

TAC ATTACK

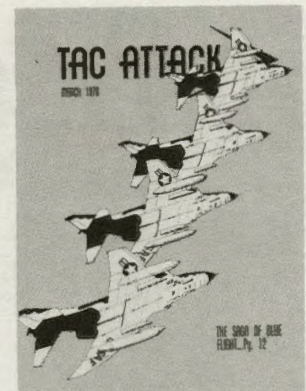
MARCH 1978



THE SAGA OF BLUE
FLIGHT...Pg. 12

MAR

FOR EFFICIENT TACTICAL AIR POWER



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TACRP 127-1

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Angle of ATTACK

our most valuable resources

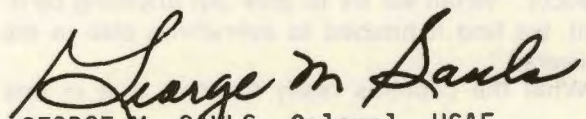
Americans are naturally inclined toward the subjects or events which are, or seem to be, spectacular. Aircraft mishaps inevitably are given a great deal of attention since they involve highly skilled individuals, expensive aircraft and equipment, and injury or perhaps loss of life. Consequently, our main thrust is toward the prevention of mishaps in flight operations, maintenance, civil engineering, and Air Force motor vehicle operations. This emphasis on the operational aspects of the TAC mission should not divert all your attention from another important area -- off-duty.

Although we can place definite dollar figures on our physical assets, we cannot put a value on our most valuable resources -- our people -- you, me, and every other individual in the command. Our most valuable resource is also the one over which we have the least influence. Even considering extended duty days, we spend the majority of our off-duty time away from the shop or unit where we have influence over the work environment. Experience has shown that the home, the public highway, and recreational activities account for a disproportionate number of individual mishaps.

As one example, shortly before the end of 1977, we experienced two serious fires in military family housing. Fortunately, all occupants escaped uninjured -- in one instance, just barely. However, a significant amount of damage was done to belongings and the structures. Both mishaps were preventable. One involved a damaged extension cord, and the other, youngsters probably playing with a stove. With a little effort, we can prevent these, and other types of mishaps, from catching us off guard.

The weather will soon be improving and spring fever will capture almost everyone. This time of year is usually used in preparing for the summer, cleaning out the "cobwebs" in the house, as well as in the mind. While you are making your preparations for the summer, conduct an inspection of your house for fire and other hazards. Check the tires, shocks, and other equipment on your automobile. If you're going to use the boat soon, inspect it as if you were going to buy it.

Make sure that every effort is made to instill an attitude of safety in your family. You will find that this will have a considerable effect on everyone they come in contact with. Once exposed to a sincere effort of accident prevention, almost all concerned will subconsciously anticipate hazards and work to eliminate them. Off-duty time can, and should be, enjoyable.


GEORGE M. SAULTS, Colonel, USAF
Chief of Safety

F-15 SITUATIONAL



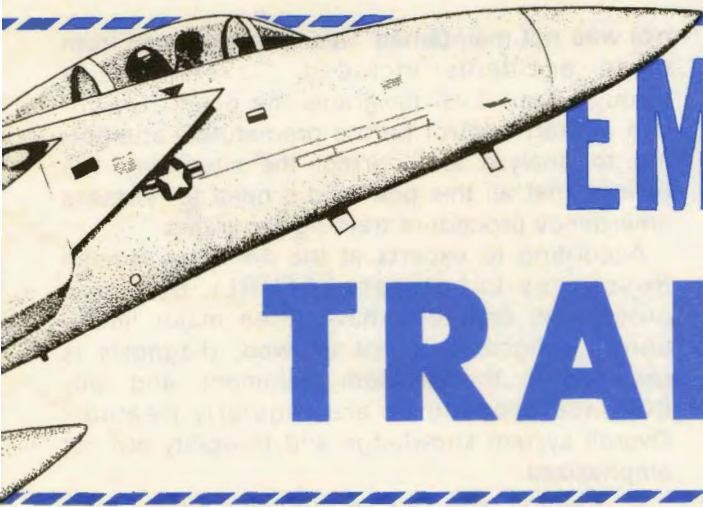
By Capt Jim Hale and Capt Jim Williford
27 TFS/1 TFW
Langley AFB, VA

"#%&#&%%, you really DON'T have any Boldface?" The outburst came forcefully at first, then tapered off to a wistful whine. The pilot was reading the F-15 Dash One for the first time (had the word heresy surfaced in his mind). Our Wise One (your basic ops officer), radiating inner strength, omniscience, and humility, calmly deflected the barrage with an appropriate, profound quote from John Muir (flashback to ops officer as a young boy growing up among intellectuals in small Junior College near Malibu Beach): "When we try to pick out anything by itself, we find it hitched to everything else in the universe."

What the captains really mean is that in this

article, we'll attempt to give the reader background information on some new directions being taken in the F-15 community with respect to training -- specifically, emergency (we call 'em abnormal) procedures. The lack of Boldface is just one aspect of a pervasive new philosophy about how to train people to make the SYSTEM (pilot plus machine) more effective. We don't pretend to have "the answer" for everyone else in the flying business, or the Air Force as a whole, but we do want to encourage review and more study of the training problem in light of the huge advances in the fields of education, engineering, human factors, etc., over the last 20 years. We'll discuss some of that research and apply it in the light of the direction taken in F-15 methods.

The way in which "all the stuff" involving F-15 operations is digested by the pilots is similar to a model used for training SAGE crews in Aerospace Command. The Sage System Training Pro-



EMERGENCY TRAINING

gram (SSTP) was based on the following five principles developed under laboratory simulation conditions:

1. Train a (large) functionally complete unit.
2. Simulate the environment adequately.
3. Train for FLEXIBILITY. Emphasis was on hypothesis formation testing in a variety of operational contexts. Hence, many different types of problems are run.
4. Promote SYSTEM skills and understanding. Emphasis was on the operator's understanding of how his job (actions) fitted into the overall systems, rather than on his job, per se.
5. Monitor and record performance and provide knowledge of results.

We feel there are two important points related to flying safely which are indirectly related to Boldface procedures. They are sometimes forgotten or are not intuitively obvious to a pilot under stress. First, the problem is not an isolated incident which occurs in a vacuum, unrelated to anything else; and secondly, YOU are responsible for your actions in the aircraft, and your actions and their effects likewise do not take place in a vacuum. Unfortunately, the sheer weight of numerous Boldface procedures might tend to seduce the user into complacency because Boldface is the "the answer." Once the actions in big, black letters have been accomplished, it is easy for the pilot to implicitly assume that he can no longer be held responsible for what happens afterward. After all, he didn't have a hand in formulating "the answer." So, if things go sour after the initial attempt to rectify the problem, the pilot may not be mentally or emotionally prepared to cope with

subsequent unanticipated complications.

It is conceivable that, in certain circumstances, the rote memory approach to Boldface procedures training might actually preclude all three steps listed in the introduction to Section III of the Flight Manual:

1. Maintain aircraft control.
2. Analyze the situation and take proper action.
3. Land as soon as practical.

This is certainly not the intent of many training programs currently in effect, but the application of the technique may result in cultivating a flock of parrots rather than pilots (or eagles, if you prefer).

At most fighter wings, heavy emphasis is placed on knowing the Boldface steps; but information contained in a warning, caution, or note is asked much less frequently. If you bust Boldface, you don't fly. Not so with the other "general knowledge" examinations. This holds true for IG inspections. Busting Boldface tests nearly always results in death for all concerned, but missing other questions on aircraft in general is not nearly as bad.

If you should drop into your friendly local simulator, you'll likely find a potential breeding ground for improper and incomplete transfer of training. That's a fancy way of saying you're not learning what you should -- particularly with respect to maintaining aircraft control, and most particularly when emergencies and control are related (which they always are). Simulator emergency procedures are given regularly to all aircrews; but the simulator doesn't fly like an airplane, and this is where the problem begins.

F-15 SITUATIONAL EMERGENCY TRAINING



Give a guy an emergency in the simulator during a low-altitude, high-speed run and see if he completes the requisite procedures AND maintains aircraft control. Since all IPs and other evaluators know that the simulator doesn't fly very well, the resultant crash in the aforementioned scenario usually generates the same concern as would be evident while examining one's fingernail parings. To the human mind we've just said, "No sweat, this stuff isn't serious." Hopefully, we are also thinking about improvement in simulator design, applications, etc.

