN, approaching the fix. Do you read, over?"

"Sideslip Two, Approach, loud and clear, over."

"I've got a flight of two in sight now, Sideslip, is that you?" It sounded like Major Wrong again.

"Yes, Major, we're a flight of two...uh, Approach, Sideslip Two, declaring an emergency... would like an immediate penetration to VFR, the altimeter and the latest weather, over."

"Roger, Sideslip Two, ... proach, you are cleared immediate TACAN letdown, no other traffic reported ... what is your altitude, over?"

"Sideslip Two, this is Ivory Tower... are you on this channel, Sideslip, over?"

"Roger, Ivory Tower, Sideslip is on this channel... we'll check in with you when we get on the ground." Chase had beat him to the mike button.

"Approach ... Sideslip, we're over the fix leaving Flight Level 200, flight of two ..."

"Give me a couple and I'll be in there in no time, Sideslip." It was the Major again! Sideslip already had eased the power back and started down ... Chase was right there, no sweat, so he pressed on ... check the correction to get back on track ... let the rate of des settle down ... start think about the bail-out lanyard just in case ...

And then he saw it, heard it and felt it ... all at once! He saw a lot of lights light up in the cockpit just before the smoke started to burn his eyes. As he snatched the throttle back to cut-off, he reached for the oxygen with his right hand and



he realized that he couldn't see through the smoke in the cockpit... and it wasn't getting any clearer!

Better get rid of the canopy, so I can see if there's any airplane left around me, he thought ... no, try ram air first.

The sudden pressure fluxuation was followed by less smoke. He should be over water, best pickle the garbage. He checked to see that Chase was clear, punched the button and felt the tanks go. From all indications the engine was dead and most of the lights were out ... for what it was worth!

"Wha ..." from Chase, and they were out of the overcast.

The sweating Slide bent the airplane back toward the base immediately, started to call on the radio and decided to turn the IFF to emergency first. "Mayday, Mayday... this is Sideslip Two...uh, ned out... possible engine exsion..."

He thought he had the base in sight thru the haze, better start thinking about setting up a flameout pattern ... "Chase, do you see me ... am I on fire?...warning lights are all out and engine instruments are gone!"

"Sideslip Two ... Approach, understand Mayday ... weather is ... pfszzt - zsshrrr ..."

"... I'll be with you in a minute, Sideslip ... looks like you can make the field from where you are!"

"Sideslip, this is Chase ... the altimeter at takeoff was 29.76 ... set your altimeter NOW, over."

"Sideslip Two, this is Ivory Tower, can we be of any assistance, over?"

"Chase ... let's go to tower channel."

He was beginning to wonder en all of the help would let him ne!

"Chase's on ..."



"Rog, Chase ... Tower, this is Sideslip Two, Mayday, entering a flameout pattern for 18...give me winds and altimeter."

"Roger, Sideslip Two... wind 220 at 12, altimeter 29.74, no reported traffic."

"Sideslip Two ... this is Mobile, understand that you got a relight, is that roger?"

"Keep your airspeed at 240, Sideslip ... it looks good from where we are." Chase was all business. The right kind of business.

The Slip eased back on the stick, measured the distance to the point above the end of the runway where he could start the big, sweeping circle that would put him on the ground ...

"Sideslip Two, this is Ivory Tower, we have the tech order out now, if you'll just tell us what your condition is at this time."

"... This is Colonel Schmartz in mobile, Sideslip ... we don't have you in sight. Let us know when you are over high key. Are you running on normal or emergency fuel, over?"

"Colonel, Major Wronghere, it looks to me like he has lost his drop tanks. I'm just closing on him and can't tell very well ... I think that he said something about an explosion while he was on approach channel, but he keeps switching channels without telling me ..."

"OK, Wrong, you keep an eye on him."

Sideslip began to lose track of

the many-sided conversation as he played airspeed against angle of bank and altitude, trying to decide in his mind whether this was going to work out like the many precautionary patterns he had practiced. He glanced over at Chase and saw the steady nodding of his head... reassuring, he thought. At least he's with me!

"Sideslip, this is Tower, observe a flight of two, oh ... three approaching low key ... is that you? ... did not receive a high key call."

"Rog, Tower, Sideslip is at low key, flamed out, Mobile, and trying to get it on the runway."

The Slip decided that it was time for gear, shot a quick glance at Chase and slammed the handle down. Now, watch airspeed, lower the nose ... how's it look? Hold the flaps for a while.

"Sideslip, Ivory Tower, confirm that you are attempting a flameout approach to runway 18... Did you ever get a re-light or not? Over."

"Roger, Ivory Tower, this is Major Wrong ... I'm on his wing now and I think he did get a light after the first flameout, altho I wasn't with him at the time."

