TAC ATTACK

TAC attack

JANUARY 1973

TO KILL A MiG ....Pg 16

Tomkowski

for efficient tactical air power

TAC ATTACK

JANUARY 1973
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Tactical Air Command

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TO KILL A MiG
Actual radio transmissions of Capt. Ritchie's fifth kill .... Page 16

CURRENT INTEREST

DEPARTMENTS

TACRP 127-1

Angle of ATTACK

know your people

You've all heard the old saw that goes "all accidents are preventable." I believe that. But, I also believe that some accidents are more preventable than others. Here's what I mean.

During 1972 a full twenty-five percent of the private motor vehicle accidents in TAC were caused by individuals who had records of previous moving violations or accidents. In other words, 25 percent of the accident victims told us, by their performance, that they were potential accident causers. I wonder how many of those accidents could have been prevented if the supervisor had taken the time to know that one of his troops was likely to get himself into an accident?

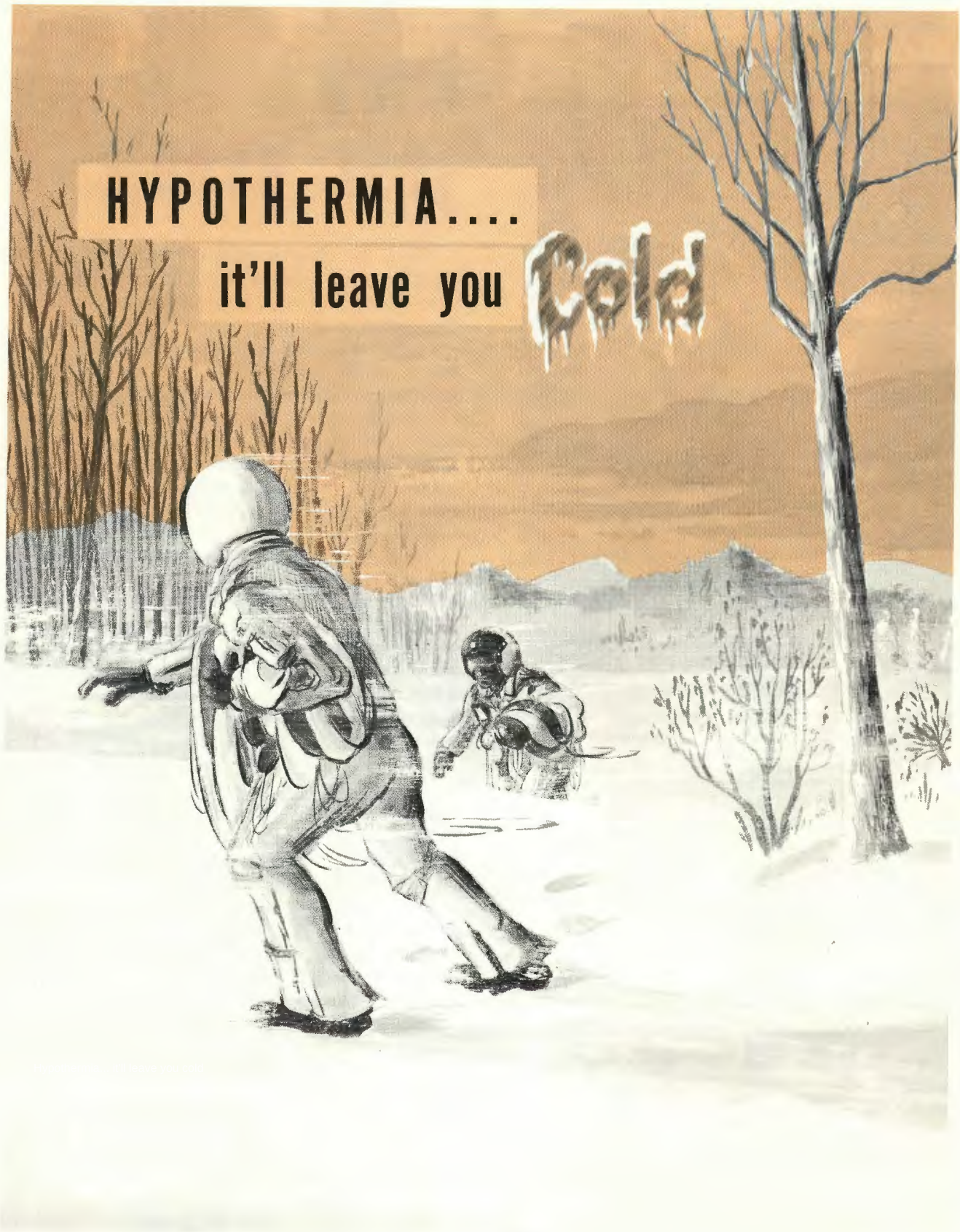
Trying to prevent all private motor vehicle accidents is an exercise in frustration. We know that and so do you. Let's not neglect the overall program, but this year let's concentrate more on those potential accidents that are the most preventable. How do you, the supervisor, do that? It comes down to HOW WELL YOU KNOW YOUR PEOPLE. How many traffic violations has Airman Jones had during the last year? How about his work habits, his ATTITUDE? Is he, by his actions, signaling an accident?

Other than day-to-day observation, there's a lot of information available to aid the supervisor in making a judgment. On-base traffic citations, off-base citations, fender-bender vehicle accidents, and, if you choose to go that far, even first aid injury reports are just a few examples of information sources.

Once you've identified an individual who just doesn't care to comply with the rules, several means are available to help you help him. Extra counseling may be appropriate. Get his close friends to help you influence his driving habits. A visit with the unit commander might do the trick. Whatever the means used to prevent the accident, the first and most important step must be taken. IDENTIFICATION! Once you've done that, then get personally involved.

Let's prevent the most preventable accidents in 1973. It's a life-saving goal.

E. HILLDING, Colonel, USAF
Chief of Safety


HYPOTHERMIA....
it'll leave you Cold

by Capt Jim Young

Jump out of your airplane almost anywhere in the northern half of the United States in the wintertime and you are face to face with an arctic survival situation. Definitions of "arctic" may vary depending on what source you are using, but regardless of whether you call it "arctic," "sub-arctic," "northern temperate," "frigid" or just plain "cold," you're smack in the middle of a fight for your life! The enemy? Cold! It's not going to be a lack of food or even water that'll get you first, it's going to be hypothermia. (That's a scientific term that means a lowering of the temperature of the body's inner core.) In other words, your body is going to cool off to the point where you are incapable of taking care of yourself.

An interesting note here is that hypothermia has been reported in a large number of cases in temperatures of 30 to 50 degrees Farenheit. It doesn't have to be sub-zero weather before you're affected.

Here's what happens. Your skin temperature starts to drop first. When this happens, it affects the muscles close to the surface and prevents fine, coordinated movements. After the skin cools off, the temperature of your inner core starts to decrease. As it drops from 99 to 96 degrees, violent uncontrollable shivering sets in. The body temperature continues to drop through the various clinical stages toward death, but let's just let it suffice to say that once violent uncontrollable shivering starts, you're going to have trouble striking matches, building fires, making shelters, operating your survival radio, or any of the other vital tasks necessary for survival and recovery.

The best cure for this loss of heat, or hypothermia, is obviously prevention. And to prevent it, you've got to know something about it. You lose this heat in five basic ways: radiation, conduction, convection, evaporation, and respiration.

RADIATION

Your head is nothing more, from a thermal point of view, than a big radiator. If the temperature gets down near zero, an uncovered head will radiate between one-half and three-fourths of the body's total heat production. Here then, is an obvious way to preserve your body heat – keep your head covered. You might even consider carrying a knit cap or something similar in your flight suit or G suit pocket. It'll be a lot warmer than your helmet.

CONDUCTION

You can avoid loss of heat by conduction by not allowing any exposed skin to come in contact with ice, snow, any metal objects, etc. If you've ever had your fingers stick to an extremely cold object, you've experienced a heat loss due to conduction. (As a child, did you ever stick your tongue to an ice tray?) If you take normal precautions, you probably won't lose very much heat to conduction.

CONVECTION

A much more likely way to lose body heat is by convection. Convection is nothing more than removal of heat from your body by the movement of air next to the skin. (Sounds like wind chill, doesn't it? It is!) Your body, via convection, produces a layer of warm air. The only thing that holds this warm air next to your body is clothing. The more layers of clothing, the more heat you're likely to retain. If that sounds important – it is! You must be prepared with the proper clothing PRIOR to the flight. Every winter season the same old phrase, "dress for the conditions you're flying over", is handed out and briefed. Every year you still see people clothed improperly. If you're going to survive, you still have to plan ahead and dress properly.

EVAPORATION

Dressing properly will certainly help your situation, but don't forget about the heat loss due to evaporation. Plain old sweat will not only get rid of a lot of heat, but will dampen your clothing, which will subsequently freeze. The layer of icy clothing will then extract more heat. In addition, the wind chill factor is about ten times as serious with wet clothing as it is with dry.

RESPIRATION

Respiration is the fifth and last way you lose heat. Aside from stopping breathing, there's not much you can do about this one. The heat from your breath will help warm a shelter, though.

HYPOTHERMIA

There they are then — the five ways your body loses heat:

Radiation — Keep your hat on.

Conduction — Cover as much exposed skin as possible, then avoid contact with cold surfaces.

Convection — Keep out of the wind. Wear layers of proper clothing.

Evaporation — Don't sweat. Stay dry.

Respiration — Stay sheltered as much as possible. Use your breath to help warm your shelter.

Any shelter you make or use should be an extension of your clothing. Once again, you are trying to preserve heat and prevent heat loss. If you go down with your aircraft, it is normally not a good idea to try to live in the aircraft. In most cases, you SHOULD try to stay near it. A downed aircraft is a good signal by itself, and far easier to see from the air than a survivor by himself. Snow is a good insulator so you can use it to help retain the heat in your shelter. You should remember that if you construct any type of thermally insulated shelter, you shouldn't have a fire in it. Only in a non-thermal shelter, such as a para-tepee, can you safely build a fire. Incidently, don't forget that parachute. It has just as many uses in arctic survival as anywhere else. Shelters, ground cloths, additional clothing, signals, etc., can all be made from parachutes. Aside from proper clothing and fire starters, it's probably the handiest item you have.