How about the Chinese method of training (sometimes used in ATC) wherein we all fastened ourselves to a plumber's helper which was stuck to the floor and shouted emergency procedures at the top of our lungs? Real fine until a good friend who flamed out his trusty T-38 promptly shouted, "Airstart, airstart," and then shouted out the appropriate steps without performing them. Luckily the IP wasn't mesmerized by the harangue and actually restarted the engines.

Here's another -- take off from a field in WESTPAC and see a fire warning light illuminate. Immediately perform Boldface. Shortly thereafter, eject. Why? The fire warning lights were wired backwards and the good engine was shut down.

Two TAC accidents have indicated that Boldface procedures were not performed as required, or that while performing the aircraft con-

trol was not maintained. Recommendations from these accidents included, "...reemphasize through Stan/Eval programs the need to maintain aircraft control before prematurely attempting to analyze and correct the situation." We believe that all this points to a need to reassess emergency procedure training programs.

According to experts at the Air Force Human Resources Laboratory (AFHRL), Boldface procedures and tests have three major limitations: "Judgment is not allowed, diagnosis is provided in the problem statement, and only Boldface procedures are regularly treated." Overall system knowledge and flexibility are not emphasized.

In addition, the lack of emphasis on systems knowledge and flexibility judgment (a subjective and slippery thing to deal with in our quantitative environment) does not occupy the place it should in the training programs involved with emergency procedures. As stated by the AFHRL: "Boldface training discourages judgment or makes it harder to exercise."

"Whence cometh Boldface, anyway," we hear you cry. Boldface was implemented in the late fifties as a result of a meeting on the format of flight manuals. Back then, the aircraft crump rate gave birth to nifty slogans like, "a plane a day in Tampa Bay." The T-33 was used as a training vehicle in UPT, and some of the IPs were requiring their students to memorize all the checklist items. Actually, there were probably just a few things that would get you killed in a hurry if not immediately taken care of -- like an engine flameout at low altitude. With the knowledge and sophistication in training and educational techniques, and the reliability of aircraft of that time, Boldface was deemed the best way to solve the problem of dealing with emergencies. It was implemented in military specification manuals: Flight, MIL-SPEC MIL M-7700A (YGBSM). It states that the emergency must:

1. Be a serious emergency.
2. Be acted upon with no time to refer to the printed checklist.
3. Have a reasonable frequency rate.

At first, there were few procedures deemed serious enough to merit Boldface treatment. But, like Jack's magic beanstalk, they just grew and grew. However, according to Dr. Anchar Zeller (aviation psychologist), Directorate of Aerospace Safety, Norton AFB, CA, no known studies have been conducted to determine the effectiveness of the Boldface training approach.



Capt's Hale and Williford
are this month's
Fleagle T-shirt winners

By surfacing some of the deficiencies inherent in Boldface, we hope to provide a stimulus to explore alternative courses of action, improve present training programs, and reevaluate Boldface procedures and the methods used to test them.

Why did the F-15 take another approach to the handling of abnormal situations? From the beginning, the ISD training approach was applied to the F-15. In 1974, TAC sent a letter to the F-15 Systems Program Office (SPO) suggesting that Boldface procedures be implemented until research had been done on the new methods of training. Neither the SPO nor the JTF pilots, working with ISD, MCAIR, and the 555 TFS agreed; so the Dash One was published without Boldface. Section III of the flight manual has an expanded narrative of possible abnormal situations and suggested ways of dealing with them. If this sounds a little wishy-washy, check the safety record of the F-15 to date. It is flown aggressively by your basic Air Force pilots; and although there have been several major mishaps, and most have been flown to a landing by their pilots. A tribute to their systems knowledge (and a well designed airplane).

Training for abnormal procedures takes place in a Cockpit Procedures Trainer (CPT). The CPT is a nonpowered mockup of the F-15 cockpit with switches, handles, and control grip, but with graphic representation of all gages and instruments. The CPT has a sound-on-slide viewing system for review of appropriate ISD programs. Initial Situational Emergency Training (SET) begins with the student studying Section III of the Dash One and then reviewing ISD programs at the CPT. An instructor pilot then generates problems to be solved with respect to all factors involved in flying an aircraft. An engine malfunction will require that the student be aware of his geographic position, mission, weather, alternate fields, radio frequencies, etc. As he proceeds through his analysis and correction of the problem, he must activate the appropriate switches, make radio transmission, and plan how he will land. He must refer to his checklist and should be able to demonstrate a good general knowledge of all aircraft systems affecting -- or affected by -- his problem.

The instructor can manipulate three elements of situational training for various training sessions. These are: (1) situational detail, (2) relevancy, and (3) content. These factors can be

varied as the pilot increases his knowledge and proficiency in the aircraft.

Situational emergency training appears to generate a more positive attitude than Boldface training. The CPT is off in a quiet room. Generally there are only two pilots there; a mutually supportive climate exists as "what ifs" are discussed, and even lieutenants find their opinions are respected by others. Moving the switches provides for better transfer of learning than writing Boldface down, but even this is limiting. It's just another way of attempting to get better simulation. Some CPT sessions last more than 2 hours with almost the entire Dash One covered. Normally, one pilot will act as instructor while the other performs required operations. Then they switch roles. All abnormal procedures are presented in a situational context, limited only by the instructor's imagination and ingenuity. This has generated an atmosphere in which most pilots are conversant with items normally covered around page E-22 in one's checklist. In addition, of course, Stan/Eval provides frequent written examinations to keep everyone up to speed (at least that's standard).

Finally, if your head isn't already nodding, or if you're not late for your ground training, we'll quote from SYSTEMS ANALYSIS TECHNIQUES by Dr. Kenyon B. DeGreene which sort of sums up the way we should be looking at our training programs: "Task analysis is usually iterative Task and analysis are basic to the development of other ... subsystem products ... Data derived in task analysis do not generate these products, but they provide for *subsequent evaluation and treatment.*" (Italics are ours).

Advances within the Air Force over the last 20 years have been impressive indeed. We need to be sure that all the components of the "aero-space system" are optimally integrated at the highest level of development possible. New training concepts need to be explored and utilized.

Boldface was one way the Air Force decided to deal with the problems of emergency situations many years ago. The explosion of knowledge in the fields directly affecting pilot training and education, since Boldface was instituted, needs to be critically evaluated and adapted to the improvement of pilot capabilities today and tomorrow. There's no doubt that we are being supplied with the best hardware in the world. It's up to us to learn to employ it effectively and safely. ➤

PHYS-BIZ



ON BEING "COST EFFECTIVE" OR THE "BOTTOM LINE"

By Lt Col Harold Andersen
HQ TAC Physiological Training Coordinator

About 18 months ago, in the summer of 1976, HQ USAF placed 6 physiological training units in a "limited training" status and continued to operate 22 "full-time" training units. The "limited training" units were to operate one week each month, at which time all requested/required training would be accomplished. A skeleton crew of two NCOs would be expanded to a full working crew by bringing in technicians on a TDY basis.

These days, one hears the term "cost effective" bandied about more and more frequently. As a matter of fact, I heard a senior staff officer, just a week or so ago, ask if the TAC Physiological Training Program was "cost effective." (TAC has three limited training status units.) Now, I have never seen, nor heard, a definition of this term, but I assume that if a procedure or program is so labeled, it's a good thing. And, conversely, to be "non-cost effective" would be bad. Well, a bit of pondering led me to an empirical definition of sorts: if a training program, such as physiological training, is to wear the "cost effective" stamp of approval, then costs per student trained must be low, the quality of the product must be high, and the training must

be necessary to the safe, successful accomplishment of the AF mission.

