

TAC ATTACK

APRIL 1978



WEATHER FORECASTS
... Pg 24

TACTICAL AIR COMMAND

TAC ATTACK

APRIL 1978 VOL. 18 NO 4

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TACRP 127-1

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Angle of ATTACK

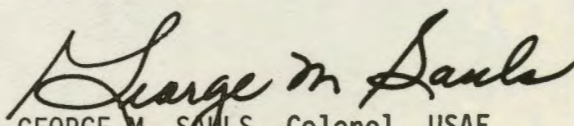
the challenge revisited

In January, I spoke of 1978 as a year of challenge. A year when our resources, innovation, and managerial skills would be tasked as never before. I told you that our new aircraft, changes in maintenance concepts, and ongoing realistic training programs would challenge each of us to get involved deeply in carrying out these programs effectively -- safely.

In the first three months of 1978, we have not met the challenge. During the initial 67 days of 1978, the command experienced 11 major flight mishaps, 12 minor flight mishaps including FOD, and 1 major ground mishap. Twelve aircraft have been destroyed and seven aircrewmembers fatally injured.

In the majority of these mishaps, there is one common thread which links them all together -- one failing which either caused the mishap or was an integral part of the sequence of events leading to the mishap -- personnel error. The aircrew who flew their aircraft to a position from which recovery was impossible and a successful ejection unlikely, and the mechanic/crew chief/specialist who didn't account for all the hardware that was replaced and the missing fastener found its way into, and through, the engine. These are the people who committed the errors. These are the people our prevention efforts must reach.

The challenge is presented once more. We must improve the safety of our operations -- now. Tomorrow, next week, or next month will be too late.


GEORGE M. SAULS, Colonel, USAF
Chief of Safety



TAC

SAFETY AWARDS

Individual Safety Award

Sergeant Ricky D. Searing, 366th Equipment Maintenance Squadron, 366th Tactical Fighter Wing, Mountain Home Air Force Base, Idaho, has been selected to receive the Tactical Air Command Individual Safety Award for this month. He will receive a desk set and letter of appreciation from the Vice Commander, Tactical Air Command.



Sgt Ricky D. Searing

Crew Chief Safety Award

Senior Airman James A. DeSantis, 27th Organizational Maintenance Squadron, 27th Tactical Fighter Wing, Cannon Air Force Base, New Mexico, has been selected to receive the Tactical Air Command Crew Chief Safety Award for this month. Airman DeSantis will receive a desk set and letter of appreciation from the Vice Commander, Tactical Air Command.



SrA James A. DeSantis

it just



By Capt Robert O'Dell
56 TFW/DOW
MacDill AFB, FL

"It just doesn't feel right." How many times have you said that to yourself during one situation or another? For example, at the top of a pop-up attack when the target isn't where you planned it to be. Or, during an air-to-air engagement when mutual support has broken down and you're not sure who is attacking and who is supporting. Or, during a low level in "marginal viz" (just at command minimums) when you're not quite sure that you're on course, but then you didn't really put a lot of study into this low level; you've seen it a hundred times before. Or, even during a GCA in actual weather conditions when you know you should have been instructed to turn left instead of right.

Yes, we've all been there. You'll hear it in mission debriefings usually associated with statements like, "it just didn't feel right, so I came off dry," or "somehow, it looked different

than I thought it would," or "the hair began to stand up on the back of my neck, so I called, 'knock it off.'" What are these feelings? Why does the hair stand up on the back of your neck? What is it that makes the old pucker factor start to rise?

There was the time, as an inexperienced 1 Lt with an even lesser experienced 2 Lt GIB, that I was #2 on the wing trying to penetrate a broken-to-overcast cloud layer so that we could get on the range. We found a hole and started down. The F-4's turn radius being what it is, we were unable to spiral down in the opening without flying into the clouds. We were in and out, increasing/decreasing bank, descending lower and lower; it was all I could do to stay on the wing. Finally, it hit me. The butterflies in my stomach, the hair raising on the back of my neck, the feeling that things were obviously not

doesn't feel right

the way they ought to be. Finally, I asked the GIB (who was entranced by the sight of our leader going in and out of the clouds) what our altitude was. He said, "800 feet and descending," at which time I called for lead to roll out and take it up. Later, in the debriefing, lead admitted that both he and his GIB were eyeballs out, looking for the ground (they were as inexperienced as we). He did not realize the clouds went down to one or two hundred feet and stated that if we hadn't called he would probably still be descending. This taught me a valuable lesson, "never trust anybody."

A friend related another experience that probably saved his life. It was an ACM mission (2V1), he was lead with a young tiger (with overgrown fangs) on his wings. As the engagement progressed, communication broke down (SOP) and after a couple of turns and a garbled radio call or two, lead got the feeling something wasn't right; and as he called, "knock it off," came out of AB, easing out of his hard turn, he looked to his right. There was the young ace, belly up on the inside of the turn trying to attack the bandit. The debriefing revealed that lead was also attacking the bandit and, as my friend related, had he not called, "knock it off," and eased off his turn, they would have collided about 3,000 feet at the bandit's 6.

What about the guys who didn't trust their feelings, who felt something was wrong but didn't go through dry or knock it off? Most of them consider themselves lucky to be here; some of them are statistics.

What about the crew that found themselves well inside their preplanned parameters during a

pop-up attack. Surely they must have felt that it didn't look right. Surely they must have realized that they would have to pull their sox down to make that corner. Surely they could feel the aircraft telling them, "we shouldn't need to pull this hard or fly this slow during one of these attacks." None of us will ever know, but I am convinced that they had that "feeling," knew it should not look that way, had those butterflies and hair standing up ... but they elected to continue the attack. Why? I wish I knew.

TAC statistics are full of mishaps with "pilot error" listed as a cause, and personally, I feel that in most of these cases the crew got the "feeling" at some point prior to the accident. In fact, probably in enough time to abort the pass or knock it off.

My explanation for the "feeling" is judgement manifested by experience. Not only personal flying experiences, but experience derived from conversations with those who have been there or the experience of planning even though you haven't been there. The experience of going over it again and again in your mind, or walking through it step by step and visualizing just how you think it will look.

This experience is then translated into judgement. Sometimes a long drawn-out process in which all aspects of a given situation can be analyzed and the proper course of action taken. Or, when time is not available, we must make snap decisions relying on our instinct and experience.

These instant judgements are what I believe

it just doesn't feel right

the "feeling" is all about. It is your mind analyzing your wealth of experiences and before your brain has time to systematically work it out for you, signals are sent through your nervous system. Signals expressed in fear of bodily harm. Fighter pilots call it pucker factor, sinking feeling, butterflies, hair raising, etc. That shocking feeling you get on a low angle pass when just about the time you're ready to pickle, you experience ground rush and immediately pull out. Up on downwind you settle yourself down, check the G meter, and realize that your reaction was instinctive. An instantaneous judgement based on experience, or perhaps the desire to survive a while longer.

Again perhaps, not the experience gained in a previous low angle bomb pass (maybe you've never done one before) but the experiences of others, of your own visualizations, of your planning, or maybe even your last hard landing.

The point is, no matter what the psychic process, your mind is saying that something is wrong and commanding (or at least advising), through your nervous system, that action is necessary. Old fighter pilots called it, "flying by the seat of your pants." Instinctive judgements based on conscious and subconscious experiences, personal and/or related. Like it or not, today's fighter pilot must also "fly by the seat of his pants" quite often relying on these instantaneous judgements, the "feeling" that something is wrong.

RTU student grade books have a block on

every grade sheet in all phases of training entitled, "JUDGEMENT." Instructors must pay close attention to this block. It is probably the most important thing on that sheet. Look for catch phrases during debriefings like, "Well, I knew it was wrong, but I decided to try it anyway," or "It didn't feel right when I looked down, but I pressed anyway; besides there was an IP in my pit," or "I know I shouldn't have continued, but I wanted to get that bomb off." They go on and on.

We, as supervisors, flight leads, or instructors, will never be able to give a student/new guy all of those experiences required to make correct judgements everytime; but we can teach him to respect his feelings, or unconscious judgements when they do occur. If it doesn't feel good, don't do it. If it doesn't look right, go through dry. If you don't know what's going on, then "knock it off."

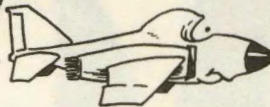
Nine times out of ten, if it felt wrong, it was wrong. If you continue to press, then you are exposing yourself to a state of uncertainty and confusion which can only complicate your problem. Take it through dry, or knock-it-off, and chalk it up to experience. Now you will be armed with the experience of that pass, or that engagement, enabling you to successfully complete your attack the next time you try.

Remember, don't underestimate your "feelings." It may make the difference between using a little bit of fuel to try again, or becoming a statistic inside the back cover of TAC ATTACK. ➤



The Holding Pattern

The Holding Pattern



RECOGNITION AID FOR ATTACK PILOTS

By Lt Col Joseph W. Moffett
TSM-AH Office
Fort Rucker, AL

In his book, *STUKA PILOT*, the ace German tank destroyer, Hans-Ulrich Rudel, describes tank killing as a very individual matter. His view from the cockpit was that enemy and friendly ground positions were often so fluid and intertwined that he was able to identify friendly ground troops only by making an extremely low pass (5 to 10 meters) above the ground. He and his fellow pilots experienced the same difficulty in distinguishing enemy and friendly armored vehicles. They solved part of the recognition problems by collecting scaled models of enemy tanks in their operations room. These models were examined constantly and discussed with respect to best method and axis of attack. Vulnerable points were color coded.

More than three decades later, American pilots are faced with the same recognition problem. Instead of the Stuka's 175 knot airspeed, our A-10s are experiencing attack speeds of about 300 knots. Our attack helicopters, although moving slower than the A-10, also are encountering instant recognition problems.

Help is available! The U.S. Army Training Support Center produces a variety of graphic training aids to assist in solving the recognition problem. Three dimensional plastic scale Soviet armor vehicle models are ideal for squadron and troop recognition and tactical discussions. They include a T-26 Medium Tank No. DVC-T 17-81; a BMP Infantry Combat Vehicle No. DVC-T 17-82; a ZSU-23-4 Self-Propelled Antiaircraft Gun No. DVC-T 17-83; and a 122 mm Self-Propelled Artillery No. DVC-T 17-84. Estimated cost for each is \$20. Air Force subscribers should initiate their request by writing Commander, U.S. Training Support Center, ATTN: ATTSC-LO-L, Fort Eustis, VA 23604.

Courtesy United States Army *AVIATION DIGEST*, Jan 78

WATERBED OWNERS BEWARE



By Capt Kal E. Reistetter
474 TFW
Nellis AFB NV

Can a waterbed catch fire? The answer to that question, as strange as it may seem, is yes. Ever since the waterbed craze came into existence in the early 70s, not much information has been disseminated through ground safety programs regarding the potential hazards that exist with waterbed heaters and thermostat controls. The manufacturers of such equipment have now become more aware of some safety measures that should be practiced when installing a waterbed heater. A waterbed fire pointed out that it really can happen.