"Sideslip, Tower, the tower officer wants to know if you have a safe gear indication at this time, over."

"Ivory Tower, Sideslip Two, I AM flamed out! And I AM going to land on 18." He decided he'd better concentrate on flying for the moment.

Lower some flaps, not too much...

now, a little more bank and line up with the runway.

As he started the rest of the flaps down, Chase came on the radio, "OK, Dad, the rest of the flaps and bleed off the airspeed... 200, 200 looks good!"

"Roger, Sideslip, it's looking good from here, uh, this is Major Wrong ... you might better hold 210 if you have much fuel left, old boy ... do you have all your flaps down already?"

"This is Mobile, use 220 on final if you have over 3,000 pounds of fuel ... pfsszt ... zsshrrr..."

"... have crash equipment standing by if you need ... pfszzt ... zsshrr ..."

"Sideslip, this is Ivory Tower, what was the reason for jettisoning your ... pfsszt ... zsshrr ... any idea where they landed? Over."

The Slip almost reached over to turn off the radio, but couldn't take his eyes off the runway ...

Chase broke through the bedlam, "OK, it's all yours," and Sideslip saw a shadow go by him as he eased the stick back, reaching for the end of the runway. And he was on the ground! Hold the off ... don't have much brakes ... NOW, the chute, hope it works! There, that felt good ... got it made!

As he turned into the taxiway with the last bit of forward speed left in the bird, Sideslip couldn't resist the temptation: "This is Sideslip Two, do you lads want me to de-brief you now, or can you wait?"

MAINTENANCE MAN of the MONTH

Technical Sergeant James Abreu, 479th Field Maintenance Squadron, George Air Force Base, California, has been selected as a Tactical Air Command Maintenance Man of the Month.





CREW CHIEF of the MONTH

Staff Sergeant Franklin A. Chapman of the 4512th Organizational Maintenance Squadron, Luke Air Force Base, Arizona, has been selected as a Tactical Air Command Crew Chief of the Month.

PILOT OF DISTINCTION



Second Lieutenant Fredric G. Shotz of the 4514th Combat Crew Training Squadron, Luke Air Farce Base, Arizona, has been selected as a Tactical Air Command Pilot of Distinction. The flight of four was airborne about ten minutes when Lieutenant Shotz, the number four man, experienced severe compressor stalls as he advanced the throttle of his F-100D. Other flight members observed flames coming from the tailpipe of Lieutenant Shotz's aircraft during the compressor stalls. Lieutenant Shotz jumed ataly reduced the power to 88 per cent. This cleaned the engine. He declared an emergency and turned toward the nearest auxilliary field, thirty miles away. Although his approach was complicated by low visibility, clouds, and mountainous terrain, Lieutenant Shotz set up a perfect pattern. During the turn to final the engine again began to compressor stall, and continued to stall until the thrattle was reduced to idle. With only 300 hours total flying time and 31 hours in the F-102 Lieutenant Shotz accomplished a perfect landing in a lieuvier than normal discrets at an unfamiliar flight.

Lieutemant Share's airmanchip, good judgment, and calm application of procedures, despite very limited experience in the F-100, qualify him as a Tactical Air Command Pilot of Distinction.

OUTSTANDING FLYING SAFETY OFFICER

Captain Roy L. Holbrook, Jr., of the 31st Tactical Fighter Wing, Homestead Air Force Base, Florida, has been selected as the Tactical Air Command Outstanding Flight Safety Officer for the six month period ending 31 December 1964.

Under Captain Holbrook's guidance, the 31st Tactical Fighter Wing has maintained a highly effective safety program. His tactful manner and outstanding knowledge of the safety field, combined with his ability to put across safety material has helped wing personnel to understand their role in accident prevention.

Captain Holbrook co-authored an outstanding 35MM slide presentation on adverse yaw which was adopted by Tactical Air Command forpresentation to all F-100 equipped wings. He wrote and established an effective Impound Program to insure thorough aircraft incident investigation and prompt reporting. In addition to his duties as flight safety officer, Captain Holbrook is a qualified instructor pilot and test pilot in the F-100 and is highly regarded by wing personnel.

Captain Holbrook's diligence and devotion to a positive accident prevention program qualify him as a TAC Outstanding Flight Safety Officer.



SO LONG
SOCKROLLER



This month we say goodbye to the irrepressible Ellrod T. Sockroller and his old dad, Captain Walter I. Bostwick. Walt somehow managed to escape from this magazine racket and is headed toward France and an assignment flying RF-101s. The ATTACK will no longer be the same . . . neither will France.

Seriously, we'll all miss his quick wit and ready comments, both verbal and written, and do our best to take over where he left off.