Now that we've talked about means to retain your self-generated heat, let's move on to a brief discussion of how to produce additional heat. Nothing can be more helpful or comforting than a fire. It can be used for warmth, cooking, signaling, and just to boost morale. The concerned crewmember will make sure he carries some matches and/or a lighter to start fires. Of course, survival situations being as they are, your matches will get wet and your lighter will be out of fluid. You're not out of luck yet. Your lighter is the handiest little flint and steel kit ever invented. You've even got tinder included. Use the cotton in the bottom of the lighter, fluff it up, and use the striker wheel to shower sparks on the cotton, add more combustible material, and presto — fire. Don't forget to search through your issue type survival gear — there should be a fire starter of some type in there. If you're close to the wreckage of your aircraft, you may be able to use some parts of the aircraft — rubber, cushions, etc., as signaling devices. They produce a thick black smoke when burned. Don't forget to check for fuel or oil in the tanks. You can use it for fuel. Be careful though, gasoline and fire are just as dangerous, if not more so, in a survival situation than they are in your fireplace or barbecue pit. Also, because gasoline and other liquid fuels absorb and retain the cold (they become super-cooled liquids), they will give you an instant case of frostbite if you get some of the super-cooled fluid on your hands or spill it on you.

Just your luck, you say. You took up aerobics and gave up smoking; hence, no lighter. Matches are gone, and no crashed airplane with unruptured fuel tanks available. OK, got a survival radio? Good. As a last ditch effort the battery in it is a potential source of sparks for fire starting. Using a lot of ingenuity, the survivor may be able to short across the terminals and get a fire started. Since in doing so the battery may be damaged, the decision of which is more important, the fire or the radio, must be carefully weighed.

Here then, is a quick look at winter survival. As in everything the Air Force does, preparation is the key word. If you are mentally and physically prepared BEFOREHAND, your survival experience will have a happy ending. Being prepared doesn't end with reading this article. The next time you fly, mentally check yourself over and see how you would fare if you punched out. Are you ready for it? You'd better be! Remember — hypothermia will leave you cold.

TACTICAL AIR COMMAND

AIRCREWMEN of DISTINCTION

Capt Ticktin

Capt Hunt

Captain Thomas L. Ticktin and Captain Allen W. Hunt, 12th Tactical Reconnaissance Squadron, 67th Tactical Reconnaissance Wing, Bergstrom Air Force Base, Texas, have been selected as Tactical Air Command Aircrewmen of Distinction for the month of November 1972.

Captain Ticktin and Captain Hunt were flying number two in a flight of two RF-4C aircraft on redeployment from Elmendorf AFB, Alaska to Bergstrom AFB, Texas following a mercy mission search for a downed civilian light aircraft.

During the second scheduled refueling, the stick forces necessary to control the aircraft about the pitch axis increased to approximately forty pounds pressure. After only 4000 pounds of the refuel offload were taken on, the aircraft's response to pitch control inputs became extremely erratic and Captain Ticktin immediately disengaged from the tanker. Pitch trim was used to help control the aircraft's gyrations. The aircraft was found to be controllable on autopilot provided no changes in pitch were required. At this time the aircraft was responding very sluggishly to all pitch axis inputs.

Requesting clearance to the nearest suitable alternate, Captain Ticktin began a descent to 10,000 feet MSL. During the descent the control sticks in both cockpits completely froze in the pitch axis. Using pitch, trim, and power Captain Ticktin was able to level the aircraft at 10,000 feet with Captain Hunt assisting with the control stick. Some control stick movement was regained after several minutes of flight, but the stick forces remained in excess of forty pounds. The flight was cleared to 8000 feet MSL and a controllability check was initiated. Stability augmentation was disengaged with no apparent effect. The aircraft became increasingly difficult to control as airspeed was reduced. The crew determined that with both crewmembers attempting to position the control stick, the aircraft was controllable down to 17 units angle of attack at approach airspeed. Captain Ticktin requested a straight in GCA precision approach and, utilizing trim, power, and Captain Hunt's assistance, landed without incident. Binding of the forward bell crank torque tube bearings was later determined to have caused the excessive control stick forces.

By correctly analyzing and applying rapid and correct responses, the crew was able to control their aircraft without full use of the flight controls. Their actions prevented the loss of a valuable aircraft and possible personal injury. The professional skill and alertness of Captain Ticktin and Captain Hunt certainly qualify them as Tactical Air Command Aircrewmen of Distinction.

by Maj Tim Brady

The cover of the January 18, 1960 issue of AVIATION WEEK AND SPACE TECHNOLOGY featured the following headline: "C-130 Team Flies Air Show Formations." The cover photograph was that of four C-130s in a very unusual formation and was captioned: "Four Horsemen Begin Bomb-Burst."

Bomb-Burst?

C-130 Aerial Demonstration Team?

Four Horsemen?

Somebody's got to be kidding!

Kidding? Hardly. The Four Horsemen did, indeed, exist. From 1956 to 1960 they thrilled audiences throughout the country with precision four-ship formations in the big Hercules C-130. To "thrill" was not their goal. To demonstrate the performance, versatility, and multi-role potential of the C-130 was. And there was another, completely understandable, goal. For years the primary airlift aircraft was the C-119, a good airplane but not particularly endowed with spectacular performance. But now the airlifters had themselves an airplane with power, maneuverability, speed, and endurance; a gut airplane which could do everything better. And with the C-130, the airlifters had a chance to demonstrate that as professional pilots there were none better anywhere.

Such must have been the thought when in 1956, while on a training mission at Fort Campbell, the aircraft commanders who were to become the Four Horsemen, conceived the idea of a C-130 demonstration team. That

turned out to be the simple part; promoting it to a practical reality became the difficult task.

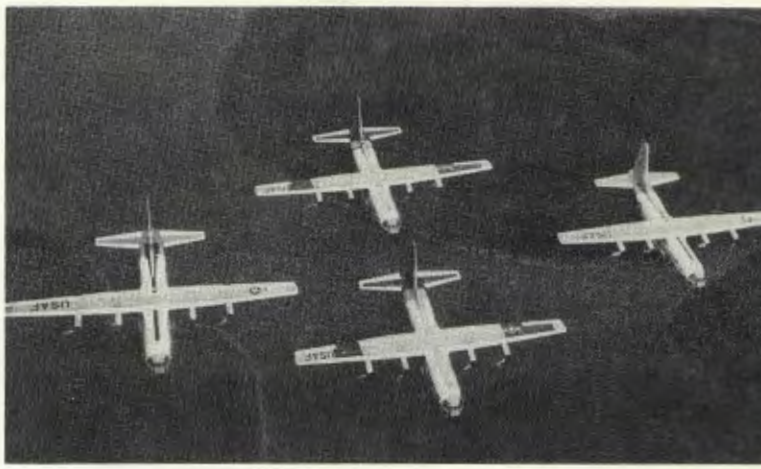
Hours upon hours of research into regulations, tech orders, and safety standards, coupled with the tedious job of placing the show formations on paper, finally paid off in the form of TAC approval. The Four Horsemen became a sanctioned aerial demonstration team.

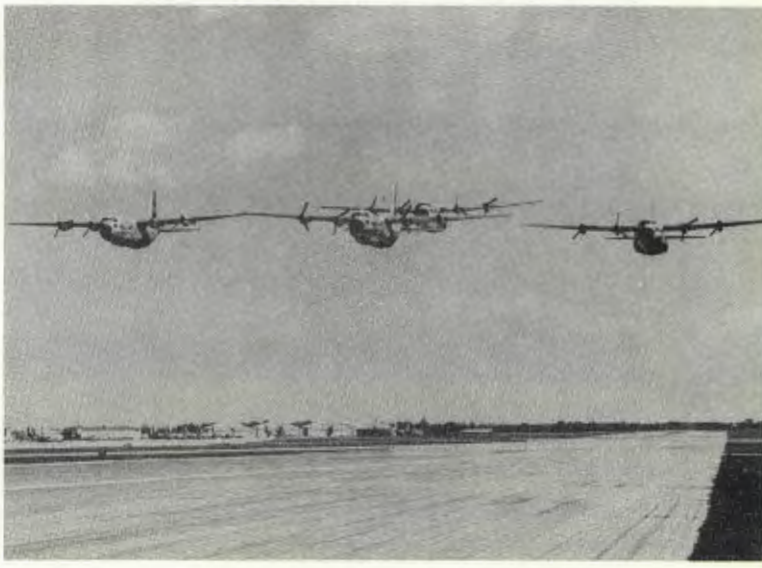
The team was not formed as a separate unit with their own airplanes, maintenance teams, and crews; rather the crews and airplanes were drawn from the resources of the 774th Troop Carrier Squadron which, during this period, was stationed first at Ardmore AFB, Oklahoma, then Sewart AFB, Tennessee. Of course, the same crews that made up the Four Horsemen team always flew together but the airplanes were picked from the operational aircraft on the flight line.

The flying time necessary to practice the show formations and to give performances came out of the squadron's hide and had to be sandwiched in between such things as the Lebanon crisis, the Quemoy-Matsu thing, and numerous side trips to Fort Campbell, Kentucky, and Pope AFB, North Carolina for airborne troop and heavy equipment drops, and scores of other operational missions and exercises.

Soon after the team was formed, the word about "those guys that fly the big airplanes" spread and requests for demonstrations came hot and heavy. And no wonder; the shows were exciting and completely unique in that a big four engine turboprop was being used as the show aircraft rather than the traditional fighter.