Cause? The plug connection between the heater and the thermostat control worked itself slightly apart, approximately 1/4 inch; and near this plug, approximately 3 inches, lay a copper thermostat bulb for the temperature control. The separation between the plugs caused electricity to arc to the copper bulb. To complicate matters, the plug connection was under the water-filled mattress.

Lesson learned? Don't have any electrical connections under your water-filled mattress. Over a period of time, they will work apart. Make sure that you periodically check all connections between your heater and thermostat control.

Follow the manufacturer's recommendation regarding installation and add some additional safety measures of your own. Remember electricity and water do not mix. It's a heck of a way to get a charge out of your waterbed.

TAC TIPS

It is easy to be brave from a
safe distance. Aesop

SEE AND BE SEEN

Several recent incidents highlight a disturbing trend in aircraft operations -- the reliance on air traffic control radar facilities for all traffic separation...

Two points need to be made:

1. AFR 60-16 and Federal Aviation Regs place the responsibility for separation between VFR and IFR traffic operating in VMC upon the pilots.
2. Air Traffic Control Manuals state that controllers will issue vectors around VFR traffic only on request.

It doesn't make a lot of sense to end up submitting a "near-miss" report when you had the chance to prevent the situation from occurring. If your finely tuned eyeballs haven't picked up converging traffic by 5 miles, it's time to ask for avoidance vectors. Otherwise you probably won't see the other guy until the last minute and it's no fun to die all tensed up!

Don't trust ATC to keep you out of the hills either. It's the crew's responsibility to know their position in relation to all obstacles. Taking chances isn't worth it. It's your life, your crew's, and your passengers' that are on the line -- don't take chances.

PHANTOM PHIRE

A recent F-4 major aircraft mishap involved a fire on takeoff. The fire was fed by the centerline

**...interest items,
mishaps with
morals, for the
TAC aircrewman**

external tank which had been improperly installed. This was the third mishap of this type within the last several years. All three aircraft were lost but might have been saved if the centerline external tank had been jettisoned in time. The last mishap resulted in the publication of a new interim safety supplement for RF-4 and F-4 aircraft which has just reached the field.

The main point of the new supplement is that if the tanks must be retained (over population, etc.), the IFR door must be opened to depressurize the tanks and the external transfer switch turned off. This should check or reduce the source of fuel feeding the fire until you can get to a jettison area.

One additional consideration; the higher the power setting, the greater the pressure differential between the engine bay and the belly of the aircraft. High power settings will cause more fuel to be drawn into the engine bay(s) than low settings. Reducing gross weight to an absolute minimum should be accomplished as rapidly as possible to allow the use of low power settings. So jettisoning external stores when conditions permit is your best course of action.

If you aren't familiar with this supplement, find it, read it, and make sure you understand it. We must prevent this recurring type of loss.

TO BREATHE OR NOT TO BREATHE

In 1977, an F-15 pilot experienced hypoxia symptoms in an incident with lessons for all ...

The mission was a two-ship night air intercept sortie followed by night air refueling. On the second leg of the stereo route at FL 290, the flight lead had difficulty determining the next turn point and asked his wingman for range and bearing. The wingman replied and noted erratic

altitude and heading control by the lead. Number two asked the leader what his cabin altitude was, and the lead replied 29,000 ft. At this point, the leader noted tingling in both arms. After selecting 100% and initiating a descent to 8,000 ft, the flight lead felt his condition improve.

The oxygen regulator was the culprit. The aircraft pressurization valve was not properly set, allowing the cabin altitude to rise to 29,000 ft.

The malfunctioning regulator provided insufficient pressurized oxygen for the cabin altitude.

The increasing number of single-seat aircraft in the inventory raises the potential for a physiological incident leading to a mishap, especially during single-ship missions. The lesson is obvious for all ... preflight your equipment and insure that it's working right. If it isn't -- get it fixed. Don't take chances in the air. If all else fails, take along a sharp number two man.

G O T C H A

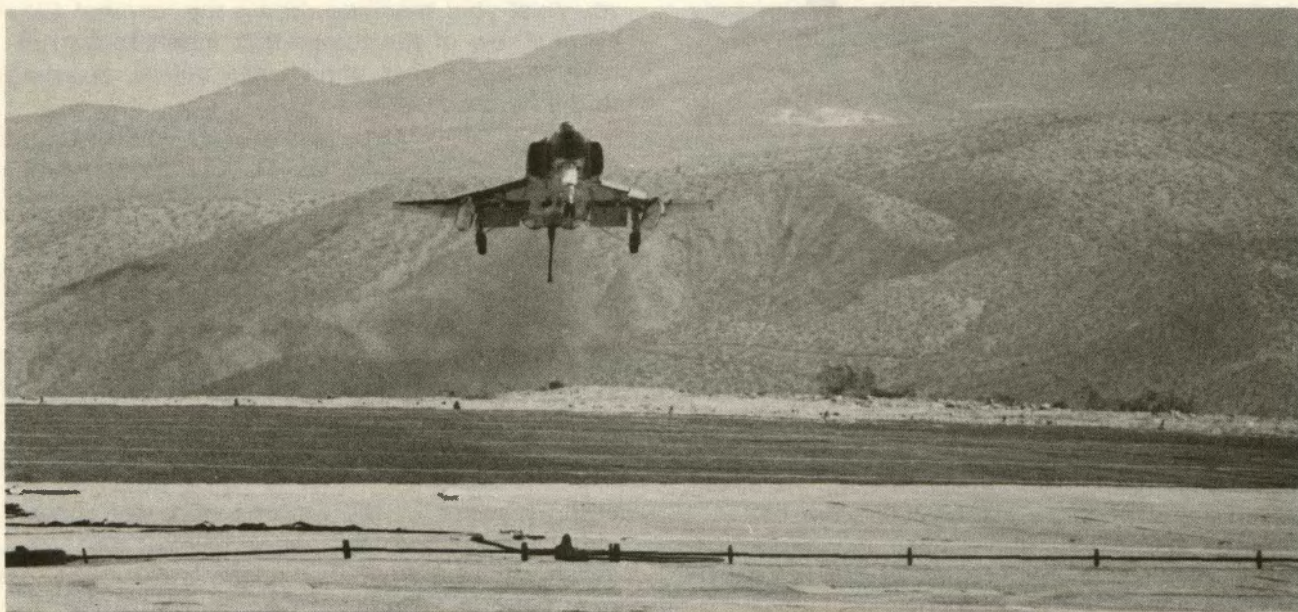
During a TACAN penetration, just after the speed brakes were extended, the utility pressure on an F-4D dropped to zero. The crew declared an IFE and accomplished the procedures for landing with utility failure and set up for an approach-end arrestment on a BAK 9. Due to the close displacement of the BAK 9 from the runway threshold, a touchdown near the threshold was attempted.

During the landing, the tailhook first engaged the lowered cable of the MA1A lying disconnected in the overrun 105 feet short of the threshold. The BAK 9 was subsequently engaged; however, both arresting cables dislodged from the tailhook causing the aircraft to swerve toward the left side of the runway. Flight controls and emergency brakes were used to keep the aircraft on the runway and complete a safe stop. Postflight inspection revealed damage to

the left exhaust nozzle and AB liner.

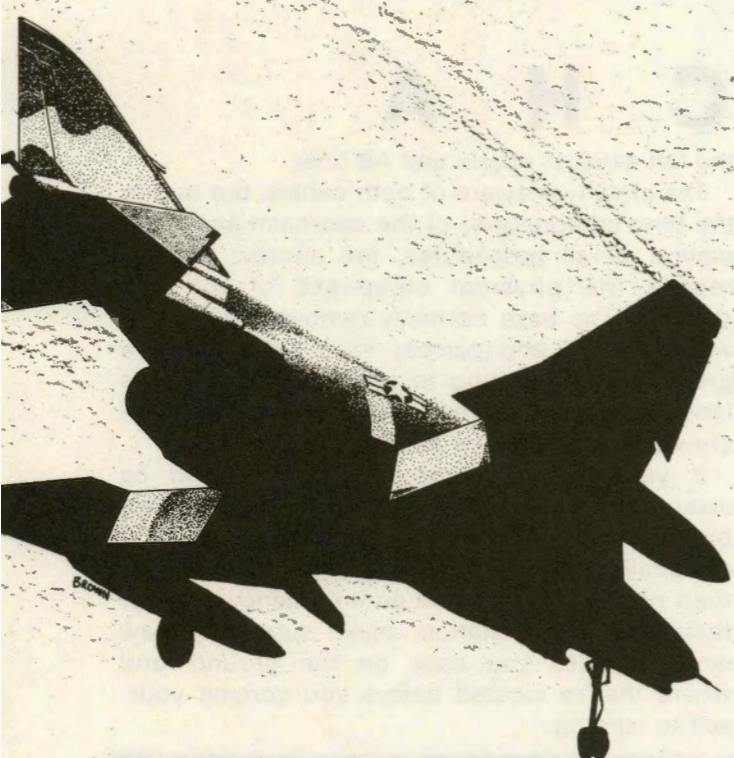
The crew was aware of both cables, but due to the time compression of the approach and completion of all procedures, the aircrew did not realize the physical closeness of the two systems. The base normally removed the MA1A when a BAK 9 engagement was planned; but the ground crew, wanting to expedite the aircraft's landing, did not remove it and assumed the aircrew was aware of the MA1A and its position.

If you fly a tailhook-equipped aircraft, be aware that the tailhook will drag for a considerable distance before the main gear touch down -- especially if the approach is faster and shallower than normal. If you have an emergency at other than your home station, make sure you know what facilities you have on the ground, and where they're located before you commit yourself to landing.



STOPPING BIG UGLY...

or any other aircraft for that matter...



By Capt Don Rupert
51 COMPW/Flight Safety Officer
Osan AB, Korea
and
Capt Pete Abler
Editor

Last month you were treated to, or perhaps tortured by, "The Saga of Blue Flight," wherein four F-4 crews managed to make all of the standard mistakes, and a few new ones, during their landing pattern. This time around, we'll talk about some of those errors -- or even better -- how to insure you don't make the same mistakes. Specific characteristics of the F-4 MK III antiskid system will also be covered.

The first step in planning any landing begins in the prebrief preparation. Probably for most, the takeoff and landing data computations are strictly a ho-hum exercise. When it comes to gross weight and landing airspeeds, it can become very important in terms of energy and stopping ability. For the F-4, the tolerance between angle of attack (AOA) and indicated airspeed is 6 kts. This could give you an increase of 8% in kinetic energy even though you indicate "on-speed." That's quite a healthy increase for an extra 6 knots! Think about that the next time you're 10 knots fast and tempted to forget it. Compute your landing data properly and fly what you've computed.