Assaying the physiological training program posed some problems: there is no civilian program, at any educational level, which is directly comparable; also, how can we judge the quality of the product if we can't compare it with civilian programs? We might consider military programs which would be comparable. There didn't seem to be a course of similar duration, 4 - 20 hours, which presents such a wide variety of subjects, ranging from human physiology to operation and use of emergency/support equipment and procedures. How, then, to judge the quality of presentation? Well, how about asking the students who participate in the training? They are the "users," the "beneficiaries," of the training. What do they say? On their critique forms, the great (almost vast) majority describe the course as either "outstanding" or "superior," and describe the curriculum as relating to their flying duty. Material is "presented in an understandable manner," by instructors who are "above average," employing training aids which were "well utilized" in an "excellent" classroom environment. So, apparently, the curriculum is acceptable to the majority of users, who compare it with other courses they have taken and stake it against their training needs. Granted, the evaluation is subjective and, to be sure, physiological training has its detractors. Although they are a very small minority, their suggestions and criticisms are accepted and integrated into the evaluation process. No opinion should be discarded.

A more objective index might be the cost of training -- either the gross amount, or dollars-per-student. Some expenses, such as instructor salaries, are easily calculated, but other major fixed costs are less readily obtained. For example, there are no meters to record electric power used for heating, cooling, illuminating, and operating equipment. So the absolute cost of training a student cannot be calculated with any acceptable degree of accuracy. Although the precise cost-per-student figure is not readily available, it would seem that costs could be minimized by training an equal number of students, with fewer personnel and fewer "fully operational" days.

This could be achieved by maintaining some

of the less active units with a minimum of personnel most of the month, and bringing in TDY personnel from another unit to augment the "home team" during training periods. Using this technique, it is apparent that whatever the cost-per-student was formerly, it must be reduced under this formula.

Finally, one must consider the "fruits" of the program -- the benefits realized. Recently, within a week or so period of time, two physiological incidents, involving hypoxia, were reported. In both instances, the aircrews and the aircraft were saved because the individuals involved were able to recognize their symptoms of hypoxia, which were learned, and relearned, during physiological training.

It seems to me, that when the "bottom line" is calculated, there must be considerations other than simply, "closing down the unit will save 'X' number of dollars." Not only must the above factors be considered, but also the fact that units so maintained will be available for expansion to full operational status (i.e., a full month of training per month, rather than the "limited training," one week per month) in times of buildup to meet emergencies. For, if the facility is deactivated, equipment stored at the depot, and the building put to another use, it will not be readily available (if at all) to cope with future force expansions.

A "cost effective" physiological training program, as shown above, will:

1. Provide training which aircrews recognize as being high in quality and relevant to their jobs.
2. Provide the requisite training for the same number of aircrews, but with fewer permanently assigned personnel.
3. Directly contribute to the saving of aircrews and aircraft.
4. Maintain a reexpansion capability to meet crisis mobilizations.

In closing, it may be a bit redundant to point out that the dollars and cents represented by the two aircrews and aircraft could support the entire USAF Physiological Training Program to well beyond the year 2000, but it's one redundancy I can't resist!!

(P.S. It's been a while since we discussed hypoxia, so next month we'll broach that subject.)



RED FLAG MISTAKES

**By 1st Lt Billy Barbour
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The learning situation at Red Flag is one of the finest you will ever encounter. Within the framework of the tactical environment created at Nellis, mistakes will be made and are expected. The overall benefit derived is in the analysis of these mistakes and taking the best corrective action on future missions. As with all training, there is a limit to the type and frequency of errors. We can never be totally trained for all possibilities, but I will mention some errors we encountered in our flying and planning and some of the solutions we formulated.

In general, there were many things which could not be foreseen as problem areas but might be considered in the future since they did occur in our training. On one particular interdiction mission, a Navy EA-6B accompanied a flight of four F-4 strike aircraft. No real problems occurred during the mission since the capabilities

of the Navy aircraft were discussed, and we knew what we could and could not do as far as performance. The problem occurred when the lead F-4 rocked his wings and then, shortly afterwards, yawed his aircraft from side to side. The Navy AC assumed at first that the Air Force jet was having flight control problems. When the yawing started, he thought the F-4 pilot had just discovered a new flight control and was experimenting a bit. The lesson learned was that "standard" visual signals are not always standard and should be briefed in interservice flights. If not, you might have an EA-6B who won't fly fingertip with you.

SCAR missions provided some interesting situations. One such mission, a strike on a SAM site, included an RF and four very interested F-4s in a box formation. The recce, as a single, was performing a great deal of maneuvering en route to the target. This was all fine but caused fits for the four-ship, which was trying to maintain some sort of flight integrity during the run-in. "Impossible," you say? You're right! Just when Two was about to eject for a frustration light, the recce made a 90-degree turn and disappeared around a ridge line. The flight began a delayed 90 to follow and beheld a

photoflash about halfway through the turn. The results were: one fighter putting his bombs on target and three dry passes. During flight briefings, insure that all concerned understand aircraft and individual capabilities and formation limitations. Exceeding any is foolhardy and dangerous. Another thing I thought I'd mention is photoflash. When you see the flash, the recce has just jettisoned a Mig magnet, so plan to make your new stall speed 500 knots.

CAS missions presented amazing coordination difficulties. There was never a perfect mission (until the mass debrief, of course). Most of the problems occurred when the fighters assumed that the FACs would perform as advertised, and weren't prepared when they didn't. FACs gave the wrong IPs, the wrong run-in times, the wrong plots from smoke marks, and the wrong code words for aborts. Other than that, they performed admirably. (ED Note: I'm sure there are plenty of FACs who could rightly say the same about fighters.) The answer to the problem is a lot of target and map study and having a very good idea of what the target is.

Another point for the CAS mission is to be very attentive during the high FAC's briefing. On one such mission, an F-4 three-ship was in the process of negating an F-15 attack while the high FAC was expounding his knowledge of the day's target. The result was that nobody knew what he was looking for. (A small point at the apex of a pop but still worthy of mention.)

As for the air-to-air threat, there were several items worth mentioning. The first is the method of crossing mountains. This isn't a big problem in south Georgia, but at Nellis ranges it often

becomes one. Three basic ways existed and we tried all. There was the roll inverted and pull, also known as the "Ivan thanks you very much" maneuver (a favorite with the back seaters), the quarter-roll and rudder down, and the FOD check unload. Words from the aggressors convinced us that the FOD check was the best. It seems that when a large green and brown object flashes a white belly, acquisition was easily obtained; and we all know that being invisible is neat. The use of terrain masking was the most effective counter along with splitting the four-ship into two elements, causing the aggressors to commit, or else delay because they couldn't find the other guys.

Other nit nois of the war included knowing your fuel status at all times; and if you find yourself with surplus pounds after your pass, no one will criticize you for expediting your target egress. Besides, it's tactically sound to watch F-5s run out of gas trying to catch you. WSOs will find themselves all but maxed out unless they prepare themselves to navigate; recall headings; check six; have two or three sets of pop and release parameters memorized; operate the INS, WRCS, and TACAN; talk on the radio; and copy down FAC instructions; not to mention figuring out the run-in time; the pop point; and then directing the AC to the egress heading. (The AC is flying and chewing gum the whole time but not at the same time!)

The last thing I will mention is a little on comm procedures. Comm-out is the only way to go, but a thin line exists between necessary transmissions and extraneous words. On one particular mission, the wingman (not me, of course) had his slats locked out and did not inform the flight lead. Since it was difficult for him to maintain 550 kts, the leader found himself perpetually in front of the winglet, and finally left him in the dust. The end results were the wingman hitting bingo before the rest of the flight (by 1,500 pounds) and him holding his breath while eating jetwash on final. If it's important, say it.

The things which evolved tactically weren't mentioned, since we have to leave something for the FWS Tactical Analysis Bulletins. There are probably as many war stories from Red Flag as there have been TDY slots, but I hope the mention of some mistakes I encountered will stir thoughts and encourage you to have a "lessons learned" session at home once the shouting is over. It'll make the next trip easier. Check six





THE SAGA OF BLUE FLIGHT

**By Capt Don Rupert
51 COMPW/Flight Safety Officer
Osan AB, Korea**

Blue Flight looks like the Thunderbirds on initial. Lead makes a Tiger break; about the time he rolls out on downwind, he realizes there's a 15-kt wind blowing him toward the runway. He won't dare roll up to crab into the wind once he's wings-level on downwind. Every fighter pilot on base is waiting to jump into his shorts if he does and, for sure, they're all watching him now.