A typical show began with a four-ship, two second interval takeoff. Since normal spacing for formation takeoffs is fifteen seconds, the two seconds used by the Horsemen made the takeoff appear to be a simultaneous four-ship maneuver. Takeoff roll was less than 2000 feet. The gear came up on all four aircraft simultaneously and the flaps were milked up while climbing out. Passing the end of the ten thousand foot runway, the Horsemen were tucked in "diamond" formation and passing 1500 foot altitude while climbing at 4000 feet per minute. Next came a high speed pass (about 270 knots) over the field in diamond formation, followed by a diamond formation chandelle. The Horsemen then changed to an "arrow head" formation for another fly-by, followed by a single file "arrow" formation fly-by. Each formation change was a crisp maneuver done in perfect coordination within full view of the audience. The next-to-last maneuver was a bomb-burst done from the diamond formation. The spectacular maneuver was begun on command of the slot man, at which time he started a steep pull up with a 45 degree left bank; at the same time the leader pulled up and to the right at 45 degrees of bank and the wingmen





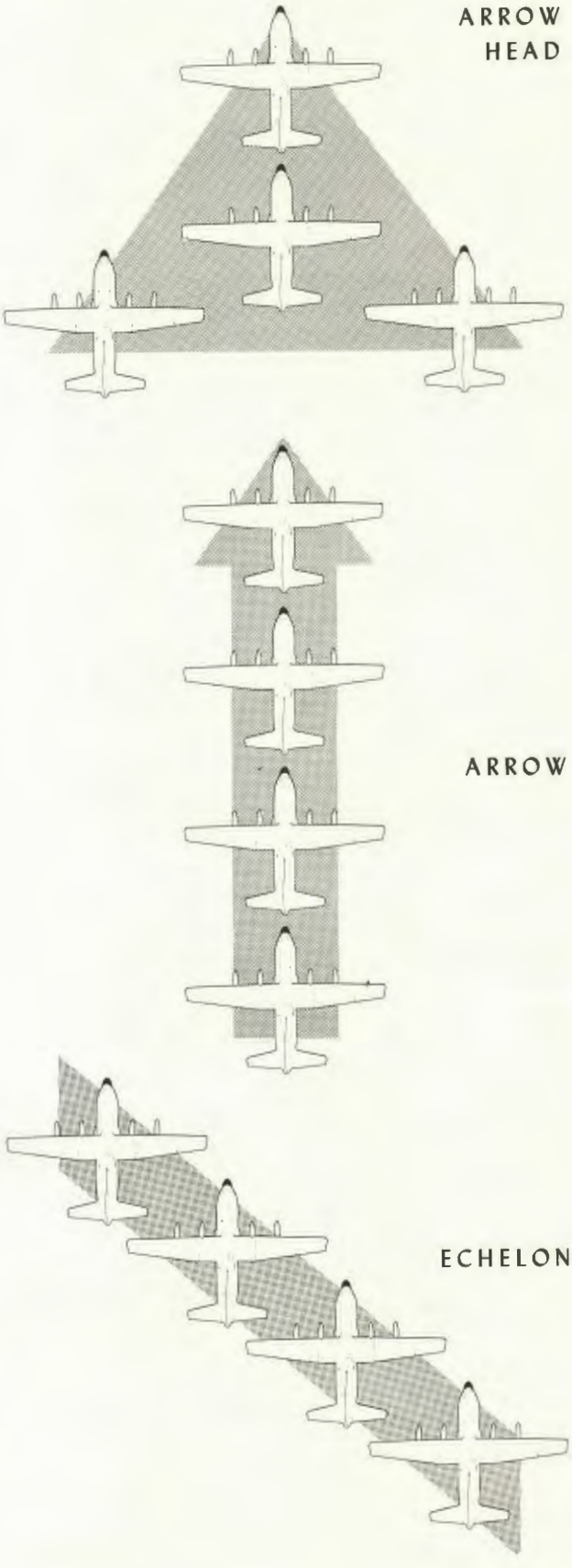
the four horsemen

broke to the left and right, respectively, using 90 degrees of bank. After the bomb-burst, the formation quickly rejoined and came over the field in echelon formation for a simultaneous "fan break" overhead pattern. The Horsemen rolled out on downwind in close trail formation, which was maintained to landing, with each succeeding aircraft touching down on alternate sides of the runway.

With their impressive performances, the Four Horsemen carved out a little piece of history for themselves and for all airlift (troop carrier as it was then called). And, like the old saying, "It was great fun while it lasted." In the spring of 1960, the team was disbanded because of the pressing operational need of the C-130 capability.

The Four Horsemen achieved their objectives. They brought the capabilities of the C-130 to the forefront of discussion and they proved that as professional pilots and crews, there are none better in the world than those in TAC airlift. And that's true today.

THE FOUR HORSEMEN (1960). FROM LEFT TO RIGHT : CAPT HUBERT E. (GENE) CHANEY, CAPT WILLIAM H. HATFIELD, CAPT JAMES F. AKIN. AND CAPT DAVID L. MOORE



From a collection of anonymous stories published in 1942 by the Army Air Forces, TAC ATTACK presents:

Lessons That Live

No. 4 of 17

Courtesy of Lt Col H. M. Butler, 4500 ABW/SE

HOW LONG WILL A B-18 FLOAT?

We were on a routine navigation flight in a B-18 airplane, en route from Puerto Rico to the island of Curacao, just off the coast of Venezuela. We were on automatic pilot and things were rather dull.

"How long," I mused aloud, "do you think a B-18 would float if it were forced down in the ocean?" It was a purely academic question, posed more than anything else for the purpose of creating conversation. The discussion waxed hot for a while, each of us having a different idea and defending it strongly; then I laughingly exclaimed that it was rather silly for grown men to be arguing about a theoretical question which we couldn't possibly settle right then anyway.

The words were no more than out of my mouth when both engines suddenly quit cold without warning. We were then some seventy miles south of Puerto Rico.

Automatically I turned the fuel selector to a full tank and commenced working the wobble pump. Nothing happened, except that the propellers continued to windmill. We were losing altitude fast, and the bottom was dropping out of my stomach even faster.

I realized with a sinking heart that we were going to learn first-hand how long a B-18 would float.

Hope springs eternal, however, and I began a re-check. Fuel pressure normal, oil pressure normal, everything, in fact, appeared to be in order. We just sat there in awed silence for a moment, then the pilot, resigned to our fate, instructed the radio operator to send our position back to the base.

My eyes wandered idly and helplessly over the instrument panel. Suddenly they froze on one point — the main ignition switch. Instead of being at an upward slant from the panel as it should have been, it was standing straight out. I leaped across the cockpit and threw it on. The engines started with a roar that was the sweetest music I ever heard in my life and we continued calmly on our way.

We had lost more than fifteen hundred feet of altitude when the engines took hold. Fortunately we had that much to lose and something to spare, otherwise my idly-posed question of a half-hour earlier would have been answered then and there.

>

TAC TIPS

. . . interest items,

CORRECTION (FOR A-7 TYPES)

In an article published in the November 1972 issue of TAC ATTACK entitled "A-7D: Why ISO?" the following statements were made:

"Whenever you contemplate moving the handle out of ISO, bring the handle inboard and push it forward. If the handle won't go forward, you were in ISO. If the handle goes forward, you are not in ISO." A typo occurred and completely changed the meaning of the last sentence. The word "not" should be "NOW," so the sentence should read "If the handle goes forward, you are NOW in ISO."

Sorry 'bout that, SLUF drivers.

TACAN ERRORS

A recent hazard report investigation turned up some interesting information concerning TACAN errors. It seems that it is possible (although extremely infrequent) that a false signal can be introduced into the DME which would cause inaccurate DME readings in increments of 20 miles. One condition that can cause this error is an internal failure of the memory element; however, this failure would probably be apparent to the crewmember and is easily corrected during bench checks. Another condition which can introduce errors is improper shielding of the TACAN ground site. Through various combinations of electrical transmissions, it is possible that false DME readings of seven miles or more would be indicated. This is also infrequent and should it occur the DME would break lock rather frequently. The normal 30 second search cycle would be reduced to a 10 second or less cycle. Additionally, the signal would vacillate from a correct indication to a 10 second search cycle to an incorrect reading to a normal 30 second search cycle, then back to a correct reading. A malfunction of this type can be corrected by rechannelizing the TACAN.

Although these TACAN errors are very rare, it is important that the pilot cross-check the TACAN with other nav-aids (when available) or ground positioning sources (ATC, eyeballs, GCI).

EXPENSIVE TROPHY

Recently a range officer on one of our TAC ranges picked up a 20 mm casing and a 20 mm ball projectile. He was going to mount them as a trophy for a friend. He looked the casing over, trying to determine if it had been fired. Since the primer in the casing had an indentation on it caused by the firing pin, he did not check any further to see if the primer was live or not, but assumed it was not. He then attempted to remove the primer portion using a file and a hammer. The primer detonated, causing lacerations to his left hand. The list of regulations, manuals, and directives violated in this incident are impressive, but probably more impressive is the lack of common sense. Even a trophy made of scrap can be expensive.

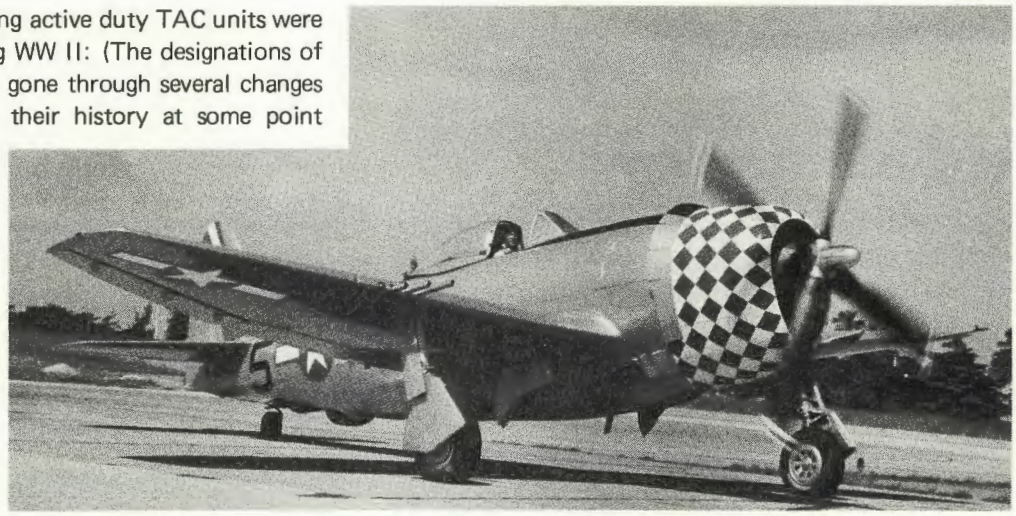
THE ONE AND ONLY P-47N

While opening the mail on a dreary day recently, the following photos fell out, and made our whole day. We think they'll make yours too. The P-47N was rebuilt by the Puerto Rican Air National Guard; a project which took five years. According to Major Penagaricano, Chief of Safety, PRANG, this is the only airworthy P-47N in existence, and the Puerto Rican National Guard will gladly exhibit it at static displays at TAC bases, given adequate advance notice and support.

mishaps with morals, for the TAC aircrewman

Incidentally, the following active duty TAC units were equipped with P-47s during WW II: (The designations of these units have, of course, gone through several changes but the P-47 figures into their history at some point during the big war.)