So now, you've flown your mission and you're returning to the home drome for one each normal type landing. A piece of cake -- right? The number of landing mishaps would seem to point out that the landing pattern is one of the more hazardous areas of flying operations--so why be so complacent? That 75 ft of gun camera film you have of your golden hands tracking the "enemy" doesn't do a bit of good if you bust your machine during the landing! Let's cover a few of the things that ought to be running through your mind when you're returning to the field:

1. Your airplane -- Recompute your landing speed. Remember to adjust your gross weight for more/less fuel than normal, unexpended ordnance, etc.

2. The runway -- You land day after day on the same runway, but do you ever notice where the stripes and other markings are located? Have you bothered to check where the rubber deposits built up? Either one of these can cause you problems if you expect to have a good braking surface under your wheels.

3. The weather -- Anyone who's flown an aircraft is aware of the hazards of a wet runway and hydroplaning, so I won't belabor that area. What about the winds? Again, most everyone has become proficient in compensating for

crosswinds. Headwinds and tailwinds are usually ignored. Aside from giving you a long or short final from an overhead pattern if you fail to compensate for the winds, there's not much else to worry about, right? Wrong! Your stopping ability is based on groundspeed not airspeed. For comparison, let's use a 10 kt headwind versus a 10 kt tailwind at a nominal touchdown speed of 150 kts. The 10 kt tailwind gives you a 30% increase in kinetic energy over the headwind situation -- and that's a bunch of kinetic energy to dissipate! Also, if you mentally compare runway remaining with your airspeed (which you should anyway), remember to add the tailwind component. For a hot day and high altitudes, add more than the tailwind component to get a true indication of your groundspeed.

Now that we've talked about the airplane and environmental considerations, we can get down to the most important factor in the equation -- you, the operator. The stopping ability of your aircraft is dependent on the friction between your wheels and the pavement. This friction is proportional to the weight on the main wheels times the coefficient of friction. (If parts of this article don't appeal to your technical nature, stare at them intently so the guy next to you thinks you understand it, and then, when he's not looking, skip to the easy parts.) So, your problem is to get as much weight on the main gear as possible to increase braking effectiveness.

Some aircraft utilize drag chutes to initially slow the aircraft while others employ aerodynamic braking. Whichever you utilize, once the stabilator loses most of its effectiveness, if max braking is required, get the stick back short of raising the nose wheel and utilize the residual airflow over the wings and stabilator to add some additional down force on the wheels. Realize that the slower you are going, the additional down force from this procedure is negligible. This technique is only for dry runways and little crosswind. If you have a wet runway or strong crosswinds, you must have adequate pressure on the nose gear to have effective steering control.

Your aircraft's Dash One and other experienced pilots can give you other techniques to utilize in stopping your particular aircraft. One point should be made, your physical sensations can be misleading as to your aircraft's braking performance. During light to moderate braking on a long runway, those same

organs that give you vertigo may give you an indication that you have stopped while you're still moving. Another miscue is the relationship of one moving object to another. It is much easier to detect a 10 kt deceleration at 40 kts than at 140 kts because the percentage change is much greater.

These sensations make it very difficult to detect antiskid/brake failure at high speeds on a dry runway or at slower speeds on a wet runway. While this is true of most aircraft, it is especially apparent in the F-4 with the MK III antiskid. The smoother deceleration of the MK III is quite different than the longitudinal hesitations under max braking with the old system. You F-4 drivers with MK III will probably be unable to detect antiskid/brake failure above 100-120 knots on a dry runway, or 60-90 knots on a wet runway. These speeds also happen to be the transition point for being able to detect and react to locked brakes if you are manually (no antiskid) braking. Above those speeds, if your brakes have reverted to manual braking (electric failure in your antiskid, for one), you can't reliably detect this failure nor can you manually brake without high probability of blowing your tires -- unless your toes are as golden as your fingers.

No one expects you to contemplate all this information during each landing pattern. It would be nice to occasionally mull it over in your mind. If not, you can probably think about these points as your aircraft comes to a stop -- about 5,000 ft from the approach end and just off the left edge of the runway ➤



Phyz-biz

Under normal conditions, your body is able to obtain all the oxygen it requires. However, a few changes in your normal environment can drastically alter this picture. For example, if you could transport yourself about 2 miles straight

For your bone and skin cells, this creates very little problem since they utilize oxygen at a very low rate. Your muscles use oxygen at a much higher rate than do the bone or skin cells, but the real consumers of oxygen are the cells of your central nervous system (neurons). These cells have a very high, continuing demand for oxygen. Because of this high demand, they are the first cells affected by lack of oxygen.

Muscles can function under conditions of a lack of oxygen because they have some ability to store oxygen. Neurons do not.

The lack of storage ability in the neurons and their high demand for oxygen make them the first cells to be affected by a decrease in oxygen. Hypoxia's first effects are felt by the central nervous system, the brain, and the spinal cord. Also included are the cells of the retina (light sensitive lining) of the eye.

Another important characteristic of neurons is their incapability for spontaneous regeneration. Neurons which are damaged in any way beyond their ability to recover, die and will not be replaced. So their particular function is lost forever. Hypoxic death of central nervous system (CNS) tissue has permanently incapacitated many people. Hypoxia definitely should not be taken lightly.

Hypoxic hypoxia can be the result of any number of different situations which cause a lowering of the partial pressure of oxygen in the lungs. Strangulation, suffocation, fluid in the lungs (drowning, pneumonia), and increase in altitude will all produce the low oxygen pressure (P_{O_2}) condition. For the aircrew, an increase in cabin altitude and an accompanying failure in the oxygen system are the conditions which most often cause hypoxia.

At sea level, the oxygen tension in the lungs is 100 mm Hg and the oxygen saturation of the blood going to the tissues is 98%. At 10,000 ft, the lung P_{O_2} is down to 60 mm Hg and the oxygen saturation is 87%. At 10,000 ft, normal functions are not affected with the exception of night vision which is only about 75% as effective as at sea level. By FL 180, the lung tension is down to 38 mm Hg and saturation is 72%. At high altitudes, 40,000 ft and above, air taken into the lungs is lower than the P_{O_2} of venous blood; so with every breath you take, you lose what little oxygen you have. All these numbers are only statistics and meaningless by themselves. The effects of the lack of oxygen are important. The most important is your ability to function.

"Time of useful consciousness" (TUC) -- perhaps we might call it "survival time" -- is the time available from the interruption of the oxygen supply to the time when useful function

is lost. This loss of useful function may be characterized by inability of the victim to perform such tasks as flipping the regulator switch to the "ON" position, or plugging the mask hose into the regulator hose. Sometimes a feeling of "well-being" is present to such a degree that the victim does not wish to turn the regulator "ON" or hook his mask to the regulator hose, even though he is capable of performing the task. In such cases, TUC has also been exceeded. The person who has no desire to take corrective action is as bad off as the one who sees the need, but cannot perform the task.

As altitude increases, TUC decreases. Some "average" TUCs are listed:

Altitude	Time of Useful Consciousness
FL 180	20-30 Minutes
FL 220	10 Minutes
FL 250	3-5 Minutes
FL 280	2.5-3 Minutes
FL 300	1-2 Minutes
FL 350	0.5-1 Minute
FL 400	15-20 Seconds
FL 430 and above	9-12 Seconds

There is not only a range of variation from individual to individual, but also for each individual there may be a daily variation in TUC. Also, the values listed above for FL 180 through FL 400 are subject to a reduction by perhaps as much as 50% following a rapid decompression. Your most urgent need, after experiencing a rapid decompression, is for supplemental oxygen. Failure to observe this rule may lead to rapid unconsciousness.

Next month, we'll conclude with some info on recognition of hypoxia, factors influencing hypoxia, prevention of hypoxia, and other relevant considerations. Future issues will comment in depth on the other three "types" of hypoxia and their relationship with hypoxic hypoxia and the aviator.

chock talk

Chock talk

*...incidents and incidentals
with a maintenance slant.*

The accident that didn't happen

Suppose you were driving down the highway and your steering wheel froze, the brakes wouldn't work, the gas pedal was stuck, you couldn't move the transmission lever and the ignition wouldn't turn off. Imagine the feeling of helplessness as you motor towards the curve ahead at 55 mph ...

Now you get some idea of how a pilot feels when the flight controls freeze. An F-4E was flying low level at 500 ft AGL and 480 kts. The stick in both cockpits suddenly froze in approximately the neutral position. The only control left was engine power and flight control trim. The aircrew nursed the aircraft up to 10,000 ft before attempting to break the stick free. Both crewmembers pushed forcefully on the stick and it came free.

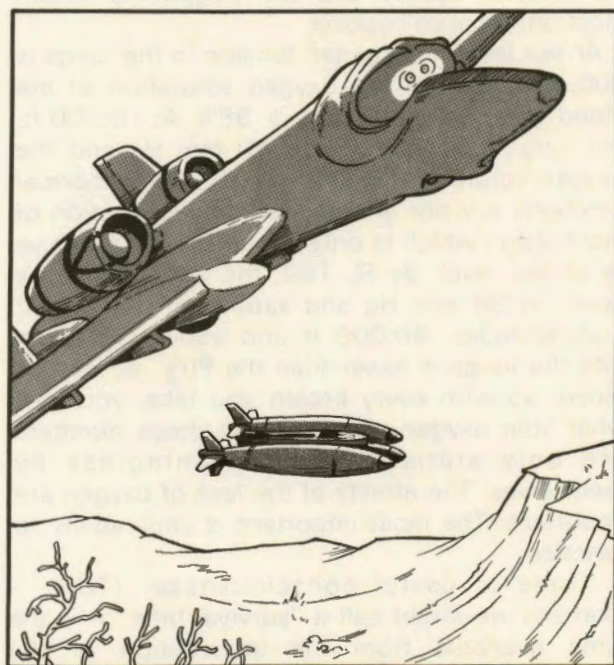
The left forward AIM-7 umbilical dust cap cover was not safety wired. It came loose during flight and lodged in the stabilator control linkage. A check of the aircraft also revealed that the right AIM-7 umbilical dust cap cover was improperly safety wired. A dumb reason to almost lose an aircraft? You bet!

Bombs Away

The A-10 was on a ground attack mission. All proceeded normally until the second bombing pass. When the pilot pressed the release button, the Triple Ejector Rack (TER) on station four departed the aircraft with the bombs still attached.

The adapter cable, connecting the TER to station four was still attached to the station by the male cannon plug. The cannon plug was cocked and only two of the three locking clips were engaged. This allowed the pins to mate improperly -- giving the proper cockpit indications, but sending the release voltage to the MAU-40 weapons rack instead of the TER. The MAU-40 sensed the TER as a single store, the carts fired, and released the TER.

Access to the station four adapter cable connector compartment is through a small door. The compartment is small and contains protrusions which limits accessibility. Installing the cannon plug is difficult, and it's impossible to visually insure all locking clips are engaged. Since the above aircraft was loaded at night, it was even more difficult to insure that loading and connections were correct. Don't let a poor design factor cause you a problem. If you're unsure of something, double check.