Quickly thinking of how to hack the final turn, he checks his gear down, rolls into 60° bank, and calls base. The only thing he hears is "cleared to land." He's certainly not going to overshoot final (Rule 5), so he holds 200 kts and "on speed" all the way around the final turn. As he rolls out, he yanks the power to idle, realizing that the wind is really a left quartering tail wind. Through skill and cunning, Lead unconsciously compensates for the tail wind and rolls out "red over white." He lands only 5 kts hot and gets his chute right away. Meanwhile ...

Blue 2 remembers that 3 is the guy who chewed on him for his last BUFF pattern. He's determined to roll out with Lead's smoke nibbling at his wing. He did check the anti-skid light-out (Lead forgot that) before rolling off the perch. He had his hands so full hacking the final turn that he didn't notice that the tail wind made him roll out high. The throttles went back so fast they nearly overrode the stops. He aims at the close end of the runway but doesn't notice the AOA tone stop as he goes below 15 units. Over the overrun, he pulls to a 20-unit tone and figures he's golden. Failing to consider that an "on-speed" tone is only for stabilized flight and that Lead was "on-speed" at 200 kts in final turn, he lands. All he can see is Lead's nozzles looking like a double-barreled shotgun. He gets on the brakes and doesn't feel much deceleration, but remembers that he can't tell much above 100 kts. He keys the mike and says, "Blue 1, clear left! 2's overtaking on the right." As he checks the anti-skid light, he hears Mobile say, "Blue 2, you're no-chute!" He sheepishly deploys the chute and maintains clearance on Lead. As he's rolling out, he remembers that above 100 kts, manual braking can easily blow tires. Taxiing back, he wonders how long he would have closed the runway and "watered" Lead's eyes, if he had taken the BAK-12.

Number 3 listened to the winds and flew a tighter pattern than he wanted to, but he wasn't going to make the flight look bad (Rule 12). He knew there was a quartering tail wind and flew it to land "on-speed" at the 500' point. He got his chute out right away and used full aft stick during the rollout. Before comparing his speed with distance remaining, he added the tail wind component. The check point you use should not be the same on every runway. It depends on runway slope, cable placement, weight and RCR. On a flat, grooved concrete runway at 100 kts, light braking will be required when passing the

big 4. At the same point on a wet runway at 80 kts, continuous braking (not necessarily anti-skid cycling) will be required for a normal landing.

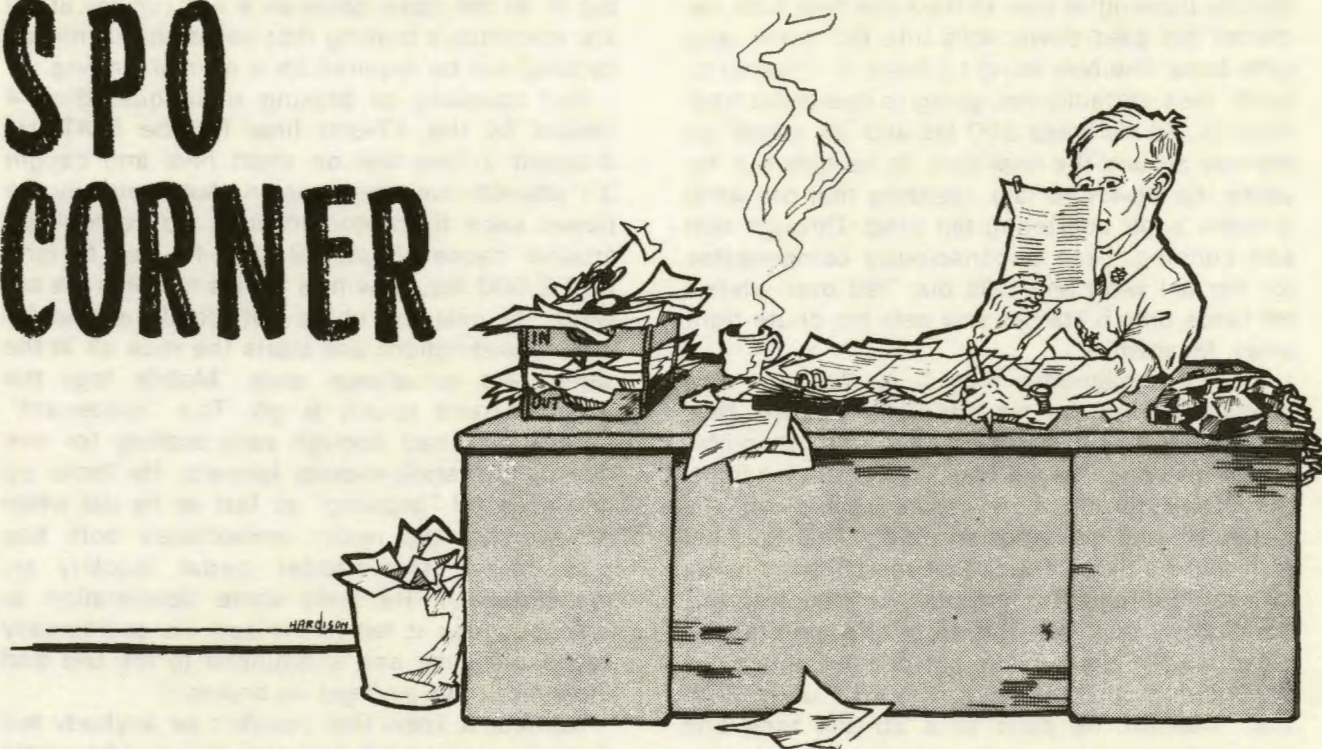
And speaking of braking technique, Blue 4 swears by the 17-unit final for the SLAT. He dropped a little low on short final and caught 3's jetwash over the overrun. Automatically the power went from stop to stop. He couldn't go around 'cause chapter 8 says he has to land with 2,000 lbs. Now he's 10 kts hot plus the tail wind. He gets the chute out (chalk up one for crew coordination) and starts the stick aft at the same rate he always does. Mobile logs the unauthorized touch & go. The "lootenant" figures he's had enough aero braking for one day as the stick rockets forward. He looks up and sees #3 "growing" as fast as he did when he overshot the rejoin. Immediately both size 12s smash the rudder pedal (luckily simultaneously). He feels some deceleration at first, but then it felt like it quit. He accidentally keyed the mike and announced to his GIB and the world, "We ain't got no brakes!!!"

Number 3 knew that couldn't be anybody but 4, so he cleared left and was able to add a little power. OI' 4 Bravo (in high "C") yelled, "GETCHURFEETOFFTHEBRAKES!!!" He just knew that the nimble-fingered A/C would crush the paddle switch before getting off the brakes. The WSO checked the speed, 110 kts, to see if he could hack manual braking yet and knew he couldn't. He was about to tell the A/C not to touch the brakes yet when the rudder pedals disappeared again (expletive deleted). For 2 seconds they decelerated pretty well, then the GIB watched the fireworks in the rearview mirrors. They got the nose gear steering engaged without incident since the pedals were evenly buried, but still slid off the right side of the runway.

So ends the saga of Blue Flight. Next month we will have an article which deals with the F-4 MK III anti-skid system and things to consider when landing any type aircraft. ➤

Captain Don Rupert is a flight safety officer with the 51st Composite Wing, Osan AB, Korea. He holds a B.S. in Engineering from the University of Florida. Don completed F-4 RTU at Luke AFB, flew a tour in USAFE at Torrejon, and attended the USAF Safety Course at Norton prior to going to Korea. He has over 1,000 hours in the F-4C/E/E(LS).

SPO CORNER



LESSONS

By Maj G. H. Felix
HQ TAC/SEF

Back in the mid-sixties, we had a regular feature in TAC ATTACK called "A Second Look." As you might expect, it focused on unnecessary losses or common problems. It was a good idea then; it's a good idea now and will become a regular in the SPO corner under a new name. We're going to call it "Lessons."

The feature: Two F-4s departed their east coast home station on a cross-country out west for low-level training (two other F-4s had deployed the day prior). Two flights got them to their RON base. The day, however, was not done, for the four aircraft took off on a low-level training mission. The first flight of two aborted for weather; the second continued a bit farther before aborting. During a turning rejoin below the weather, the wingie hit a ridge.