4th TFW
23rd TFW
27th TFW
33rd TFW
35th TFW
49th TFW
57th TFW
58th TFTW
354th TFW
355th TFW
366th TFW



SPO COR

spo corner

AB WITHOUT BANG F-100

It's simply "thrilling" to watch an old Hun light up at both ends when the AB eyelids fail to open after the pilot has selected afterburner. The pilot, himself, doesn't have a view of all this excitement, but he does have a ringside seat. No doubt he will feel the effects of his efforts as his feet bounce off the instrument panel. This AB problem has been around for as long as the "Hun" and will be until we are completely retrofitted with Dash 23 ABs.

To keep the number of "thrills" you Hun pilots are experiencing to a minimum, I'll pass on a couple of "techniques" for lighting the AB. Tongue-in-cheek, I'll forget the aerodynamic and engineering principles behind these gems, as they are as numerous as the pilots who care to talk about them.

Step one is to come back slightly on the throttle after going outboard. The original thinking behind this razzle dazzle was that you have more time to catch an overheat condition if it arises. There are other "reasons," too (the number depends on the number of people you talk to). But, whatever the reason, coming back on the throttle helps.

Step two (done in concert with step one) is to "unload" the aircraft. This reduces the angle of attack at the inlet and takes the engine further from the edge of compressor stall. Additionally, it takes the G loading off the exhaust nozzle and allows more freedom for movement.

If you can coordinate the above actions to occur at approximately the same time, like walking and chewing gum, you won't have that tingling sensation on the soles of your feet.

Units may consider opening the AB eyelids anytime it is anticipated the aircraft will not be flown for several days. This protects the AB actuators from dirt and rust, in addition to activating the eyelids the next time the engine is started. Or, if an ENC valve is installed, have your crew chief actuate the eyelids after start on the first flight of the day.

by Capt Al Mosher

EMERGENCY -COUNT THE PIECES

Nothing in the world reveals the makeup and true savvy of a fighter pilot as completely as his handling of a full-scale emergency. And, in many cases, "true savvy" prints out as planning, preparation, and knowledge of the equipment.

A recent accident pointed out the need for pilots to once again review their habits in the use of the zero-delay lanyard. Consider the times when the lanyard should be connected, such as: takeoffs, landings, and extended periods of time at lower altitudes. Mountains are also a consideration. During all flights in mountainous areas where your altitude is less than 2000 feet above the terrain, you should have the lanyard connected.

Situation: You are faced with the fact that you know you have to eject from the disabled beast. Your zero-delay lanyard is unhooked. Do you connect the lanyard or leave it unhooked? (Clue: Altitude doesn't make any difference.)

Regardless of your altitude and the reason behind the unhooked lanyard (you made a mistake, maybe?), don't take the time to connect it. The time required to connect your lanyard will exceed the one second pad it gives you when connected.

Of course, the best thing to do is to have it connected (or disconnected) at the appropriate times. Correct zero-delay lanyard discipline can, obviously, save your life.

The Dash One for your aircraft covers the subject well.

NER

Some list the "Warning, do not attempt to connect zero-delay lanyard after deciding to eject." Know your Dash One procedures before you find yourself between the rock and the hard place. Once you're there, how you got into the emergency situation is not important – it is getting out of it in the desired number of pieces that counts.

by Maj Bob Lawler

F-4 USE OF NOSE GEAR STEERING

What's the difference between an F-4 blown tire incident and an accident? Simple. In the incident, the pilot is able to keep the aircraft on the runway. Review of past blown tire incidents and accidents reveals little difference in the weather, runway conditions, length, width, blowout point, barriers, or the emergency procedures used. In all cases when the aircraft drifted off the hard surface, the pilot was trying to steer the machine in the other direction, usually with full opposite brake, rudder, and nose gear steering. So why do the emergency procedures work in some cases and not in others?

I'll bring out the following facts about the nose gear for thought:

1. Nose gear steering provides a full 70 degree nose gear deflection with full rudder.

2. This deflection to 70 degrees is not a straight line function with respect to the amount of rudder applied. The gear moves in a non-linear manner, i.e., one-half rudder does not give 35 degrees of gear movement, but only 5 degrees; two-thirds approximately 14 degrees, and 90 percent rudder yields 50 degrees gear deflection.

3. At 70 knots, the F-4 nose gear tire will start to skid at approximately 14-15 degrees of deflection on a dry runway and at less than 7 degrees under wet runway conditions. (At higher airspeeds, the skid will start at lesser deflections.)

4. Effective nose gear steering will probably not be achieved if the tire is skidding – dry or wet.

So what does this imply? If you put in two-thirds or more rudder, at too high an airspeed, you could very easily get the tire into a skid condition and lose all effective steering from the nose gear tire.

Solution: Go in with the rudder slowly and don't be in too big of a hurry to get a large change in direction. Increase your rudder/nose gear steering inputs up to two-thirds rudder smoothly. Going rapidly past the two-thirds position will dramatically increase the gear deflection and probably result in a skid. If you find yourself at 60 or 70 knots with full rudder, brake, and nose wheel steering with no noticeable directional response, ease off (the rudder not the brake) and try it again up to the one-half to two-thirds rudder pedal position. If the runway is wet and/or airspeed higher, the situation is even more critical. A little finesse should go a long way toward keeping these incidents, incidents.

by Maj Burt Miller

P.S. A limited ($\pm 15^{o}$) N/G/S system will be evaluated in January during our rain tire test. If successful, you may find another switch in the cockpit.

TO KILL A MiG

The time? Summer 1972. The place? Somewhere over North Vietnam. The event? Captain Steve Ritchie, the first USAF Vietnam war ace, downs his fifth MiG, and Captain Chuck DeBellevue, now also a Vietnam war ace, downs his fourth. Captain Ritchie is the flight leader of Buick flight, a MiG CAP (Combat Air Patrol) of four F-4 Phantoms. Vega and Olds are two other F-4 flights also chasing the MiGs. Red Crown and Disco are the call signs for radar agencies that provide assistance during the kill.

The coordination and teamwork necessary to kill a MiG compresses the efforts and training of many people to a single point in time. Captain Ritchie and Captain DeBellevue (front seater and back seater in the same airplane) must perform as a well disciplined team. Buick

TO KILL A MiG

flight (and all the other flights involved) must blend all their skill into the coordination necessary to give mutual support and must work together perfectly to fight as a team. The coordination necessary between ground agencies and aircraft must be flawless. The countless people who make sure the airplanes are in operating condition, that keep the ground radar working, that man the tankers, and that do a hundred other things, must have done their thing correctly. In this kill everything had to work . . . people, airplanes, and radar. It's a classic example of teamwork in action.

The following sequence of radio transmissions has been extracted from actual tape recordings of the kill. Cockpit communications between Capt Ritchie and Capt DeBellevue are identified by "Ritchie" (intercom) and "DeBellevue" (intercom). Radio transmissions made by Capt Ritchie to other airplanes and to radar are identified as "Buick." All radar agencies are called "Radar." Bullseye is a point in North Vietnam known to the aircrews and ground agencies. This allows positions of enemy aircraft to be identified easily. For example: "Bandits 270/50 Bullseye" — means enemy fighters 50 miles west of Bullseye.

Here then, is a MiG kill.

Radar: **Buick, Bandits 240/30, Bullseye.**

Buick: **Copy 240 at 30.**

Ritchie (intercom): **What in the hell are they** *(the MiGs)* **doing down there?**

DeBellevue (intercom): **What's our fuel?**

Ritchie (intercom): **11.2.**

DeBellevue (intercom): **OK.**

DeBellevue (intercom): **I've got some friendlies and some MiGs. The MiGs are behind the friendlies right now. The friendlies are at 60** *(miles)* **and the MiGs at 70.**

Buick: **Buick shows MiGs 10 miles behind friendlies.**

Buick: **Stand by for position.**

Olds: **Olds 90 right** *(Olds flight is turning toward the MiGs also.)*

Radar: **This is Red Crown. Bandits at 253/37, Bullseye.**

Radar: **Buick, Disco, Bandits 235/45, Bullseye.**

Buick: **Copy that.**

Ritchie (intercom): **Bandits on the nose.**

DeBellevue (intercom): **It looks like two of them at least.**

Buick: **Buick flight, fuel check.**

Olds: **Olds, 90 left.**

Radar: **This is Red Crown. Bandits 252/51, Bullseye.**

Buick 3 (The element lead responsible for protecting Capt Ritchie's airplane): **Buick 4, this is 3. Can you read me? We've got bogies** *(unidentified aircraft)* **off to the left at 10 o'clock, way out.**

Buick 4: **Tally.**

Radar: **This is Red Crown. Bandits 251/57, Bullseye.**

DeBellevue (intercom): **Roger, I've got 'em.**

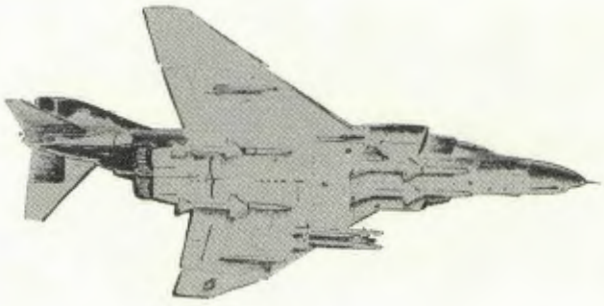
Ritchie (intercom): **I can't believe we're not getting a SAM** *(surface to air missile)* **shot at us.**