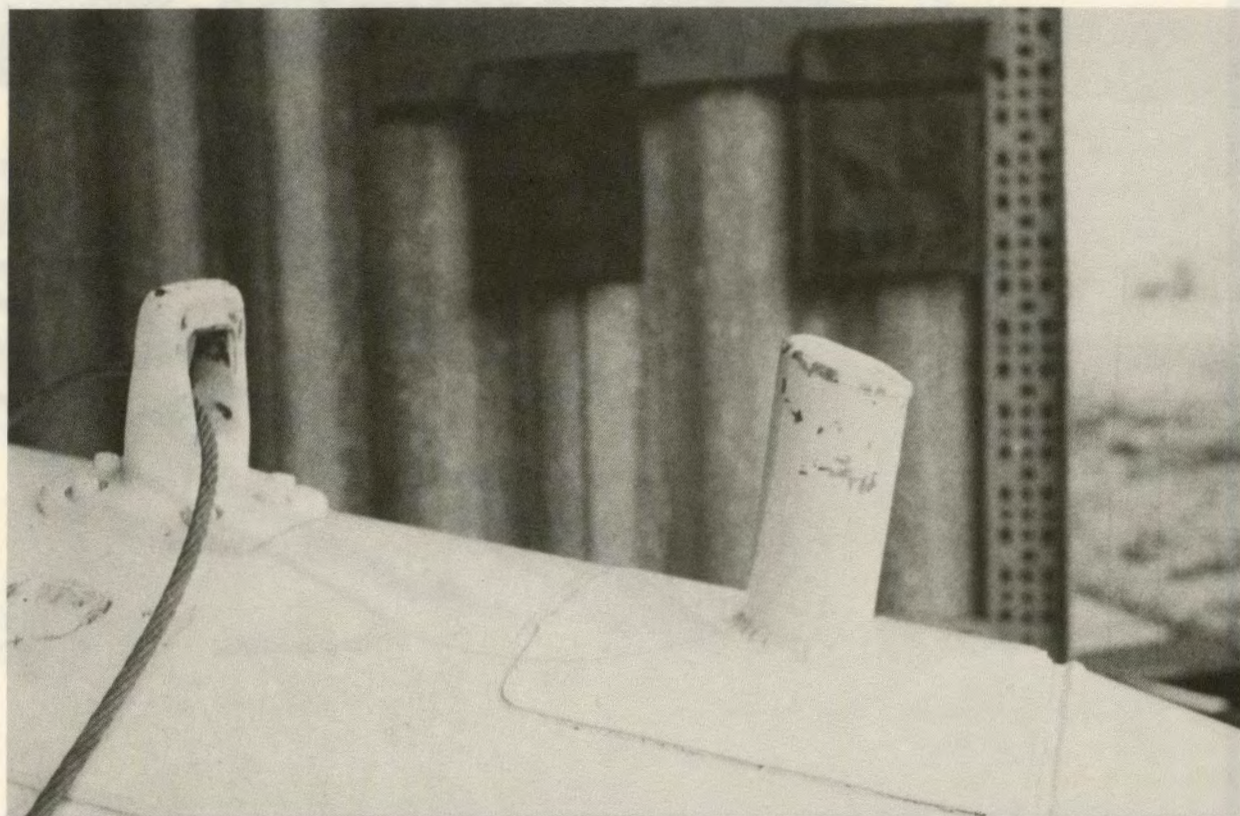
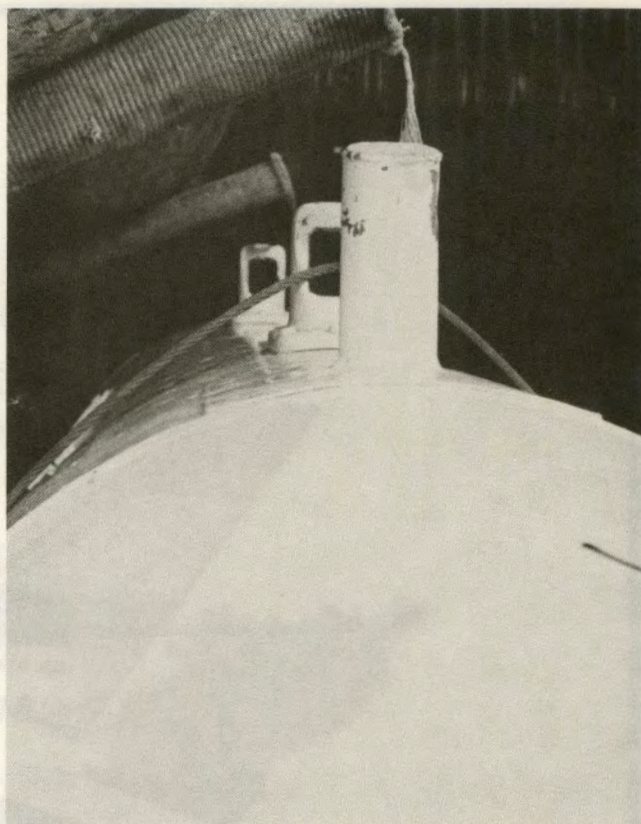
F/RF-4 Baggage PODS

**By Capt R. L. Atkinson
HQ 26 TRW/FSO
APO NY 09860**

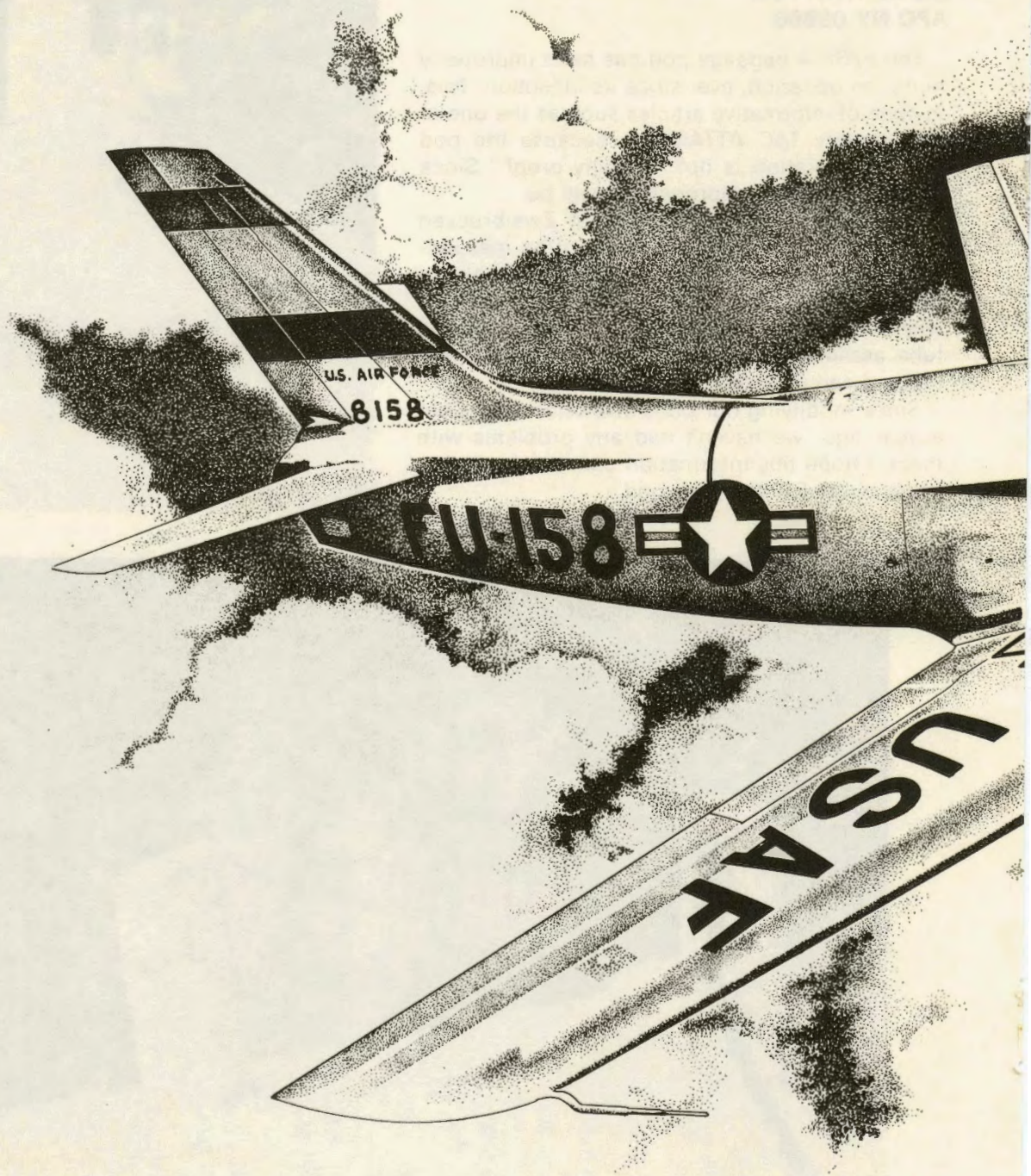
The F/RF-4 baggage pod has been improperly hung, on occasion, ever since its inception. This, in spite of informative articles such as the one in the January TAC ATTACK, is because the pod loading operation is not "Murphy proof." Since it can be installed improperly, it will be.