Lessons:

1. If you can't complete the mission without

violating crew rest, cancel. Although crew rest was not violated in this mishap, it would have been had the mission been completed.

2. Flying a low-level in marginal weather after a two-sortie deployment was not a wise decision. Once again, cancel and reschedule would have been better choices.

3. The second flight should have discontinued the low-level after the lead flight aborted. A "can-do" attitude prevailed over good judgment.

4. Weather abort procedures were not briefed. The leader initiated the rejoin towards rising terrain. Perhaps it was time for burners and lost-wingman procedures to get out of the hole.

Recap: This is simply a flight that should not have been flown. The combination of errors cost the lives of two airmen.

Quickies:

1. The T-38 pilot decided that he could not

stop the aircraft on available runway remaining. He executed a go-around, hit a tree, and ejected -- unsuccessfully.

Lesson: Make timely decisions. An earlier go-around would have saved the aircraft; an earlier ejection would have saved a life.

2. An F-111 pilot did an aileron roll on TR-1. The roll could not be stopped; ejection was successful.

Lesson: Follow the checklist. A cockpit switch was in the wrong position.

3. The T-38 front seater unloaded for separation, heard a thump, could not pull back on the stick, and ejected. The back seater followed some time later and was seriously injured.

Lesson: Strap in properly. The thump was the survival kit banging around; the back seater failed to hook it to his harness.

4. An A-7 pilot departed controlled flight while in the strafe pattern on a controlled range. No attempt to eject.

Lesson: When recovery is impossible eject in the envelope.

5. The F-100 pilot, leader of a flight of four on a RED FLAG mission, sent his flight home and went back for more action. He tangled with aggressors, was told to knock it off, didn't, and collided with the ground. He ejected too late.

Lesson: Maintain air discipline, don't get caught up in the RED FLAG fever and bury your fangs in your mask. Eject in the envelope.

6. Also at RED FLAG, an F-4 pilot, while engaged with an F-15, placed his aircraft in a position from which he could not recover. Once again, ejection was too late.

Lesson: Beginning to sound familiar? RED FLAG fever and too late. Not knowing or disre-

garding performance parameters. How much altitude does it take to do a slice? Split-S? Wifledoofer?

7. Upon recovering from a loft maneuver at RED FLAG, the F-111 driver got his nose too low during the egress maneuver and hit the ground. Ejection was not attempted.

Lesson: Beginning to sound ridiculous? Distraction may have been a problem in this one. It's no excuse, however, for not "flying the aircraft."

8. The F-100D pilot initiated a pop-up inside the MAP and lost control on the recovery. Ejection was too late.

Lesson: A dead horse is being beaten.

Have another look at the last four quickies. Common thread? You bet! The term "situational awareness" has crept into our vocabulary, and lack of it is the "Lesson for '77." Simply said, situation awareness is mentally bouncing aircraft capabilities off of where you're at and what maneuver you want to do. As we've seen, a miscalculation is almost always fatal.

Identifying the problem is one thing, doing something about it is another. Most of us are inclined to look towards training deficiencies as the first step. Training is responsible for teaching two of the three variables: aircraft capabilities and maneuvers. The third variable, the starting point both physically and mentally, is an individual responsibility. We occasionally identify training deficiencies as a result of aircraft mishaps; frequently we do not. In cases where training deficiencies cannot be found, the finger points at you. Be a professional; it's the best accident prevention tonic available.

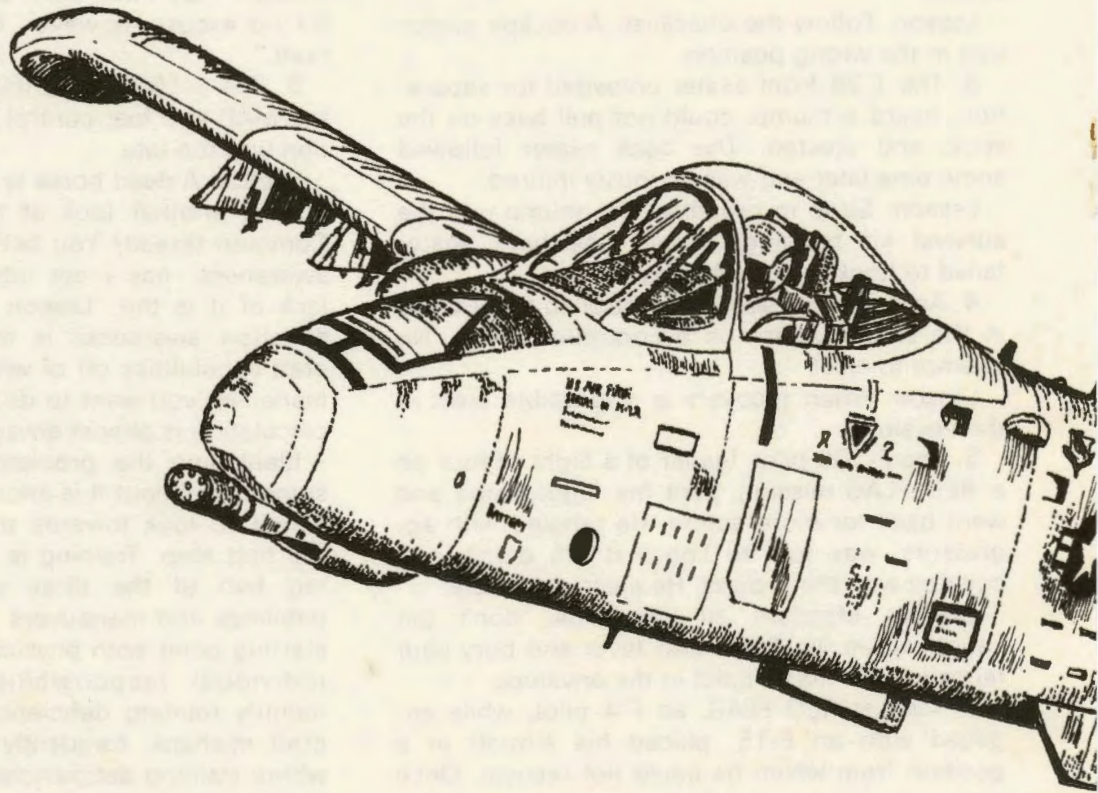
CLOUDS don't Kill!