DeBellevue (intercom): **Me either.**

DeBellevue (intercom): **Bandits 170/61 miles. We're running in.**

DeBellevue (intercom): **He's at one o'clock right now.**

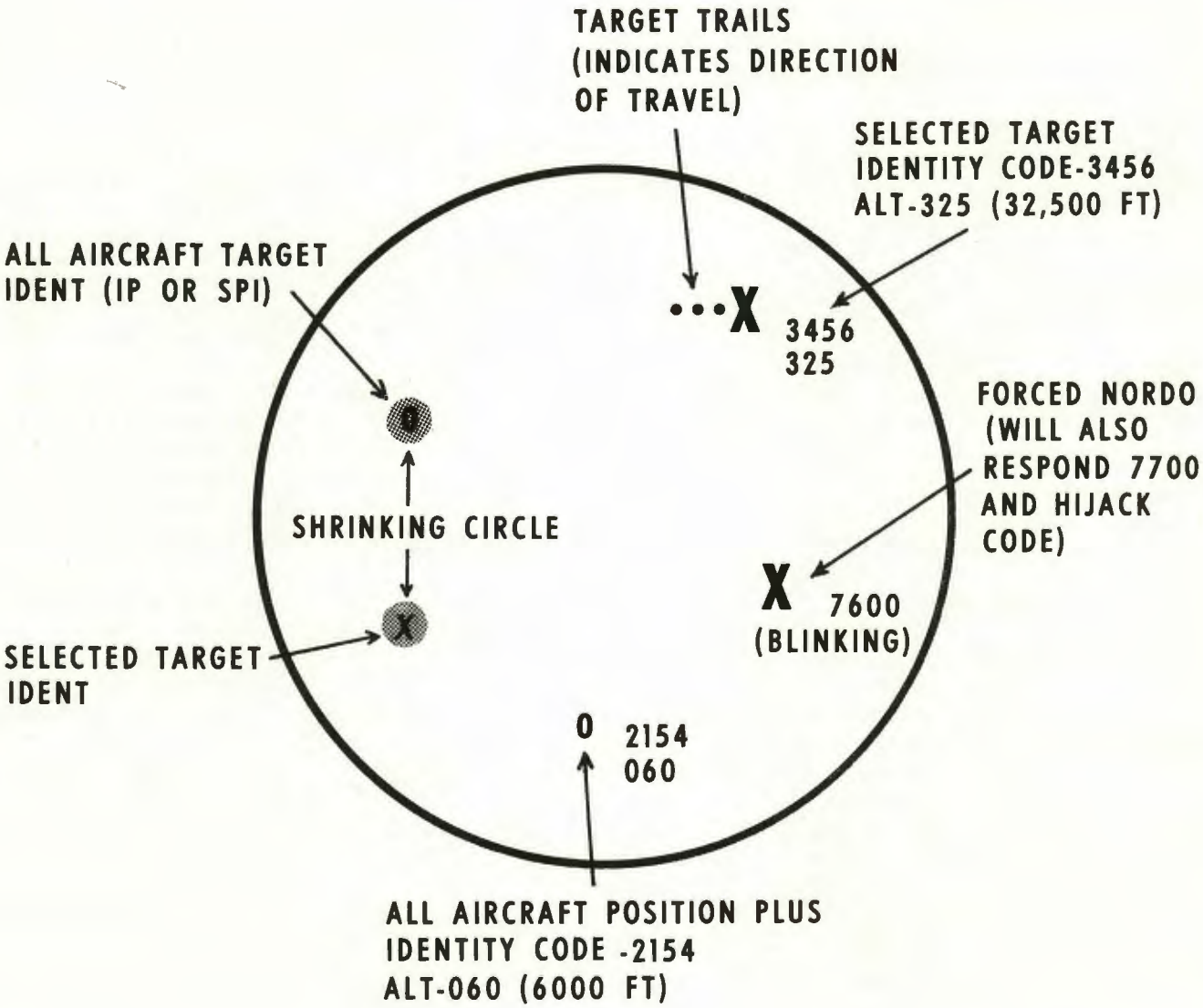
(At this point, Buick Flight is converging head on with the MiGs. Olds and Vega flights are chasing the MiGs, ground radar is telling everyone where the MiGs are. All the F-4s are using radar, eyeballs, and everything else to try to get to the MiGs, and the MiGs are trying to run away from everyone and get home.)



Ritchie (intercom):	**Keep giving it to me, Chuck.**
DeBellevue (intercom):	**O.K.**
Buick:	**Disco, do you have an altitude on them?**
DeBellevue (intercom):	**Looks like the MiGs are 160** *(degrees)* **from us.**
Radar:	**This is Red Crown. Bandits 250/67, Bullseye.**
DeBellevue (intercom):	**One o'clock** *(the MiGs are just to the right of the nose.)* **They are inside of 50 miles. Two of them at least.**
DeBellevue (intercom):	**40 miles.**
DeBellevue (intercom):	**35 miles – 1 o'clock.**
Radar:	**Vega, they are 255/62, Bullseye.**
Vega:	**Roger.**
DeBellevue (intercom):	**30 miles. Two sets looks like. May be 4 MiGs.**
Radar:	**Vega, Disco. They are 248 for 53** *(miles).*
Buick:	**Say altitude of MiGs.**
Radar:	**Buick, they are 266 for 32. Heading 080. Speed point 7.** *(Capt Ritchie now knows their position, heading and speed. Speed is seven-tenths of the speed of sound, or point seven mach. Now all he needs is their altitude.)*
Buick:	**Say their altitude.**
DeBellevue (intercom):	**22 miles dead ahead.**
Buick:	**Say altitude please.**
Buick:	**Anybody know their altitude?**
DeBellevue (intercom):	**25. We're locked.** *(The bandits are at)* **25,000** *(feet)*, **15 miles dead ahead.**
Buick:	**Buick flight, reheat.** *(Capt Ritchie is now starting a climb from 15,000 feet to get up to the MiGs.).*
Ritchie (intercom):	**We want to get a visual first.** *(Because of all the friendly airplanes converging, Capt Ritchie wants to see the MiGs before he fires.)*
DeBellevue (intercom):	**They are dead ahead going right to left. They're about 1130. You're in range.**
DeBellevue (intercom):	**Come left a little.**
DeBellevue (intercom):	**Come left a little.**
DeBellevue:	**About 11 o'clock. Three and one-half miles ahead. Turning left. 3 miles, 2-1/2. They are off the scope. Hurry it up!**
Ritchie (intercom):	**I've got 'em. I've got 'em, I've got 'em** *(visual).*
Buick:	**Buick's got a tally ho.** *(He sees them.)*
DeBellevue (intercom):	**Three miles – 3-1/2 miles, 2 o'clock.** *(Capt Ritchie is in a hard climbing turn, attempting to get behind the MiGs. He fires his first missiles, which miss.)*
DeBellevue (intercom):	**You got min overtake. O.K., you are out of range. You are out of range.** *(At this point, Capt Ritchie has turned and is directly behind the MiGs. He fired and missed during the turn, but is now accelerating and closing on the MiGs from behind.)*
Ritchie (intercom):	**They are 12 o'clock straight ahead.**
DeBellevue (intercom):	**You're in range. You're in range. Fire.** *(Captain Ritchie fires again.)*
Ritchie (intercom):	**He conning way high** *(the MiG is making a contrail).*
Buick:	**Splash! I got him! Splash!**
DeBellevue (intercom):	**Good Show, Steve!**

Teamwork? You bet! ➤

WHAT'S NEW


TARGET TRAILS
(INDICATES DIRECTION
OF TRAVEL)
SELECTED TARGET
IDENTITY CODE-3456
ALT-325 (32,500 FT)
ALL AIRCRAFT TARGET
IDENT (IP OR SPI)
3456
325
FORCED NORDO
(WILL ALSO
RESPOND 7700
AND HIJACK
CODE)
SHRINKING CIRCLE
7600
(BLINKING)
SELECTED TARGET
IDENT
2154
060
ALL AIRCRAFT POSITION PLUS
IDENTITY CODE -2154
ALT-060 (6000 FT)

in terminal control ?

by Captain Joseph L. Thomas
TAC/DCF, Langley AFB, Va.

If you haven't paid a visit to your flight facilities office recently, you might be surprised at the latest developments and the new goodies that are coming into the inventory. But before pressing on with the new stuff, let's quickly look at what Military Terminal Air Traffic Control (ATC) is all about.

Terminal Air Traffic Control has two main functions. One converts the flow of inbound IFR and VFR aircraft into a safe, well organized landing sequence. The other provides proper separation between departing aircraft and inbound or en route aircraft. Separation of aircraft must be accomplished with a high degree of accuracy and skill to minimize the accident potential in the congested airspace around military terminals.

At many TAC bases, high performance jet aircraft are mixed with slower conventional and special purpose aircraft. This mixture presents many difficult control problems which current terminal ATC facilities are sometimes hard pressed to handle. Future TAC aircraft operational requirements, along with the introduction of the F-15 and AX fighter, will further tax these facilities, and will necessitate the procurement, installation, and commissioning of new ATC systems. The purpose of this article is to acquaint TAC aircrews with two of these new systems: (1) DAIR, (2) BRITE II.

DIRECT ALTITUDE IDENTIFICATION READOUT (DAIR)

DAIR is the ground element of the DOD AIMS Program. (The term AIMS is an acronym of acronyms. The "A" stands for ATCRBS which is taken from Air Traffic Control Radar Beacon System; "I" means IFF; "M" represents special military equipment; and "S" is for systems.) This all new system with the nomenclature of TXP-42 is designed to be added to military terminal radar systems and will be used in conjunction with AIMS airborne equipment. All the features of the system will not be available unless both the aircraft and ground station have been updated with AIMS equipment. Available information indicates that most TAC aircraft should be equipped with AIMS airborne equipment by the time the ground equipment is installed.

The operational purpose of the DAIR radar is to display air traffic data synthetically on the radar scope so the controller will not have to divert his attention away from radar controlling his traffic. The DAIR will serve the controller in much the same way as the Head-Up Display (HUD) does the pilot. With all the information available on the radar scope, the controller will not be required to look away to update flight progress strips or make IFF/SIF adjustments.

Additionally, the new radar will provide amplification of primary (non-IFF/SIF) radar targets, thereby allowing better surveillance of aircraft that are not transponder equipped. Primary (non-IFF/SIF) radar targets will not have identification and altitude symbology, but this system will amplify the raw radar target and improve surveillance of light aircraft. Each IFF/SIF reply will be identified by a symbol and control slash on the radar scope, and will have a "readout tag" associated with it. The tag format consists of IFF/SIF beacon code and numerics. (See illustration to the left.)