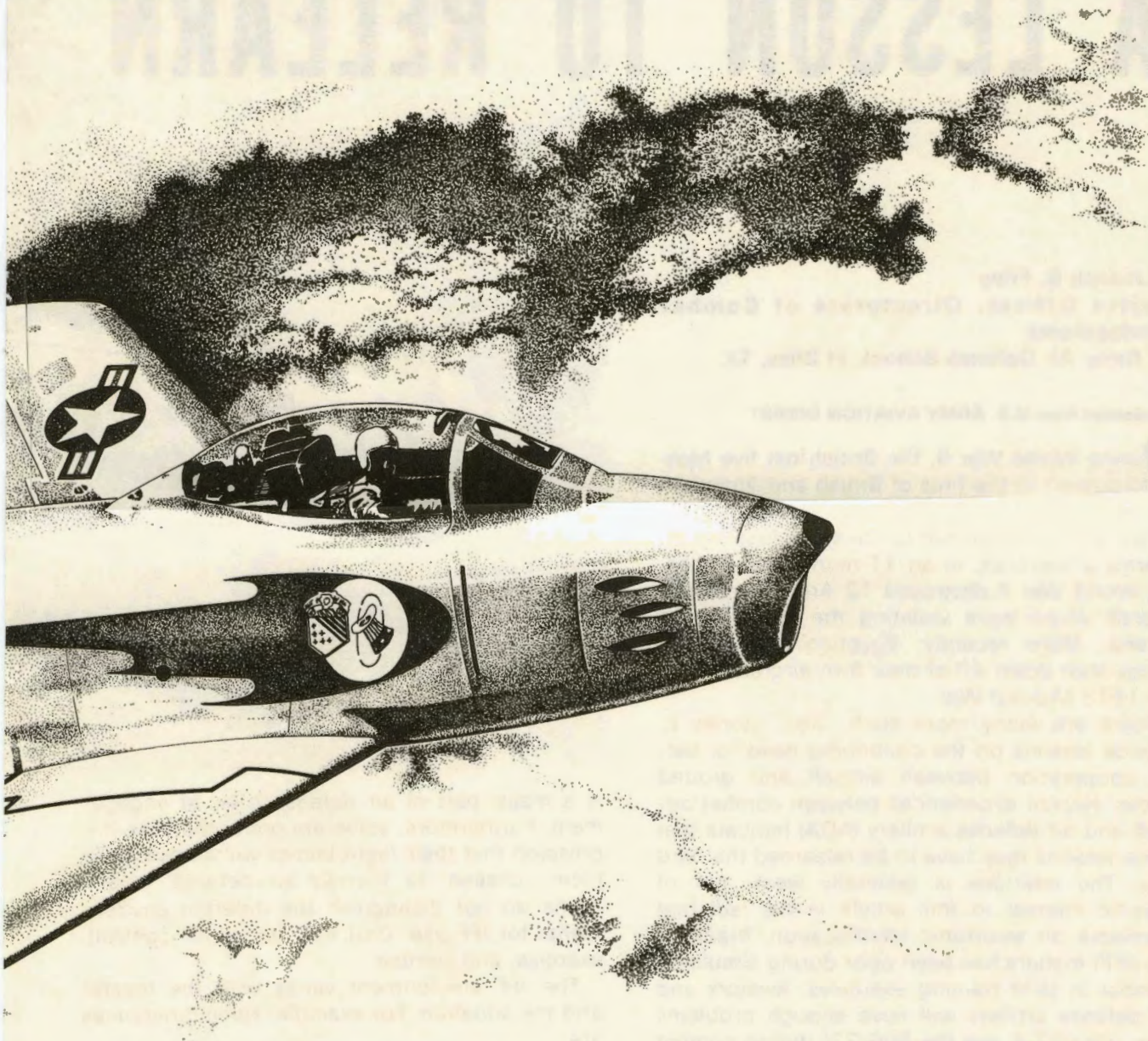
The maintenance folks here at Zweibrucken remedied this problem by means of an inexpensive local modification. A tube assembly is welded to the top of the pod, just forward of where the front of the pylon extends. Once the tube assembly is installed, there is no way that the pod can fit except the correct way.

Since modifying our pods at Zweibrucken over a year ago, we haven't had any problems with them. I hope this information can be of value to users of the F-4 baggage pod.



F-86





James H. Brown
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A LESSON TO RELEARN

By Joseph B. Fries
Project Officer, Directorate of Combat
Developments
US Army Air Defense School, Ft Bliss, TX

Condensed from U.S. ARMY AVIATION DIGEST

During World War II, the British lost five Mosquito aircraft to the fires of British and American forces. They also lost dozens of Spitfires, Hurricanes, and other aircraft to the same fires.

Army antiaircraft, in an 11-month period during World War II, destroyed 12 Army Air Forces aircraft which were violating the identification criteria. More recently, Egyptian air defense forces shot down 40 of their own aircraft during the 1973 Mideast War.

There are many more such "war" stories to provide lessons on the continuing need for better cooperation between aircraft and ground forces. Recent experiences between combat aircraft and air defense artillery (ADA) indicate that these lessons may have to be relearned the hard way. The interface is generally weak; but of specific interest in this article is the fact that teamwork on electronic identification, friend or foe (IFF) matters, has been poor during simulated combat in joint training exercises. Aviators and air defense artillery will have enough problems (e.g., ZSU-23-4 and the MIG-23) during combat without the self-inflicted wounds resulting from improper IFF use.

The rest of this article presents one man's views for consideration by aircrews. The views are unofficial, possibly biased, and perhaps do not identify all the culprits. But the problem is real, and the article is intended to get you thinking more about this serious and significant problem area.

Problem Causes: The potential for self-inflicted wounds seems to stem from several causes, the most important of which is that some aviators are not aware that electronic IFF



is a major part of air defense rules of engagement. Furthermore, some are under the false impression that their flight tactics will always make them "unseen" to friendly air defense radars. Some do not distinguish the different environments for IFF use: Civil ATC (air traffic control), exercise, and combat.

The IFF environment varies with the theater and the situation. For example, some differences are:

Civil ATC: All aircraft must fit into the civil ATC scheme when operating in and entering/departing that environment. Some of the electronic IFF capability may be turned off without significantly degrading ATC performance. Codes may be changed in flight as necessary to enhance air traffic control service. Misuse of IFF rarely imposes a severe penalty.

Exercises: Exercises take place in a mixed civil-ATC combat environment. Tactical aviation may not use complete ATC services in the exercise area and aviators may therefore not be motivated to turn on their IFF and check code

Spacers with more than 1,500 hours should be out of all engines by late this year. Detroit Deisel Allison is also completing testing on a modified spacer designed to reduce stress.

The Basic Machine

Automatic maneuvering flaps (AMF) in the mill since 1975 will finally become a reality this year. The contract for the modification kits was consummated last November. Production lead time on the kits is 12 months, making the retrofit start date Nov 78. Once the actual modification is underway, we will complete 20 aircraft per month. Nine of these will be completed at the depot and will go to TAC and the ANG. The remaining 11 will be completed by contract field teams at ANG bases.

The guys at Tucson presently own two AMF aircraft, modified by LTV as they came off the production line (lucky devils). Buffet is reduced

result: improved operational capability with a reduced pilot workload.

Training

In 1977, we changed our philosophy from avoidance to exposure with the departure training/departure prevention program. The results for the year showed a marked improvement. We experienced only one departure-related major aircraft mishap, whereas in 1976, we had three. Navy statistics also confirm an improvement. They began their program in 1975, had no mishaps in 1976, and two in 1977.

Why the improvement? Departure training prepares the man mentally; departure prevention "should" prepare the man physically. Taken separately, the training removes the mystique that has long been associated with A-7 departures. Pilots are less likely to clutch after one has occurred. Prevention teaches ~~tell-tale~~ ^{trans in aircraft and on ADA weapons.} Suggested rules are:

Exercises: Rules for IFF use are, or should be, published in exercise directives. Initial settings and self-tests must be part of the preflight checkout procedure.

Combat: Rules for use of IFF during combat are published in each theater in classified directives. Such rules are much like the suggested exercise rules with the understanding that Mode 4 use for air defense identification purposes is stressed. Also, the joint commanders' combat rules may specify that the entire IFF transponder be turned to standby when over enemy territory and outside the range of friendly weapons. This reduces the possibility of enemy exploitation of the IFF radiations to the aviator's disadvantage. IFF turn-on occurs before reentry, as described by the joint rules, because the need to identify oneself then takes precedence.

If Army ADA and tactical aviation are to do their thing -- to the enemy rather than to each other -- they will have to understand the rules and play by them. One of the rules calls for aviators to obtain and use the IFF mode/code lists. They should not wait for a shooting war to practice IFF discipline. Lessons relearned are expensive.

ED NOTE: While this article was written for Army aviators, the lessons for all aircrews are self-evident. During an armed conflict, under severe comm jamming, your successful entry back into "safe" airspace may depend solely on your IFF/SIF equipment. Use it properly.



settings. Or, possibly, they don't get the word. This has been a problem in several exercises during the past few years. Failure to use IFF would cause no great problem if it were not for the requirement to train for air defense aviation teamwork in as realistic an environment as possible. Misuse or nonuse of IFF degrades the air defense force's ability to identify aircraft. Nonlethal mistakes then accumulate. Aircrews rarely find out that they caused themselves to be "killed" by their own ADA two minutes after the start of the exercise.

Combat: In combat, most of the IFF capability must be turned on; codes must be changed frequently on a rigid area-wide schedule; and the ATC function is not permitted to interfere with the use of IFF that provides identification to other friendly weapons. The price of IFF misuse may be high, if we do not learn to use IFF equipment.

Equipment: The IFF system consists of transponders and interrogators.

Transponders: The airborne element of the

TRAINING TO FIGHT

"your responsibility"

Editor's Note: The authors have just spent 3 months "on the road" interviewing operational fighter wing personnel, and evaluating aircrew training realism in TAC today. This article presents a couple of ideas on the "jock's" role in realistic training.

**By Maj Gary A. Michels and
Capt Terry L. Millard
TAC/IGIO**



"Do you train to fight?" If you were one of the guys we talked with, you heard us ask that question. Your answers created a lot of work at the TAC/NAF staffs, but they also indicated "line jocks" hadn't done all they could to ensure that "we train to fight" rather than "train to train." There are two responsibilities that you must assume to ensure successful "competition" in combat.

First, you must realize that line aviators are the most qualified guys to talk about competitiveness in combat. Our aerospace fighters and weapons are changing at a phenomenal rate, as are our opponents' systems. The majority of HHQ staff officers aren't current in your airplane, nor do they benefit from regular review of enemy threats or the practice of tactics to defeat those threats; yet staffers write most of your directives. The dynamics of tactics development can easily antedate regulations and procedures, but the "jock" may be the only one who recognizes they have been outdated by progress. Therefore, it is your responsibility to surface problems and inconsistencies when they occur.

A word of advice before you "set your hair on fire and tell it like it is." The job of every aircrew is the creation of combat lethality. Loss of air machines to judgemental errors does not increase lethality; therefore, the balance between what is required for successful combat employment and conservation of combat assets is an important question. Safety is an integral part of mission accomplishment; therefore,

consider the risk to combat assets before you "tell it like it is."

If you feel there is a potential gain in combat capability, then get your "idea" together and start up the line. Use a few catch words like dollars, capability, sorties, degrees, knots, percent, and safety, rather than I know, I feel, I think. "Gut feelings" are often right, but you need those quantitative words when you sell your idea. Otherwise, you'll flame out in the chocks. Remember, if your idea is different or more demanding, the boss will have to weigh potential gains against incurred risks. You can reduce or eliminate those risks if you provide him a stepping-stone training program to gradually create new capability.