By Maj K. L. McBride
HQ TAC/SEF

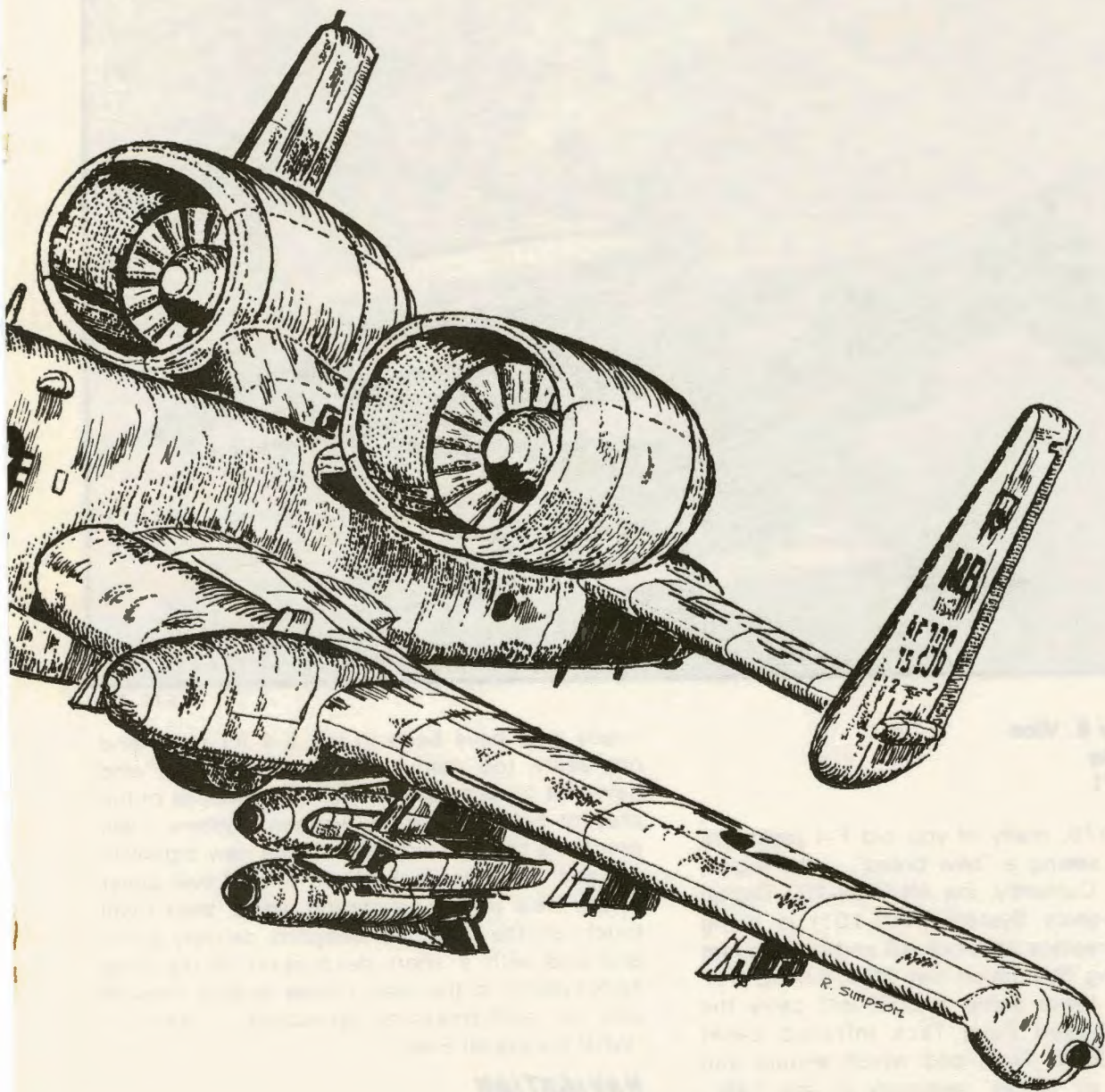
Launching capable aircrews into areas of marginal weather or weather forecast to be marginal for the intended mission is not against TAC policy. However, three recent low-level missions launched under this policy ended in

catastrophe. What's important is the clouds did not destroy the aircraft and kill the aircrews. Judgment, procedures, and adherence to directives were the causes of these accidents as well as many in the past. Can a mission flown under this policy be considered routine? Whatever your answer may be, remember this. If you find yourself between a cloud and a hard spot, for God sakes, pick the cloud.

A-10



Artwork courtesy of : Capt. Robert F. Simpson, 354 TFW, Myrtle Beach AFB



THE DIGITAL F-4E



FIG 1.

By Maj Jerry E. Vion
4485 Test Sq
Eglin AFB, FL

In early 1979, many of you old F-4 jocks are going to be seeing a "new breed" -- the digital F-4E (Fig 1). Currently, the AN/ARN-101 Digital Modular Avionics System (ARN-101) is being procured to replace all block 48 and subsequent F-4Es existing Navigation Set (WRCS/ASQ-91). In addition, these same aircraft will carry the newly purchased Pave Tack Infrared Laser Designator (Pave Tack) pod which should join the tactical air forces' inventory in late 1980. The aircraft will also incorporate the newly purchased VOR/ILS system and the ALE-40 Chaff and Flare Dispenser.

In order not to shock too many of you old

heads who have been in the F-4 for years and not scare too many of you young jocks who have not quite mastered the interworkings of the present F-4E navigation/weapons system, I will present a thumbnail sketch of the new digital F-4E and its Pave Tack blivet. First, I will cover what's new in the navigation world; then I will touch on the modified weapons delivery panel and end with a short description of the Pave Tack system. In this way, I hope to save many of you an embarrassing question -- namely, "What's a digital F-4E?"

NAVIGATION

Navigation! What's new in navigation? The answer is "really not much." In the last few years, science and engineers have brought the users more accurate inertial navigation systems,

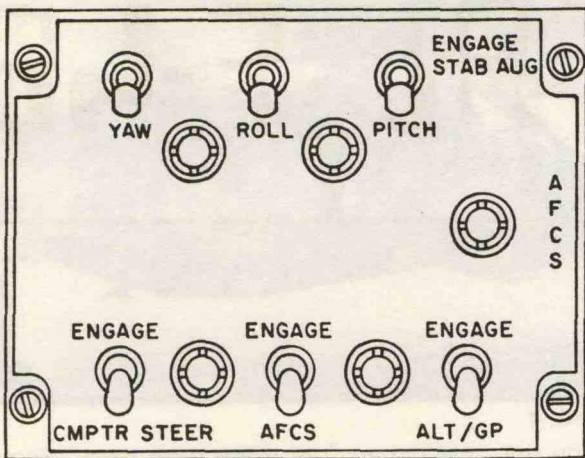


FIG. 2 Automatic Flight Control System (AFCS) Control Panel (Modified)

the Pave Phantom (LORAN) Navigation and Bombing System, and a laser designator called Pave Tack which can be pointed toward a target by the WRCS. The ARN-101 has combined a lot of the good features of all these systems; incorporated an "all singing, all dancing" digital computer and given the tactical air forces the digital F-4E.

Added to this new digital computer is a Kearfott SKI-2300 inertial unit having a low long-term position error rate. A new LORAN receiver and antenna system secures and maintains a LORAN lock-on even under the most adverse weather conditions and even through most of those violent maneuvers only young jocks find themselves having to make. Fully integrating these two navigation systems (LORAN and inertial), we now have an accurate LORAN position which continually monitors the inertial position and updates it periodically. Should a LORAN lock-on be lost for some reason, the inertial, now operating independently, will start with a very small initial position error. Now, combining this aircraft's present position accuracy with well-defined turn points, initial points, or targets allows the ARN-101 to slew the aircraft's radar cursors, TISEO, gunsight, laser, and infrared Maverick missiles (if carried), and the Pave Tack sightline to any of these points. The operator has only to look at the digital scan converter (DSC) and, presto, he sees what he's been sent to find.

After accomplishing the mission, the crew returns to base to find their VOR/ILS, TACAN, and radar are inoperative; ground radar is down; and the field is IFR. Not to worry! The weapons

system officer (WSO) calls up the end of the runway coordinates (previously inserted in the computer prior to takeoff); the pilot turns the computer steer, altitude/glide path, and AFCS switches on the modified autopilot control panel (Fig 2) to "engage"; and, like magic, the aircraft intercepts the LORAN glide path and glide slope and flies itself down to the runway. Oh, the pilot still has to control the throttles and, yes, most WSOs prefer him to land the aircraft himself. What's new in the navigation world you ask -- not much!

WEAPON DELIVERY

As you might have guessed, the installation of the ARN-101 has modified several front cockpit panels, not the least being the LABS/Weapon Release Panel (Fig 3). The weapons mode selector switch positions on the left through DIRECT remain unchanged. However, the right side now reads BLIND, CCIP, DT, G, RKT, and AGM-45. I will cover the meaning of each of these positions in a little more detail.