In addition to numerics and symbology, the system will have many other capabilities which are not available in current military ground IFF/SIF systems. One of the most important features of the TPX-42 DAIR radar is that it will provide the controller direct altitude readout from IFF/SIF equipped aircraft. This altitude information will be transmitted on Mode C and is derived from the aircraft's barometric altimeter. This feature alone will greatly improve aircraft separation and enhance flying safety.

Another interesting feature of the TPX-42 is its automatic emergency alerting system. EMERGENCY, NORDO, and HIJACK IFF/SIF replies will be forced onto

what's new in terminal control ?

all radar scopes regardless of the altitude and range selected by the controller. When an aircraft transmits an IFF emergency or Code 7700, Code 7600, or Hijack Code, a red light will flash on and off at the radar scope. An audible buzzer will sound in short, one second bursts for a total of five seconds, and a large X (position symbol) will appear over the target location. To facilitate locating the aircraft on the radar scope, the numerics and position symbol will blink on and off at a rapid rate. If the aircraft is beyond the range that is being monitored (terminal facilities normally monitor 40-60 miles), but within the range of the radar (200 miles), the lights and audible alarm will be activated, and the controller will know to switch to a longer range.

In addition to the features already mentioned, the DAIR radar will also provide target identification. This identification will be much more rapid than under current systems. The target identification feature will display civil identification (SPI), or military identification (I/P). The SPI/IP symbols on the radar scope will "shrink" from 1/4 to 1/16 inch at a rate of 2 cycles per second. This shrinking effect will continue as long as the aircraft is transmitting "IDENT."

One last feature of this system is the capability of the controller to select the altitude structure which he will monitor. The controller will be able to choose independent altitude layers within the limits selected. The limits of this system are from minus 1000 to 99,900 feet in 100 foot increments. Emergency, NORDO, and hijack replies will, of course, be forced onto the scope regardless of altitude.

Now that we have discussed the TPX-42 (DAIR) at some length, you can begin to appreciate the advantages of this new system. ATC will now have an automatic monitor and alarm capability for emergency, communications failure, and hijacked aircraft. Instantaneous altitude information will be available and the controller can select, within very narrow limits, exactly what he wants displayed on his radar scope. To help in visualizing what the controller will see on the radar scope, a DAIR Display Legend has been included as an illustration.

It appears that in a short time DAIR will finally be here. Many of you are probably wondering when it will be arriving at your particular base. Based on the latest information available, the TXP-42 DAIR should be installed at most TAC bases within the next two to three years. The system has already been installed at Altus, AFB, Oklahoma, and the first TAC base scheduled for installation is Cannon AFB, sometime during 1973; with the last installation at Hurlburt Field, in 1976.

The TPX-42 is one of the most important military ATC systems to enter the inventory in a long time. This system will not solve all of our problems but it does go a long way towards alleviating some of the deficiencies associated with current military systems.

BRITE II

Bright Radar Indicator Tower Equipment (BRITE), is a control tower surveillance radar display visible in daylight. The purpose of this display system is to supply a radar display at the local control position in the tower cab suitable for viewing under high and variable light levels. This system will provide the tower controller with a new capability which will permit safer and more positive ATC service. Initial use of the BRITE II is intended as an aid to the tower local controller in judging spacing maneuvers required for proper spacing and sequencing of traffic under his control. The BRITE II will not normally be used to provide vectors, IFR separation, or any other purpose that could be construed as a provision of radar service. Simply put, BRITE II is to be used as an extension of the controller's eyesight, particularily at night, for spacing traffic.

The BRITE II Display System includes a television type display designed with sufficient brightness, contrast, and resolution for the extremely high and variable ambient light levels normally encountered in the tower cab. The system is designed to operate with an airport surveillance radar (ASR) and has a maximum range of 60 miles. The system is normally operated on the 10 or 20 mile range and is "off-centered" to provide more coverage on the final approach area and includes a remote control unit which enables the local controller to control the presentation from the tower cab.

Both of the systems that have been mentioned in this article will have a profound effect on future military aviation and air traffic control. It would be beneficial for each TAC aircrew member to familiarize himself with these systems and a visit to your local flight facilities office should provide you with any additional information on these and future systems.

Ed. Note: At this writing BRITE II is operational at the following TAC bases: Bergstrom AFB, Texas; England AFB, Louisiana; Holloman AFB, New Mexico; Homestead AFB, Florida; Mt Home AFB, Idaho; and Shaw AFB, South Carolina. All TAC bases will have an operational BRITE II system by the end of CY 1974.

TACTICAL AIR COMMAND

Maintenance Man Safety Award

Master Sergeant Joseph D. Driver, 834 Avionics Maintenance Squadron, Eglin Air Force Base, Florida, has been selected to receive the TAC Maintenance Man Safety Award for November 1972. Sergeant Driver will receive a letter of appreciation from the Commander of Tactical Air Command and a Certificate.

MSgt Driver

TACTICAL AIR COMMAND

Crew Chief Safety Award

Staff Sergeant Donald L. Meadows, 58 Organizational Maintenance Squadron, Luke Air Force Base, Arizona, has been selected to receive the TAC Crew Chief Safety Award for November 1972. Sergeant Meadows will receive a letter of appreciation from the Commander of Tactical Air Command and a Certificate.

SSgt Meadows

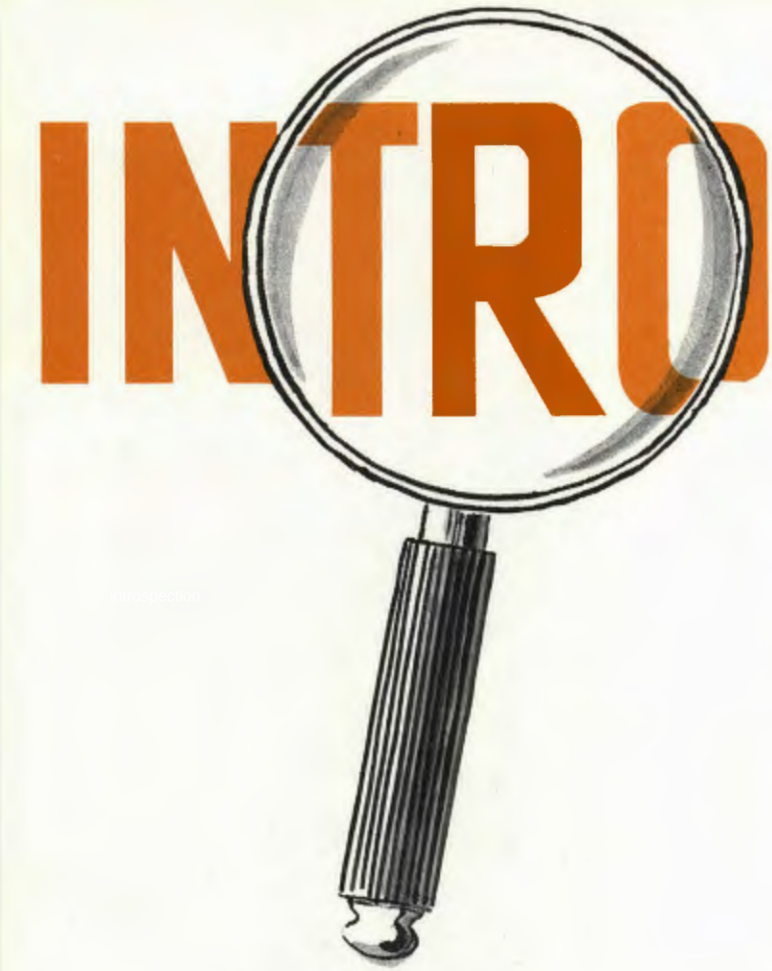
TACTICAL AIR COMMAND

Ground Safety Man of the Month

Technical Sergeant Charles E. Stuck, 9 Aerial Port Squadron, Forbes Air Force Base, Kansas, has been selected to receive the TAC Ground Safety Man of the Month Award for November 1972. Sergeant Stuck will receive a letter of appreciation from the Commander of Tactical Air Command and a Certificate.

TSgt Stuck

INTROSPECTION



by Major Jack Drummond

A recent editorial in TAC ATTACK pointed out how important it is for each of us to accept the responsibility for correcting potential accidents.

It has been my observation that when an aircraft accident occurs, most aircrews have two common questions: "How is the crew?" and "Who or what caused it?" Not too long ago I had the unfortunate experience of being forced to ask a third question: "What could I, as a supervisor, have done to either prevent the accident or to prevent the deaths of two young outstanding Air Force officers?" This last question hit me especially hard because the supervision aspect of the accident was two-sided; I was both the flight lead of the flight and operations officer of the squadron.

The mission of the squadron was typical of that of many TAC fighter squadrons. We trained aircrews (who ranged in experience from recent graduates of Undergraduate Pilot Training to the experienced fighter pilot) to deliver conventional ordnance. Our graduates were slated to go to SEA, overseas units, and Air National Guard and Air Force Reserve units.

On this particular day the flight was to be a two ship Ground Attack Tactics mission with practice ordnance; we were scheduled on the tactics range to work with a Forward Air Controller. As the instructor pilot in the lead aircraft, I briefed the mission and concentrated on the techniques and problem areas that generally occur on this type mission at this particular stage in the training program.

My student, a captain in the Air Force Reserve, had never flown fighter-type aircraft before. I was very pleased with his progress to this point and was sure that the "light bulb" was about to illuminate so that his delivery accuracy would start to improve rapidly. John, the instructor pilot in the other aircraft (a fictitious name), was instructing a young pilot who had just graduated from UPT. This young jock was having no trouble that a few more bomb passes wouldn't cure.

Start, check-in, and taxi were normal except that the tower changed the active runway after we started to taxi. This meant we had to reverse our taxi route to the new runway and it took longer than normal to get to the arming area. In addition, the quick-check crew and gun-plumbers had to move to the other runway and it took them a few minutes after we arrived to get into position.

We took off with fifteen seconds spacing and I noticed that my gear was indicating unsafe after gear retraction. This unsafe indication is not uncommon in our type aircraft; in most cases a low-time pilot allows the airspeed to accelerate too fast on takeoff, thus preventing the gear doors from closing after the wheels are in the well. I told my student to maintain below gear limit speed and to recycle the gear, then I called John to say we were slowing up to recycle the gear. He answered, "Roger."