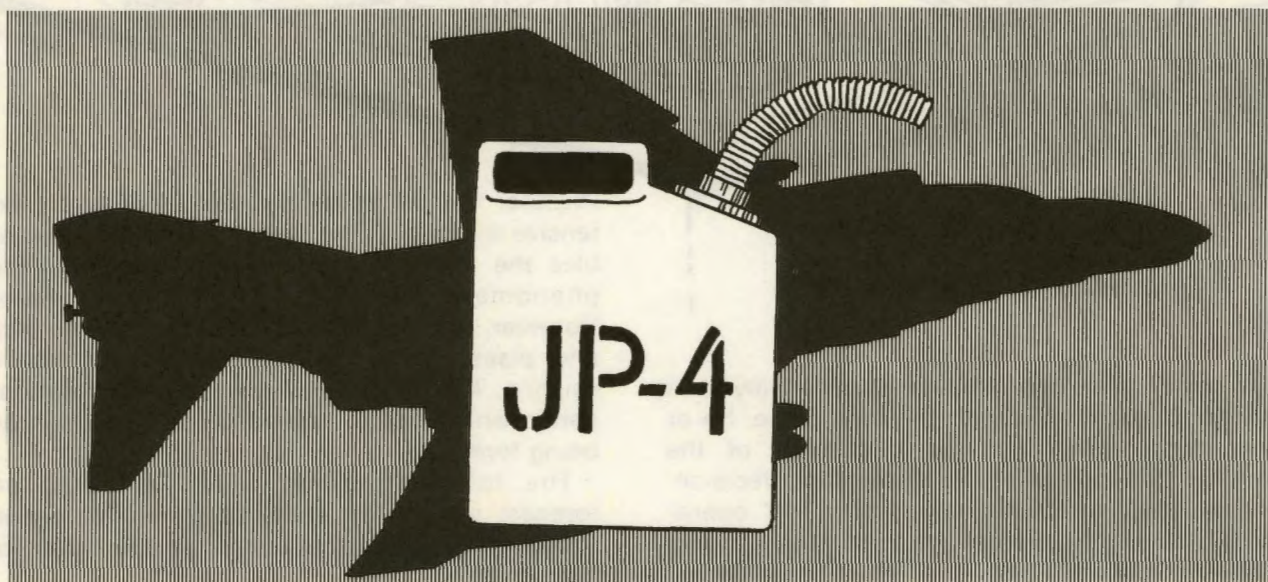
There has long been a misconception that safety and "training to fight" were not compatible; however, our experiences indicate those units that trained the hardest were also the most safety conscious. Units that trained hard demanded that aircrews assume the responsibility for development and execution of challenging training. In the process, supervisory awareness of individual aircrew limits improved both lethality and safety.

That second "jock" responsibility is to make every gallon of JP-4 improve lethality. "Think training versus gallons." The number of gallons you are issued in your flying career may be only half what you would have had 15 years ago; therefore, each gallon must buy twice as much training. Combat capability and safety awareness are developed at the same accelerated rate

if "jocks" reach their individual threshold of competence on each mission. Challenging training produces a demand for excellence which, in turn, improves performance and increases pride. Pride is the single most important motivator of excellence. On the other hand, when you are not challenged, complacency begins its insidious onset -- reducing aircrew concentration, awareness, and training per gallon.

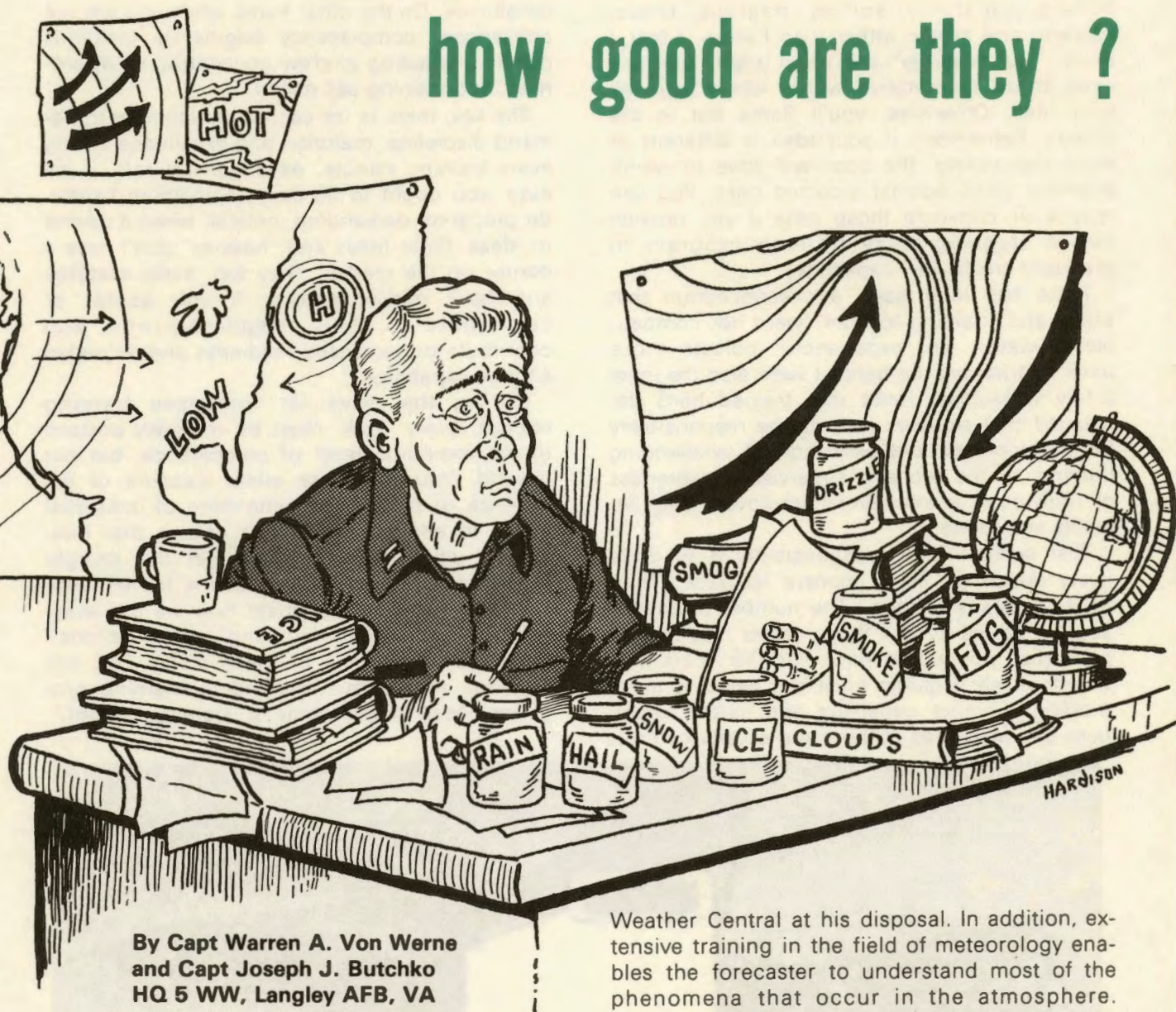
The key, then, is for each flight member to demand discipline, maturity, and excellence during every training minute. As a general rule, if it's easy, you ought to be doing something harder. Be prepared, demanding, critical; when it comes to ideas, flight leads and "heavies" don't have a corner on the market. They too, make mistakes and have misperceptions. If you accept or contribute to their misperceptions, you contribute to decreased readiness and degraded aircrew capability.

During the drive for increased training realism, every "jock" must be routinely pressed to his individual level of competence, but not beyond. You must use every measure of excellence to pursue the generation of individual pride. In addition, you must ensure that individuals who make decisions get the straight word about how it really is at the trench level. Finally, we must all evaluate how we use every gallon of JP-4; think "training versus gallons." With your assistance in these areas, TAC can continue to improve and modify training programs based on the theme of "training to fight."



WEATHER FORECASTS...

how good are they ?



**By Capt Warren A. Von Werne
and Capt Joseph J. Butchko
HQ 5 WW, Langley AFB, VA**

In many cases, the ultimate responsibility for a go/no-go decision is with the pilot alone. He or she must understand the limitations of the weather forecast used to make that decision. The weather forecaster supporting TAC operations has the resources of both the National Weather Service and the Air Force Global

Weather Central at his disposal. In addition, extensive training in the field of meteorology enables the forecaster to understand most of the phenomena that occur in the atmosphere. However, weather forecasting for a specific time and place is still more an art or skill than a science. The accuracy of a weather forecast depends on the time, location, and phenomenon being forecast.

The following table, which is based on forecast verification statistics from TAC bases, shows how forecast accuracy is a function of both criteria and time.

Forecast Criteria	% of Time Forecast Was Correct After			
	3 Hours	6 Hours	12 Hours	24 Hours
Ceiling below 1,000 ft and visibility below 2 miles	75%	60%	50%	45%
Ceiling below 10,000 ft and visibility below 5 miles	85%	80%	70%	65%

Recent studies indicate the following:

- Forecasts in the 3 to 6 hour timeframe are most reliable when there is a distinct weather system, such as a front, mid-latitude low pressure area, or a upper air trough approaching a forecast location.
- The timing and type of weather phenomena associated with fast moving cold fronts and squall lines are very difficult to forecast accurately.
- Forecasts made for a time interval are more reliable than forecasts for specific time of occurrence.
- Forecasts of surface visibility are more difficult than forecasts for ceiling heights. Visibility in snow is the most difficult of all visibility forecasts.

The skill of forecasting specific events -- such as thunderstorms or the onset of rain -- is highly time-dependent. A recent study concluded: A forecaster can predict the onset of a thunderstorm 1 to 2 hours in advance at least 25% of the time, if a weather radar is available. The study also concluded that predictions of the onset of rain or snow within plus or minus 5 hours are correct at least 75% of the time.

Cross-country flight forecasts pose different problems to the forecaster, who must forecast the time, location, and altitude of an event relative to cross-country flight track. Some of the important -- and difficult -- phenomena that come under this category include:

- The location and occurrence of severe or

extreme turbulence.

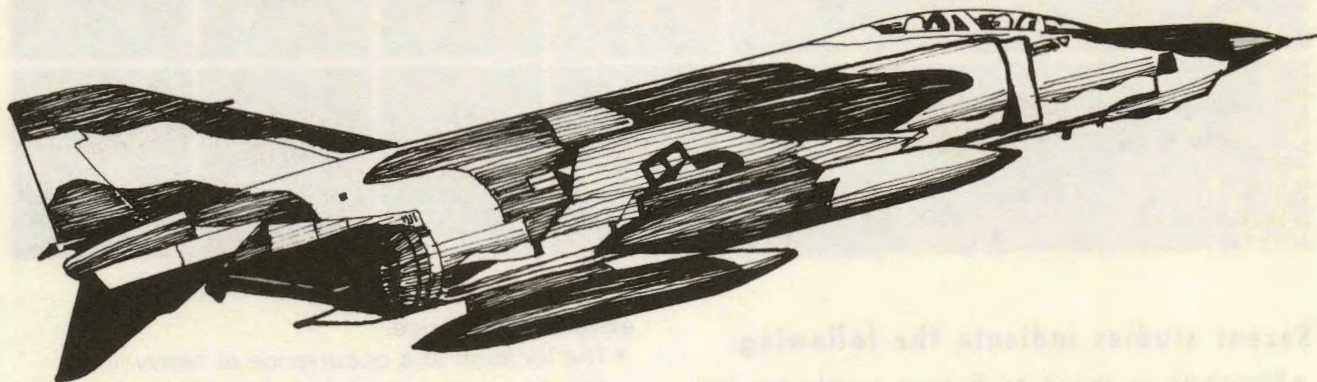
- The location and occurrence of heavy icing.
- The location, movement, and time of occurrence of thunderstorms which have not yet formed.

The point is that the atmosphere is in a state of constant flux and forecasts of atmospheric phenomena are highly time-dependent. The pilot should realize that the older the forecast, the greater the chance that some part of it will be wrong. The weatherwise pilot should view the forecast as the best professional advice that is available at the time.