BLIND: When you think of blind bombing mode you normally think of LORAN bombing or possibly radar bombing. This is exactly what "Blind" is. You can bomb any selected target

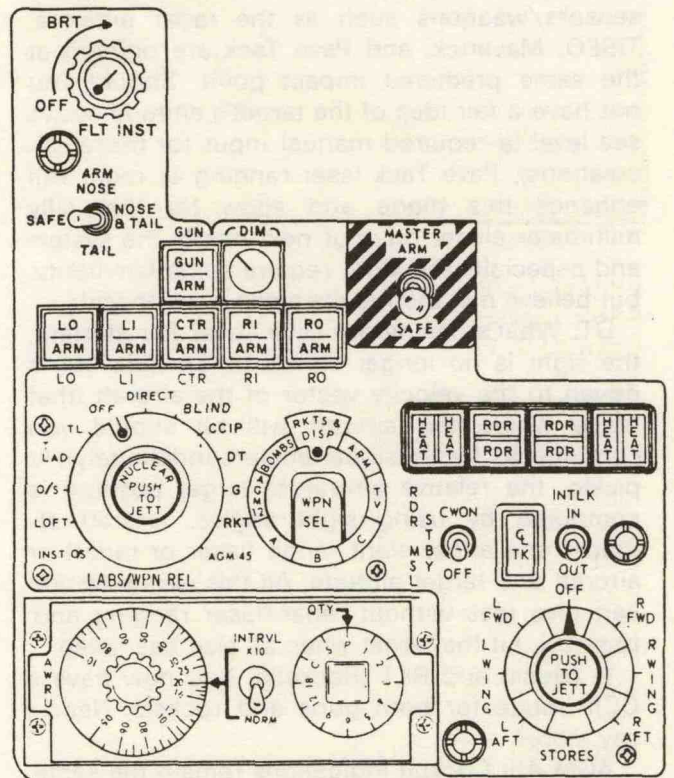


FIG. 3 LABS/Weapon Release Panel (Modified)

THE DIGITAL F-4E

using LORAN time delays, universal transverse mercator or GEOREF coordinates or you may choose to designate the target using the radar cursors. Should you later be able to see the target visually you can even substitute Pave Tack laser ranging into the weapons delivery solution to effect a valid weapons release. Once the target is identified to the computer by any method described above, the computer programs a toss delivery which converts to a level delivery which, in turn, converts to a dive delivery should you not accept the preceding weapons delivery parameters. All this is done automatically -- all you have to do is pickle when the "in range" light comes on, and fly the program that is presented. The computer does the rest; and you do not have to hold a particular altitude, airspeed, or dive angle. The computer computes, the bomb is released, and the target -- well, they are scared. I can tell you that!!

CCIP (Continuously Computing Impact Point): How many of us have ever looked at a sight and wanted to hit what was under the piper? Well, now we can do that! We now have a sight that points to the predicted impact point for an immediate release. In addition, other on-board sensors/weapons such as the radar antenna, TISEO, Maverick, and Pave Tack are pointed at the same predicted impact point. Should you not have a fair idea of the target's altitude above sea level (a required manual input for these calculations), Pave Tack laser ranging or radar will enhance this mode and allow for that silly millimeter closer on your next bomb. The system and especially the sight require some familiarity, but believe me, the results make it worthwhile.

DT: What's new about Dive Toss? For starters, the sight is no longer slaved to 35 mils but is driven to the velocity vector of the aircraft (that place where the aircraft will hit should you continue to fly those parameters indefinitely). At pickle, the relative aircraft-to-target position is computed by using sight angles, aircraft attitude, and either slant range (laser or radar) or aircraft and target altitude. All this says now you can dive toss without radar/laser ranging and, possibly, hit the target when all else has failed.

G (Guns) and RKT (Rockets): You now have a CCIP mode for both guns and rockets. Need I say more?

AGM-45: Cockpit indications remain the same, but now you have an "in-range" light that tells



FIG. 4

you the missile can "get there from here." Some of you might like that feature -- those that have been too close too often.

Well, that about wraps it up for the new ARN-101 delivery modes. Oh yes, for those interested in those precious timers, the ARN-101 will start them automatically. For you that have not been doing so well with those timers -- the ARN-101 is being certified NUKE!

PAVE TACK

Now, for you readers who are not really impressed with the ARN-101 or its capabilities -- we have Pave Tack! Pave Tack is a digital F-4E, RF-4C, and F-111F (see Fig 4). It incorporates, among other things, another "all singing, all dancing" digital computer, an infrared detector set, and a laser designator. Its main disadvantages include pod drag, the loss of the centerline station for fuel or weapons carriage, and a reduced video capability when the air contains a high moisture content. Its main advantage is that it "sees at night." This capability, when combined with the ARN-101, makes it a formidable weapon system. To get a better understanding of its capabilities let's take a closer look at the operating modes of the Pave Tack system.

Basically, the Pave Tack system can be operated in six different modes. These are forward, left and right acquire, terrain monitor, snow plow, and cue. A brief discussion of each of these modes follows:

Forward Acquire: For those familiar with the Pave Spike system, this should be old hat. Just select forward acquire and the Pave Spike looks 35 mils. The pilot then sets 35 mils on his gunsight, puts his sightline on the target; and the WSO acquires, initiates track/laser "on," and designates the target to bomb impact. Well,

Pave Tack, with its digital computer, has improved on this concept. On the Pave Tack video display there is a reading of mils depression which can be changed by the operator and is selectable between +88 and -412 mils. Any mil setting selectable in the front cockpit can likewise be set by the WSO. Not too shabby!

Right and Left Acquire: Same as forward acquire except the pod looks to the side and there is no side looking sight. The wing tanks block pod line of sight if you try to look level. For these reasons, both the left and right acquire modes have proven difficult to use.

Terrain Monitor: The Pave Tack sightline is driven to the velocity vector (flight path) of the aircraft. The pod optics can provide up to a 12 degree field of view of what's immediately ahead of the aircraft. This mode has proven of value to the RF-4C when combined with its terrain following radar; but it has proven more difficult to use with the F-4E, mainly due to the lack of a good depth of field when viewing infrared video. Without good range information to object/obstructions located ahead of the aircraft, aircrewmembers tend to fly at the same altitudes they would have without Pave Tack.

Snow Plow: The pod sightline angle is inertially stabilized in space and initially remains at the angle existing at mode selection. In this mode, the pod sightline can be moved manually throughout the total lower hemisphere of the aircraft. This mode is used as the manual search mode of the Pave Tack system.

Cue: This mode allows the pod sightline to be pointed, thus allowing maximum range target detection because the immediate target area is constantly in the pod field of view. Exact target location and identification can be determined earlier than in any of the other manual search modes of the Pave Tack system. This mode is a must for accurate night target location, identification, and destruction.

These six operating modes allow the Pave Tack aircrew the flexibility needed to adequately plan and successfully attack targets, both day and night. With the introduction of the Pave Tack system, the night environment will no longer offer the enemy safety from guided or unguided weapons.

CONCLUSION:

The F-4 has been in the Air Force inventory for a long time. Everytime I receive a new

change to the Dash One or Dash 34, I wonder what has changed -- the equipment hasn't. In the next few months the block 48 and subsequent F-4Es will be changing, and the Phantom will be getting a true all-weather air-to-surface capability. Later, these same aircraft will be carrying the infrared sensor and laser designator and will be employing even more sophisticated weaponry. The F-4E is far from dead -- it's moving towards the future. And you know some will still ask, "What is a digital F-4E?"

NOTE: Next month we plan to offer the recce troops their special cup of tea with "What's New" on Quick Strike Reconnaissance/Strike Control and Reconnaissance. ➤



Maj Jerry E. Vion obtained his commission through ROTC and degree in accounting from Texas A&M in 1963. After attending Nav training in Texas, Maj Vion was an NBT/UNT instructor at Mather. He has combat experience in the F-4D/E and the RB-57E, flying as a "Stormy" FAC at DaNang AB, RVN. He also flew an exchange tour with the RAF in the S2B Buccaneer. Currently assigned to the 4485 TESTS, Maj Vion is the only WSO checked out in the digital F-4E. He is also involved in the current ARN-101 and Pave Tack tests.

chock talk

chocktalk: incidents and incidentals with a maintenance slant

AW, WE CAN FORGET THAT STEP

Failure to complete all tech order steps following an engine installation resulted in an inflight shutdown of one engine in an F-4.

During takeoff, the pilot noticed that it required slightly more than normal pressure to move the left throttle into the afterburner range. When attempting to terminate afterburner, the left engine would not move out of the afterburner range. The engine was shut down using the master switch and a successful single-engine landing accomplished.

The aircraft had not flown since the right engine had been installed 3 days previously. The final step in the tech order for the mil power stop adjustment is to readjust the center shift plate. This was not accomplished; however, afterburner was selected four or five times without difficulty or binding. Some time after the engine-pad run and before the next sortie, the center shift plate loosened and caused the binding.

Disregarding tech data and taking shortcuts may save some time, but the potential for something going wrong doesn't justify the risk.

F-4 WHEEL FLANGES--AGAIN?

While taxiing onto the runway for takeoff, the left main wheel flange on an F-4E failed, resulting in the blowout of the tire. The explosion damaged the gear door and punctured the left external fuel tank. The aircrew stopped the aircraft, shut down the engines, and egressed normally.