The gear went down OK but we still had the unsafe indication on retraction. I took control of the aircraft and could feel a slight buzz in the controls so I asked John to come up to look me over. As I started a gentle right turn, I looked back toward my five o'clock position and noticed John in a normal formation join-up with the speed-brakes deployed. He seemed to be overshooting slightly and when I looked back to the front to scan for other traffic, I lost sight of him. At the time that I expected John to advise me if anything was wrong with

TION

my aircraft, he made a transmission that was calm and cool, but garbled. The only thing I understood was the word "engine" somewhere in his statement. Both my student and I looked at our engine instruments because we felt that John had reported something about our engines. We saw nothing wrong, so I asked John to repeat his statement. We received no answer so I reversed the turn back to the left and saw the column of black smoke coming up through the trees. I looked at my altimeter and noted that we were climbing through 1600 feet AGL.

The accident investigation revealed the following facts that are important to my question of, "What could I, as a supervisor, have done to either prevent the accident or to prevent the deaths of two young outstanding Air Force officers?"

1. John's calm and cool, but garbled radio transmission was: "(____) tower, (call sign) has had a double engine flameout. We are starting number one."
2. John and his student ejected but so low that the risers did not get out of the bag.

From my supervisory standpoint as flight lead, why didn't I:

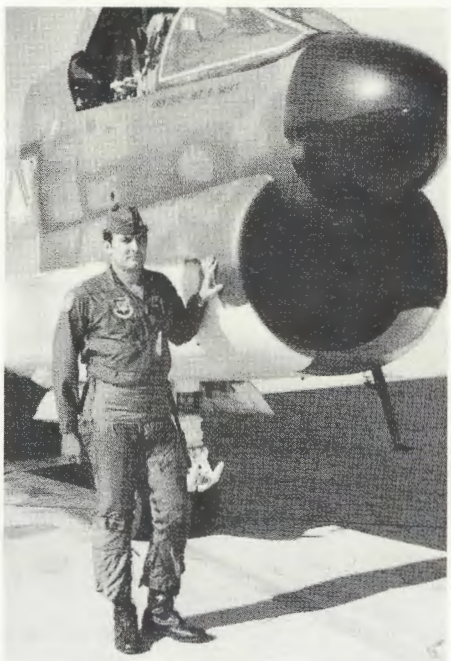
1. Stress to John and his student in the briefing that if both torches quit below 2000 feet AGL, get out? I had told my student this many times but not on this specific day.
2. Ask John immediately to repeat the radio call that I had not understood?
3. Tell John and his stud to get the hell out of that airplane?

From my supervisory standpoint as a Squadron Operations Officer, why didn't I:

1. Monitor the progress of John's student more closely?
2. Notice if John had been upset or overworked lately?
3. Urge the Squadron Stan/Eval guy to keep the jocks on their toes about ejection parameters?
4. Talk to all the jocks about my own feelings of ejection versus an attempt at gaining a hero image.
5. Pay more attention to the last check ride on John that I had signed off as a Reviewing Official?

From your supervisory standpoint as Flight Commander, Squadron Commander, Flying Safety Officer, Stan/Eval, Quality Control, Maintenance Officer, Line Chief, Crew Chief, etc, what could you have done to prevent this accident? To put things in the proper perspective, what can you do to prevent the next one? Each of us is a supervisor in some way, form, or fashion. Think about accident prevention from that standpoint and perhaps your attitudes about Flying Safety will undergo a big change. I know mine have.

ABOUT THE AUTHOR



Major Drummond is the A-7D Safety Officer for the 23rd TFW at England AFB, La. His TAC experience includes AT-28, A-1, and A-37. He served at NKP during his SEA tour and was awarded the Silver Star with 2 Oak Leaf Clusters and the Distinguished Flying Cross with 1 Oak Leaf Cluster.

CHOCK TALK ...incidents and incidentals

NOBODY TALKED TO ANYBODY

TDY aircrews to SEA frequently encounter airfield hazards that are not normally associated with stateside operations. Sometimes the aircrew enters a situation as a third party to find that a set of circumstances has developed to the point that the crew comes away from it with a dinged airplane. Here's an example:

At an intersection of two taxiways a hole developed in the taxiway. Numerous temporary repairs were accomplished as an interim fix until permanent repairs could be made during more suitable weather (dry season). Despite the repairs the hole became larger and finally a 60 x 22 foot section of aluminum matting was laid, but not secured properly. On the day before the accident, the prop blast from an approaching C-130 using reverse thrust lifted the matting, forcing it into an accordian-like shape. The aircraft was able to stop prior to the matting and was subsequently able to taxi around it. Base ops and CE were notified and came to the scene. The matting was relaid later in the day, but the hazard was not reported to the tower, nor did the pilot notify his operations section of the incident.

On the day of the accident, the hazardous situation was not briefed to the crew of the accident aircraft (the operations section had no knowledge of it). The pilot had taxied over the matting several times in recent days so he had no reason to suspect that it was not properly secured. Taxiing with a 17 knot tailwind, the pilot had dropped the outboard engines of the C-130 into low speed ground idle and was using a combination of a reverse thrust on the inboards and braking to prevent overheating of either the brakes or the engines. As he approached the matting, the combination of reverse thrust and 17 knot wind lifted the matting and it slammed into the nose section of the airplane (see photo).

The causes of the accident are as follows:

- Primary — The Air Base Wing did not properly

with a maintenance slant.

coordinate and obtain the consent and advice of the concerned agencies prior to the installation of the matting.

• Contributing — Supervisory — The Civil Engineering section did not properly lay the matting and did not have the appropriate publications available for reference.

• Supervisory — Knowledgeable people of the Air Base Wing failed to initiate action that could have precluded this accident following an incident (the C-130) on the previous day.

• Other Personnel — The aircraft commander and the crew of the C-130 involved with the matting incident (the previous day) failed to report the hazard to the appropriate people... Nobody talked to anybody.

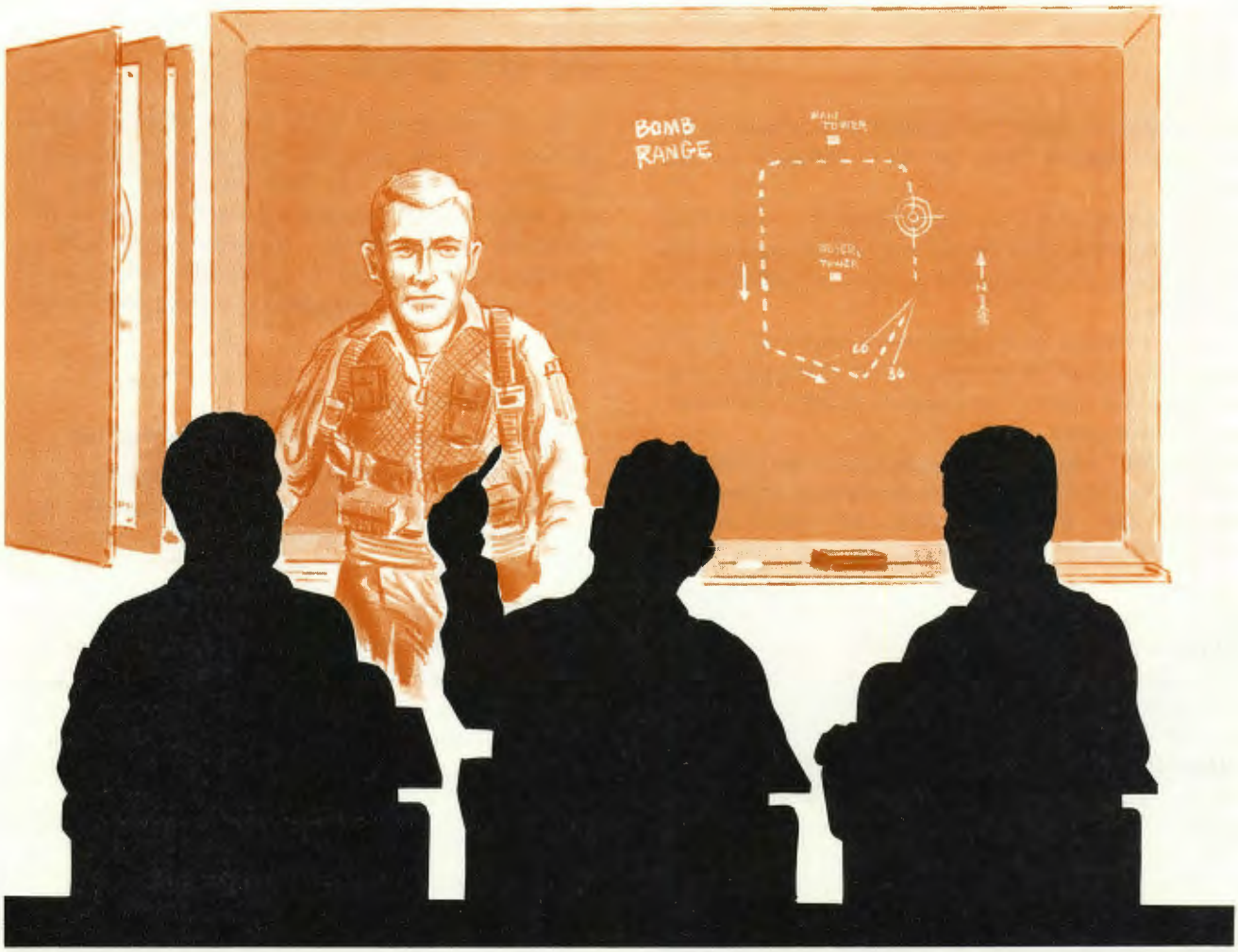
SEE AND AVOID

As an enforcement guide for its highway patrol, California lists the following 14 deviations from normal driving in a manual, "The Drinking Driver." These tips were reprinted in a pamphlet entitled "The Way to Go" distributed by the Kemper Insurance Group and are presented here as an aid to you in driving defensively. Read them carefully. Recognize and avoid the drinking driver.