The meteorological community is continually working to improve forecasting skills. Also, to better communicate the degree of certainty associated with expected atmospheric changes to the users of forecasts, Air Weather Service will implement the use of probability forecasts. Probability forecasts will increase the potential value of forecasts to the decision maker; you will hear more on this effort as techniques are improved.

Remember also that weather advisory accuracy is enhanced through the reporting of significant weather phenomena. The observation given in your PIREP allows the weather personnel to pinpoint thunderstorms, turbulence, icing, etc., and to advise other aircrews of the location of weather hazards instead of reporting only the probability. The forecaster exists to aid in the safe accomplishment of your mission. The more help you can give him, the more help he can give you.

QUICK



By Capt Luther B. Copeland
USAF TAWC/ERRI
Eglin AFB, FL

Quick Strike Reconnaissance (QSR) is a near-real-time reconnaissance system consisting of three main elements: an RF-4C sensor aircraft, an RF-4C relay aircraft, and a ground station called the Reconnaissance Reporting Facility (RRF). QSR's primary function is to provide battlefield commanders the information required to effectively utilize strike assets against mobile, time-sensitive targets within minutes of target detection by the sensor aircraft. Sound like the role of traditional reconnaissance? It is!! The only differences are how QSR accomplishes the task and some of the new equipment used. Due to space limitations, this article will be a "glossy brochure" approach to the sensor aircraft, relay aircraft, and RRF.

The sensor aircraft is considered to be a new system even though it retains some systems basic to the "plain vanilla" RF-4C. New equipment includes the AN/ARN-101 Digital Avionics System, PAVE TACK pod which contains a slewable infrared detector and laser range/designator, helmet mounted sight, AAF-5 Infrared Reconnaissance Set, Digital Scan

Converter Group, Data Link, Tactical Electronic Reconnaissance Set, and others too numerous for this article. In the following paragraphs, I will try to give a "quick and dirty" description of these subsystems.

The basics of the AN/ARN-101 system were covered in the "Digital F-4E" article in the March 1978 TAC ATTACK. However, some of the QSR peculiar functions of the AN/ARN-101 are worth some more space. Through the ARN-101, the QSR sensor aircraft is able to insert "CONTACTS" (target coordinations) into the computer memory using PAVE TACK, radar cursor, helmet mounted sight, and TERECS sensors. This eliminates the need for any map plotting while airborne, and any "CONTACT" may be reattacked by inserting its identification number as the "FLY TO" point in the computer. Also unique to QSR ARN-101 is the horizontal situation display (HSD). This allows navigation points (turn points, initial points, targets, etc.) and "CONTACTS" to be displayed on scopes in both cockpits using computer generated symbology. The HSD range is variable from 5 nautical miles (NM) to 800 NM. That's right -- 800 nautical miles! Sound like STAR WARS? Just wait!! The operator can also move the display to "look" out the left side (port for you Navy and ADCOM guys), right side, forward of the aircraft or put the aircraft in the center of the dis-

STRIKE RECONNAISSANCE

play and "look" 360 degrees with the radius variable from 2-1/2 NM to 400 NM. So you aren't interested in the information all around you because it's dark outside and you are trying to find your radar initial point, and the Stanley up front is no help at all. Never fear, HSD is here. You are looking at a 10 NM radar display with HSD, and it puts a little computer-generated symbol where the ARN-101 navigation system "thinks" the return is located. Believe an old recce navigator, ARN-101/HSD is the best thing since sliced bread for night low-level radar navigation and mission management for both crewmembers. Next is one of our primary sensors.

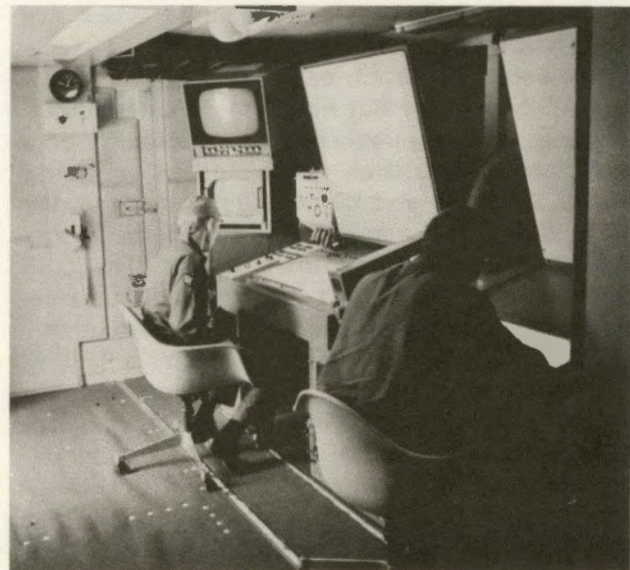
The PAVE TACK Pod presents an infrared TV presentation to both cockpits in living color (well, almost -- there are several shades of grey). This allows for detection, identification, and location of a large range of targets from cows (yes -- cows) to trucks to tanks to power plants. The QSR-unique fact about PAVE TACK is that the infrared imagery is downlinked to the RRF. (See "The Digital F-4E," TAC ATTACK, March 1978).

Pilots, don't give up yet. This next piece of equipment is a pilot's dream. Undergoing testing with QSR is a helmet mounted sight (HMS). The HMS system has a two-way interface with the ARN-101 which allows the pilot to insert HMS contacts (target coordinates) into the ARN-101 computer. By means of an override switch, he is able to slew the PAVE TACK pod line-of-sight to the target he is eyeballing. The ARN-101 also cues the pilot to look at targets the Weapon System Officer (WSO) has on the PAVE TACK system or under the radar cursors. The pilot can override the WSO's control of PAVE TACK anytime the laser is not being used. Definitely requires good crew coordination! The HMS system is used primarily as a cueing sensor for PAVE TACK but HMS target information can also

be used for automatic steering through the ARN-101 for aircraft overflight of the target giving AAD-5 sensor coverage.

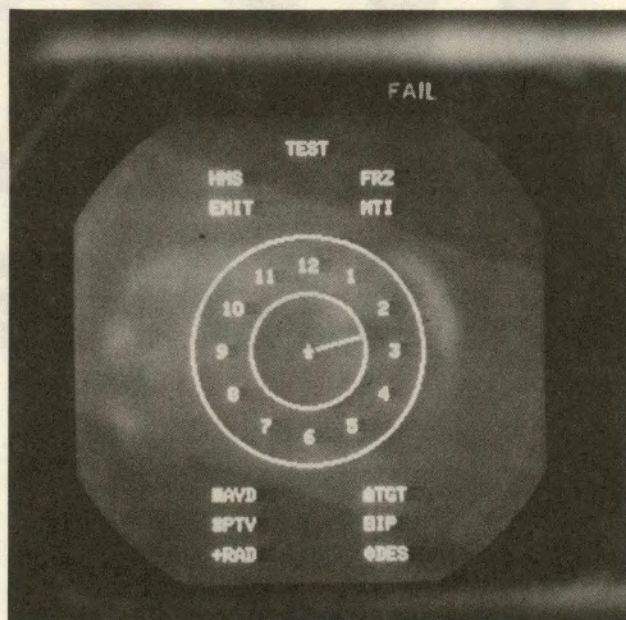
The AAD-5 is a downward-looking infrared reconnaissance sensor with narrow and wide field-of-view selectable in the rear cockpit. It performs basically the same function as the standard infrared sensor on "normal" RF-4C aircraft. The AAD-5 has much better resolution and is downlinked to the RRF. AAD-5 imagery is recorded on film for ground processing and on video tape for transmission over the data link at a later time if "live" data link is not desired. Although AAD-5 imagery is not displayed on either cockpit digital scan converter, these scopes have a variety of other displays.

The digital scan converter group (DSCG) consists of three units: the front cockpit indicator, the aft cockpit indicator, and the indicator control unit. The aft cockpit indicator replaces



AAD-5 INTERPRETATION CONSOLE

QUICK STRIKE RECONNAISSANCE



HORIZONTAL SITUATION DISPLAY PATTERN

the standard RF-4C radar scope in the rear cockpit center pedestal. The rear cockpit indicator can display live PAVE TACK imagery, taped PAVE TACK imagery, radar, and radar overlaid with HSD. The front cockpit indicator replaces the RF-4C optical view finder. The front indicator can display live PAVE TACK imagery or HSD. The standard front cockpit RF-4C radar scope is retained to enable the pilot to use the terrain following feature of the radar while viewing PAVE TACK or HSD simultaneously (one for each eyeball). With the DSCG, the aircrew can see what is being data transmitted when live PAVE TACK is data linked.

The data link system can transmit PAVE TACK or AAD-5 imagery but not both simultaneously. However, both are recorded simultaneously on a video tape recorder when either is being downlinked live; and by rewinding the tape, the same target area can be data linked for further exploitation using the other sensor. The QSR data link is not used to transmit tactical electronic reconnaissance (TEREC) information.

The last major QSR sensor system is TERC. Its primary function is emitter detection, identification, and location. When the system has determined an emitter location, that location becomes a TERC contact, the contact is recorded in a TERC recorder, put directly into the ARN-101 "CONTACT" memory, and is data linked to a ground station using the HF or UHF radio. Both TERC and the ARN-101 provide a

rear cockpit display of contacts. This covers the major systems of the sensor aircraft. Next will be the relay aircraft.

The relay aircraft is an RF-4C equipped to relay the data link signal from the sensor aircraft. It is used to extend the line-of-sight range from the sensor aircraft to the RRF.

The RRF consists of three elements: The data line receiver antenna, the receiving shelter, and the exploitation shelter. The receiving shelter controls the receiving antenna and runs the data link signal through some magic black boxes to put it back into a usable video signal. This signal is sent to the exploitation shelter for imagery interpreters to locate, identify, and report on targets covered by the sensor aircraft. Only PAVE TACK and AAD-5 imagery is data linked and exploited.

PAVE TACK video is displayed on one, two, or three high resolution video monitors. The interpreter has slewable crosshairs which he superimposes on targets anywhere within the PAVE TACK field-of-view; and using the shelter's computer, reads out the target coordinates. Next to the video monitor is a keyboard interfaced with the shelter computer which provides the means of transmission to the Tactical Air Control Center (TACC). The interpreter types the report format (target type, number, status, location, and time of day target was covered by the sensor aircraft) and transmits the completed report to the TACC or as directed.