ACCIDENT FREE MONTHS

Those of you who follow the TAC TALLY will notice this month that the 434th Troop Carrier Wing at Bakalar AFB has completed 100 months of accident-free flying. In this period they logged 93,341 hours in C-46 and C-119 aircraft without a major or minor accident. This should be some sort of record for a TACTICAL wing. Well done 434th!



















USAF Flying Safety Plaques

12th Tactical Fighter Wing, MacDill AFB, Florida
474th Tactical Fighter Wing, Cannon AFB, New Mexico
612th Tactical Fighter Squadron, England AFB, Louisiana
349th Troop Carrier Wing, Hamilton AFB, California (AF Res)
442d Troop Carrier Wing, Richard-Gebaur AFB, Missouri (AF Res)

USAF Missile Safety Plaques

4510th Combat Crew Training Wing, Luke AFB, Arizona 4520th Combat Crew Training Wing, Nellis AFB, Nevada

Annual TAC Explosive Safety Award 836th Air Division, MacDill AFB, Florida

TAC Commander's Ground Safety Trophy - Category One 354th Tactical Fighter Wing, Myrtle Beach AFB, South Carolina

TAC Commander's Ground Safety Trophy - Category Two 366th Tactical Fighter Wing, Holloman AFB, New Mexico

Annual TAC Commander's Traffic Safety Trophy - Category Two
4444th Recon Tech Sq, Shaw AFB, South Carolina

Annual TAC Commander's Traffic Safety Trophy - Category One 366th Tactical Fighter Wing, Holloman AFB, New Mexico

TAC Drive Safety Plaque (Quarterly) - Category Two 4504th Missile Training Wing, Orlando AFB, Florida

TAC Drive Safety Plaque (Quarterly) - Category One 366th Tactical Fighter Wing, Holloman AFB, New Mexico

TACTALLY

A COMPARISON OF TACTICAL AIR COMMAND ORGANIZATIONS

MAJOR ACDNT RATE			
TYPE	1965*	1964	
ALL	6.2	10.5	
F-4	4.6	4.9	
F-5	0	0	
F-105	16.7	26.7	
F-104	12.0	12.1	
F-101	0	20.1	
F-100	8.9	18.8	
F-86	78.3	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	2.0	1.2	
C-123	0	8.6	
C-119	0	1.9	
A-1E	3	10.7	
U-10	0	28.6	
T 20	0	0	

* .	1.	AN	- 3	1 1	AN	R	65

ACCIDENT FREE MAJOR & MINOR			
	JE	T	
ACTIVE	HOM	THS	ANG
4485TW	12	19	123TRW
363TRW	10	16	117TRW
(ONVE	ANOITH	L
ACTIVE		-	RESERVE
4500ABW	45	100	434TCW
4442CCTG	16	61	435TCW

MAR TALLY			
UNIT	MAJOR	MINOR	
355TFW	2		
464TCW	1	1	
4520CCTW	1		
12TFW	1		
156TFG	1		
479TFW		1	

Good Show!

The March tally was marred by seven fatalities, six major and two minor aircraft accidents . . . a bleak welcome for Spring.

The fatalities occurred during a night low level formation mission when a C-130 struck a utility pole, exploded and killed all seven on board. Another C-130 received minor damage when it hit short of a marginal overseas runway.

The aircrew of an F-4C ejected successfully after they were unable to recover from a nose down spiral that terminated some air combat maneuvering.

After an overheat light in the weapons delivery pattern, an F-105 pilot ejected short of the recovery field when the P-1 and P-2 hydraulic systems failed. The aircraft pitched up out of control. Two other pilots ejected safely from their F-105F after their bird lost power as they pulled up from a strafing pass. Compressor stalls and decreasing rpm were not corrected by emergency fuel and airstarts.

An F-104C received minor damage when the drag chute failed, the pilot was unable to stop the aircraft, the BAK-9 did not engage, and the MAIA barrier caught only the left main strut causing the nose and right main gear to fail.

An F-100 would not respond to back stick pressure so the pilot aborted a formation takeoff. The barrier engagement was not successful, and the aircraft received major damage when it crossed railroad tracks beyond the overrun.

The tower had an F-86 pilot make two 360s before clearing him for his initial approach and then told him to break late. The pilot declared minimumfuel and changed it to emergency fuel when he made his gear check on base. The tower told him to go around into closed traffic because a light plane was still on the runway. On the go, the bird flamed out, the pilot landed it on the remaining third of the runway and went off the end into the water. He hadto use a knife to get out when the canopy wouldn't jettison.





PILOTS FLYING
INTO OUR GREAT
SOUTHWESTERN
BASES SHOULD
PAY ATTENTION
TO FORECAST
SURFACE
WINDS
SINCE THEY
ARE A CUE
TO DUST
STORMS!