1. Unreasonable speed (high).
2. Driving in spurts; slow, then fast, then slow, etc.
3. Frequent lane changing with excessive speed.
4. Improper passing with insufficient clearance, also taking too long or swerving too much in overtaking and passing, i.e., over-control.
5. Overshooting or disregarding traffic control signals.
6. Approaching signals unreasonably fast or slow and stopping or attempting to stop with uneven motion.
7. Driving at night without lights. Delay in turning lights on when starting from a parked position.
8. Failure to dim lights to oncoming traffic.
9. Driving in lower gears without apparent reason, or repeatedly clashing gears.
10. Jerky starting or stopping.
11. Driving unreasonably slow.
12. Driving too close to shoulders or curbs, or appearing to hug the edge of the road or continually straddling the centerline.
13. Driving with windows down in cold weather.
14. Driving or riding with head partly or completely out of the window.

The common recognition factor is out-of-the-ordinary driving.

EMERGENCY SITUATION



A few weeks ago the office of TAC ATTACK received the following letter:

To: Editor, TAC ATTACK

In 1966 I was a new 1/Lt with about 500 hours, dual current in the T-33 and the F-101, and had just joined my first operational unit, the 13th FIS at Glasgow AFB, Montana. Though the Voodoo is not exceptionally difficult to fly, it does require a bit more attention than some, and experience is especially helpful. The nearest alternate to Glasgow was almost 200 NM away, and the winds and weather associated with winter in northern Montana required significant attention and interpretation. I knew that certain pilots had a wealth of

TRAINING

knowledge and experience from which I could profit, and I felt that there should have been much better exchange of pilot information and experience than occurred at the bar, or through idle conversation. When called upon at mission briefings, I stood and recited bold face procedures, letter perfect, but really wanted to hear discussions of situations not clearly requiring rote response. I began to write emergency situations for use once a week during aircrew meetings. I researched past issues of INTERCEPTOR, TAC ATTACK, and AEROSPACE SAFETY, used previous accidents and incidents, interviewed certain of the older unit pilots, and developed some of the exercises with pure imagination. In each case all the variables necessary to analyze the situation, select appropriate procedures, and apply proper judgment were provided. Each was reviewed by the safety and training officers for accuracy. To my surprise, I found the exercise was very well received by all pilots – not just the young ones. The only problem was ending the discussions in the allotted time. We young pilots listened to experienced pilots such as flight commanders, operations officer, and commander discuss differing views of how best to cope with the particulars of a situation, or of what they had personally seen or experienced. In some instances, we were surprised to see a few old heads run for a Dash One to check an aircraft system they had not reviewed recently. In short, it was profitable to all, and very well received.

In 1970, upon return from SEA, I was assigned to the 62 FIS at K. I. Sawyer AFB, Michigan. There I introduced the exercise to my new squadron mates and found the same enthusiastic response. As one of the more experienced pilots in the F-101 and T-33, I was now in a position to contribute more significantly to the discussions. Sometimes a pilot would approach me a week after we had discussed a situation, and say he had been thinking about it and had a new idea, or still had questions, or felt he had learned something really significant. It was evident that people were thinking in advance of how best to cope with complicated emergencies.

In 1971 I was assigned as an IP/FE to assist the 148th FC of the Minnesota ANG at Duluth, Minnesota, in their conversion from the F-102 to the F-101. I used the exercise to introduce situations requiring the aircrews to analyze, choose corrective actions, and discuss application. It was again received very well by aircrews at every level.

As an inspector during a recent unit Effectiveness Inspection of an ANG (TAC) unit flying F-101 aircraft, I read the results of aircrew questionnaires which were completed during a previous Unit Training Assembly. The questionnaire asked what the aircrews thought could be done to reduce accident potential. Three separate pilots, each with less than 1000 hours total flying time, said they would like to hear and discuss emergencies and situations of a general nature – those circumstances not requiring a clear-cut immediate action. They remarked that asking more experienced aircrews for advice was sometimes embarrassing or misinterpreted. I couldn't help but remember Glasgow AFB in 1966.

I have seen the effectiveness of the exercise in regular and reserve units, and am convinced it is one of the few tools of judgment training available outside the cockpit. If you agree that emergency situation training can be a significant accident prevention tool, and can help spread the benefits of experience, perhaps TAC ATTACK could help promote and emphasize its use.

Captain Kerry G. Herron
F-101/T-33 Project Officer,
Hq USAF Inspection and Safety Center,
Norton AFB, CA.

Indeed we agree that emergency situation training can be extremely useful and we encourage all units to give it a try.

In the August 1972 issue of AEROSPACE SAFETY, an article authored by Captain Herron (incidentally by the same title as this one) contains a further expansion of his idea. To give you a practical example of how the emergency situation is developed, the following has been "lifted" from the issue of AEROSPACE SAFETY:

AIRCRAFT F-4C/D/E

SITUATION: You are number three in a flight of four for an early morning range mission. Your aircraft has one SUU 23 (internal gun for F-4E) one SUU 20, and two external tanks. During the takeoff roll, shortly after rotation, the fuel low level and master caution warning lights illuminate momentarily (5 seconds), then go out. The takeoff is continued, and during climbout all fuel quantity indications are found to be normal. The mission progresses normally, with the brief use of afterburners required several times. After the external tanks have fed, simulated pop-up rocket deliveries are being practiced.
EMERGENCY: During afterburner pull-up for roll-in altitude, the fuel low level and master caution lights illuminate. You terminate afterburners and check the fuel at 5500/5500 (tape over counter), but the feed tank indicates 700 lbs and slowly increasing, and boost pump pressure is zero for both engines.
ANALYSIS:

1. Are you in danger of flameout?
2. What has probably caused the low feed tank situation?
3. If hydraulic and electrical systems indications are normal, why are all the pumps inoperative?
4. What type of recovery should be made?
5. Of what significance was the fuel low level warning light during the takeoff roll?
6. Should you have aborted the mission when the warning lights momentarily illuminated during takeoff roll?

ANSWERS:

1. Only if afterburners or sustained negative Gs are used.
2. Hydraulic transfer pumps and electric boost pumps are not operating.
3. The hydraulic fuel transfer check switch has failed. If this switch is stuck in the test position, it will prevent operation of the electric fuel boost pumps and will prevent hydraulic fuel transfer pumps from operating when gear squat switch is open (weight off the gear).
4. Recommend straight in approach because all fuel transfer will be by gravity.
5. It was an early indication that fuel was transferring only by gravity until the weight was off the gear, allowing the external tanks to pressurize.
6. OPEN FOR DISCUSSION.

Beginning with the February 1973 issue of TAC ATTACK, the SPO Corner series will be expanded so that we can cover some emergency situations, offer discussion, and provide some answers. There's a kicker, however; we would like for you to send us the situations, answers, and discussion items. And that applies regardless of your crew position.

Use the general format as described in the F-4 situation to develop your favorite emergency situation, then run it by the safety type and/or the Stan-Eval shop for accuracy. Next, fire it directly to TAC/SEPP, Langley AFB, Va. 23365. We'll do the rest.

Here's a chance for you to get some of your ideas across, get your name in print, and impress the boss (makes good ER fodder).

It's an offer you can't refuse.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1973-514. 006/6

TAC TALLY

MAJOR ACCIDENT RATE COMPARISON

	TAC		ANG		AFRes	
	1972	1971	1972	1971	1972	1971
JAN	0	1.6	0	16.7	0	0
FEB	0.8	1.6	0	11.6	0	0
MAR	1.6	3.1	6.3	7.0	0	0
APR	2.8	2.7	8.1	4.9	0	0
MAY	4.0	2.5	6.3	5.7	0	0
JUN	4.8	2.6	5.1	6.9	0	0
JUL	4.2	2.9	6.2	7.1	0	0
AUG	4.6	2.7	6.4	7.8	1.9	2.7
SEP	4.6	3.2	6.2	7.4	1.7	2.4
OCT	4.2	3.2	6.0	6.9	3.0	2.1
NOV	3.9	3.3	5.8	6.9	2.7	2.0
DEC		3.2		6.4		1.8

AIRCRAFT ACCIDENTS

UNITS

	THRU NOVEMBER 1972 ACDTS	1972 RATE	1971 ACDTS	1971 RATE		THRU NOVEMBER 1972 ACDTS	1972 RATE	1971 ACDTS	1971 RATE
9AF	6	3.3	9	3.7	12AF	13	3.7	7	2.3
1 TFW	3	9.7	2	5.7	27 TFW	1	5.2	1	4.6
4 TFW	0	0	0	0	35 TFW	1	3.9	1	2.7
23 TFW	0	0	0	0	49 TFW	4	9.2	0	0
31 TFW	1	4.6	3	13.8	58 TFTW	2	3.6	4	9.0
33 TFW	0	0	0	0	67 TRW	0	0	0	0
68 TASG	0	0	0	0	71 TASG	0	0	0	0
316 TAW	0	0	0	0	313 TAW	0	0	0	0
317 TAW	0	0	0	0	314 TAW	0	0	1	3.3
354 TFW	1	4.4	1	4.1	355 TFW	1	3.5	0	0
363 TRW	1	3.4	1	3.7	347 TFW	1	6.6	0	0
4403 TFW	0	0	2	14.1	474 TFW	2	7.5	0	0
					463 TAW	0	0	0	0
					23 TFW	1	9.8	0	0
TAC SPECIAL UNITS									
1 SOW	1	2.2	4	6.8	4410 SOTG	2	8.7	1	3.9
2 ADG	0	0	0	0	4485 TS	0	0	0	0
57 FWW	3	16.5	1	5.5	4500 ABW	0	0	0	0
ADS	1	–	1	–	OTHER	4	–	2	–

SUMMARY

TAC NOV 72	TAC Thru Nov 1972	TAC Thru Nov 1971		ANG NOV 72	ANG Thru Nov 1972	ANG Thru Nov 1971
2	48	30	TOTAL ACCIDENTS	1	19	21
1	30	25	MAJOR	1	15	17
2	40	25	AIRCREW FATALITIES	0	3	7
2	29	20	AIRCRAFT DESTROYED	1	13	16
2	31	23	TOTAL EJECTIONS	1	9	12
2	22	20	SUCCESSFUL EJECTIONS	1	9	9
100%	70%	82%	PERCENT SUCCESSFUL	100%	100%	75%


FLEAGLE
HARDISON
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