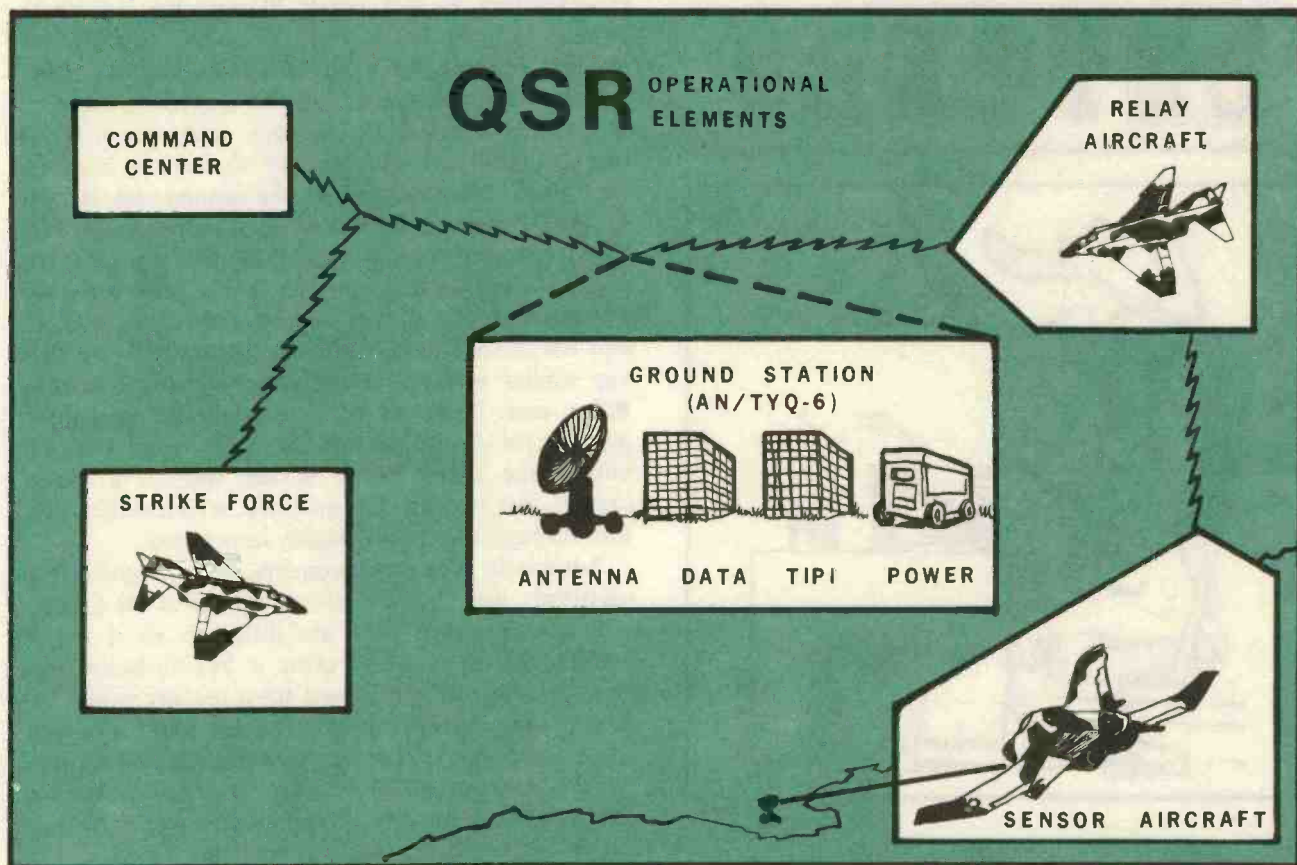
The data linked AAD-5 imagery is processed by a laser beam recorder on a continuous roll of 5-inch dry silver film. The film exits the laser beam recorder onto a modified light table where two interpreters "work" the film using data



PAVE TACK POD



Capt L.B. Copeland
this month's
Fleagle T-shirt winner



linked aircraft navigation data through the shelter computer to locate the target coordinates. The AAD-5 interpretation console also has a keyboard to access transmission lines to put the target report on the wires.

Test results have shown that target development is less than 15 minutes when live data link through the relay has been utilized. Target development time in this context is the time elapsed from target overflight to hardcopy report available to the requester (TACC). The shortest development time to date has been about 3 minutes.

The imagery interpreters are the key QSR. Working as a team, they are able to detect, locate, and identify many more targets in a shorter time period than the aircrew could ever hope to do using only aircraft information and displays.

The secondary function of QSR is Strike Control and Reconnaissance (SCAR). The SCAR mission is to detect and identify perishable targets, evaluate these targets in accordance with established guidelines, direct strike forces against targets when authorized, and provide bomb damage assessment (BDA).

SCAR concepts and missions are already being flown by recce forces within TAC at this time. What QSR hopes to add to that mission is a night time/adverse weather capability. With the QSR system, we now have the ability to identify targets day or night and lead fighters back for delivery of area munitions or laser-guided weapons. Near-real-time BDA during hours of darkness can conserve strike resources by hitting only active, lucrative targets.

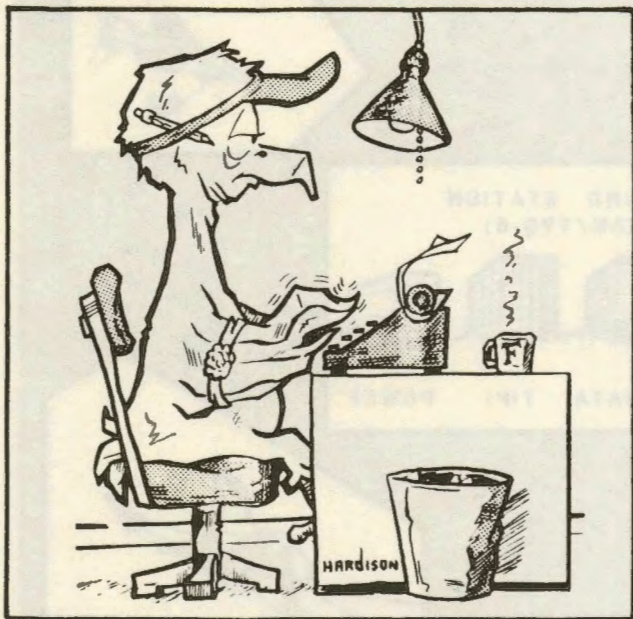
The QSR system is in the initial stage of testing and evaluation. For more detailed information about QSR, contact USAFTAWC/ERR, QSR Test Team, Eglin AFB, FL 32542.

Next month, we will be giving you the details of our work on the GBU-15, Electro-Optical Guided Bomb.



Captain Luther B. Copeland received a B.S. in Education from Auburn University in 1968, and an M.S. from Ball State University in 1974. His military experience includes: UNT, RF-4 training at Mt Home AFB, service at Tan Son Nhut and Udorn, and a tour in England. He was assigned to the 4485 TESTS and presently works as the QSR Project Manager at TAWC.

LETTERS



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Editor

An article in the July 1977 issue of TAC AT-TACK by Maj W. W. Douglass, titled "F-4 Ejection With a Missing Interlock Block Interdictor Pin," and a letter to the editor from Maj D. M. Bass published in the December 1977 issue, discuss the feasibility of ejecting through the canopy from the front cockpit of an F-4. Both Maj Douglass' article and your reply to Maj Bass indicate that the seat will definitely eject through the canopy and will probably function normally, with possible leg injuries to the pilot.

Unfortunately, the probability of a successful ejection through the canopy is not as good as the article implies. There is one accident on record that documents the survival of a rear seat occupant who was apparently ejected through a locked canopy when the aircraft commander inadvertently flew into the ground. The rear seat catapult functioned normally, but damage induced by the crash precluded rocket firing. That was in September 1968, and the rear pilot's injuries (multiple broken/dislocated bones, broken ribs, and internal injuries) have kept him off pilot flight status ever since. But, at McDonnell Aircraft Company, we have no record of a catapult successfully firing a seat through a closed and locked front canopy, which is the flight condition under

consideration. In fact, nearly 20 years ago, a test was conducted in St Louis, from an F-4A, in which the original Stanley Aviation Company seat was fired with the front canopy closed and locked. In this test, the seat contacted the canopy and stopped. As pressure built up in the catapult, the canopy breakers on the seat punched through the canopy and the seat ejected. However, the resulting extremely high "G" loading ripped the seat bucket and dummy from the seat, sending the remaining parts into orbit while the dummy and seat bucket just cleared the aircraft sill and fell to the ground. McDonnell is not aware that any similar test has been conducted with a Martin-Baker seat. It should be noted that the rear upper part of the front Martin-Baker seat in an F-4 will impact the metal frame at the rear of a closed canopy, not just the transparency, which makes ejection through the canopy highly improbable.

Admittedly the seat geometry, the catapults, the cartridges, and the catapult mountings of the Stanley and Martin-Baker seats are different, so it is not certain that an ejection using a Martin-Baker seat through a closed and locked front canopy would fail in the same manner as the Stanley seat. However, there is enough similarity between the Stanley and Martin-Baker seats to warrant extreme caution in assuming that the Martin-Baker seat would be successful where the Stanley seat was not.

Consequently, the position of McDonnell has always been, and remains, that ejection through the F-4 canopy as presently designed is not a practicable means of escape. McAIR also strongly endorses Maj Douglass' closing remarks in his article: "The best insurance ... is to perform a thorough preflight of your seat." Further insurance is available with a first class seat maintenance facility.

R. D. Hunt
Chief System Safety Engineer
McDonnell Aircraft Company

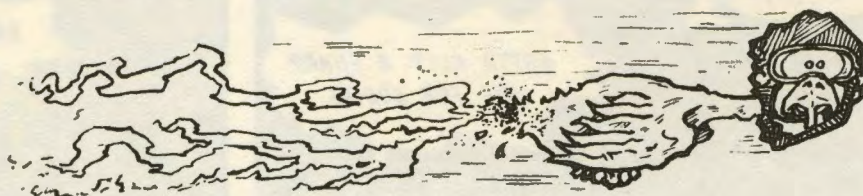
We couldn't agree more. Thank you for the valuable information.

ED

• • •

No, we haven't come up with a new "hoop" position for A-7s. The write-up for the January 1978 Aircrew of Distinction erroneously listed the position as 500' AGL, 5,000' out from the runway instead of the correct 250' AGL. All you A-7 drivers can rest easy once more.

TAC TALLY



MAJOR ACFT. ACCIDENTS ►
AIRCREW FATALITIES ►
TOTAL EJECTIONS ►
SUCCESSFUL EJECTIONS ►

TAC			ANG			AFR		
Feb	thru Feb		Feb	thru Feb		Feb	thru Feb	
	1978	1977		1978	1977		1978	1977
3	9	4	1	1	1	0	0	0
4	7	2	0	0	0	0	0	0
1	7	2	1	1	1	0	0	0
1	7	2	1	1	1	0	0	0



TAC Flight Safety Trophy Winners

31 TFW
EGLIN AFB, FL
2 MAR 77-1 MAR 78

388 TFW
HILL AFB, UT
18 FEB 77-17 FEB 78

113 TFW(ANG)
ANDREWS AFB, MD
24 FEB 77-23 FEB 78

193 TEWG(ANG)
HARRISBURG IAP, PA
26 FEB 77-25 FEB 78

301 TFW(AFRES)
CARSWELL AFB, TX
9 MAR 77-8 MAR 78

CLASS A MISHAP COMPARISON RATE 76/77 (BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

TAC	77	0.0	5.3										
	78	0.0	11.6										
ANG	77	16.1	3.1										
	78	0.0	3.1										
AFRES	77	0.0	0.0										
	78	0.0	0.0										

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

FLEAGLE