T.O. 4W1-8-53 requires that wheel flanges be inspected during buildup to insure that an "SP" is stamped on the wheel flange. This "SP" indicates that the flange has been shot peened. This process is applicable to wheels that were manu-

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

factured prior to Jan 73. Wheels manufactured Jan 73 and after do not require the "SP" marking.

The failed wheel flange was not marked with an "SP." Inspection of this unit's wheel assemblies revealed six other flanges manufactured prior to Jan 73 that were not marked with an "SP."

Wheel flange failures in the F-4 used to be commonplace. An aggressive education program and the shot peening process made wheel failures almost nonexistent. It appears that it might be time for an examination of your unit's wheel flanges and reeducation of your personnel.

NUTS ON THE LOOSE

An A-37 was climbing through 15,000 feet of solid weather when both attitude indicators, the bearing distance heading indicator, and the J-2 compass failed. The spare inverter was selected but did no good. The circuit breakers were checked and appeared normal. A glance at the needle and ball verified that the aircraft was in a right turn. Pressure was applied to roll the wings level, and the right engine RPM indicated 101.5 percent with low oil pressure. The pilot shut down the engine, and another glance at the needle and ball told him he was in a left turn. Airspeed was decreasing rapidly, and the pilot reacted by shoving the nose over in an attempt to level the wings. The needle went from left to right with the airspeed building up fast. The aircraft, still in the clouds, passed through 10,000 feet out of control ... ejection.

The incident didn't end this way. The pilot did lose his primary attitude instrument, but he wasn't confronted with the dilemma of a needle, ball, and airspeed approach because the weather was clear.

All the other factors were there because a loose nut had shorted out part of the AC transformer terminal, wiping out the attitude indicators.

Another loose nut had failed to clean up his work area allowing a thing called FOD to find its way to the electrical terminal.

One loose nut in an aircraft is bad, but two ...?

PREVENTING INGESTED PINS



DO

SAFE WAY TO HANDLE PIN
(INCLOSED IN PIN BAG).



DON'T

UNSAFE HANDLING OF PIN
(PASSING BY STREAMERS).

By TSgt Barry A. Johnson
366 AGS/366TFW
Mt Home AFB, ID

An all too common diet of jet engines seems to be the various pip pins, clips, clamps and other safety devices used to make an aircraft safe to work on or be around while on the ground; but they must be removed and stowed prior to flight. The long "Remove Before Flight" streamer attached to each one makes these lightweight items particularly hazardous because they can be easily drawn into the intake of an operating jet engine from the hand of an unsuspecting technician or aircrewmember, who thought he had a tight grip on the safety devices.

The 366th TFW has a procedure which, we believe, significantly reduces this potential hazard. A vinyl pouch with a self-sealing velcro tape is attached to the nose gear safety pin,

which is the last pin to be removed after engine start. The various pins, tail hook, main gear, etc., are removed during the aircrew walk-around and stowed in the pouch prior to engine start. After one engine is started, the nose gear pin is removed, placed in the pouch, and the pouch is handed to the aircrew on the side of the aircraft which does not have the engine started. During recovery, the sequence is reversed, the pouch is not handed out of the cockpit until one engine is shut down, and then only the nose gear pin is installed. The remaining pins are secured in the pouch until the other engine is shut down, and then they are installed immediately.

These procedures are incorporated into the local "Launch/Recovery Checklist" and have proven to be an effective method of reducing this potential FOD hazard.

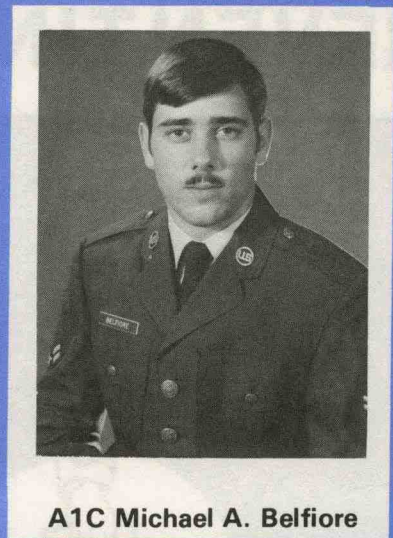
Courtesy USAF MAINTENANCE, Winter 1977

INDIVIDUAL SAFETY AWARD

TAC SAFETY AWARDS



Sgt Malcolm J. Sheets

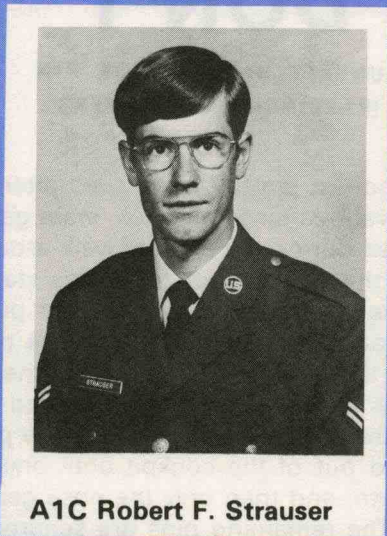


A1C Michael A. Belfiore

Sergeant Malcolm J. Sheets and Airman First Class Michael A. Belfiore, 23d Equipment Maintenance Squadron, 23d Tactical Fighter Wing, England Air Force Base, Louisiana, have

been selected to receive the Tactical Air Command Individual Safety Award for this month. They will each receive a desk set and letter of appreciation from the Vice Commander, Tactical Air Command.

CREW CHIEF SAFETY AWARD



A1C Robert F. Strauser



GROUND SAFETY AWARD of the QUARTER



TSgt James R. Schubert

Airman First Class Robert F. Strauser, 35th Organizational Maintenance Squadron, 35th Tactical Fighter Wing, George Air Force Base, California, has been selected to receive the Tactical Air Command Crew Chief Safety Award for this month. Airman Strauser will receive a desk set and letter of appreciation from the Vice Commander, Tactical Air Command.

Technical Sergeant James R. Schubert, 552d Consolidated Aircraft Maintenance Squadron, 552d Airborne Warning and Control Wing, Tinker Air Force Base, Oklahoma, has been selected to receive the Tactical Air Command Ground Safety Award of the Quarter for the fourth quarter 1977. Sergeant Schubert will receive a desk set and letter of appreciation from the Vice Commander, Tactical Air Command.

TAC

TAC TIPS

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

Good judgement comes from experience.
Experience comes from bad judgement.

A SMART DART

Ever try to let go of something and can't? This was the case on a dart tow mission. All went well as long as the dart was being towed and shot at; but mission completed, when the pilot attempted to release the dart and tow cable from the aircraft, the cable cutting mechanism did not function. After two unsuccessful attempts, the pilot descended and accomplished the dart drag off procedures in the overwater training area. After separation, approximately 1,500 feet of cable remained attached to the dart tow rig. An inflight emergency was declared and a normal straight-in approach was successful.

Remember that once the dart has separated from the tow cable and the cable remains attached to the dart rig, the cable is not stabilized due to loss of aerodynamic properties of the dart; and the cable acts like a whip gone wild. The cable trails lower than normal due to less wind resistance, and its whip can be either vertical or horizontal.

When the aircraft is in a nose-high landing configuration, the trailing cable can come in contact with the stabilator. With the approach-end arrestment gear in place during the landing phase, the trailing cable is likely to become entangled on the arrestment pendant. Once the cable is caught this way, it is drawn tight and

the chances are very good that it will hit the leading edge of the stabilator. If this happens and metal to metal friction occurs, the outer spring steel wrapping of the tow cable disintegrates into small particles approximately one-quarter to one-half inches in length. This does absolutely nothing for our forever present FOD problems.

If the approach-end arrestment gear is not required for the emergency recovery of the aircraft trailing dart cable, then it should be removed from the runway, if time permits. All personnel and vehicles should keep a safe distance because the disintegration of the spring steel wrapping creates an extreme hazard.

The aircraft's approach should be steeper than normal to avoid the trailing cable contacting objects prior to the runway threshold. A long landing should be made, if possible, with due regard to runway conditions and availability of departure-end arrestment gear.

If disintegration of the tow cable's outer wrapping occurs, the most effective method of picking up the small metal particles is a magnetic sweeper. An alternative is a runway walk by personnel to pick up the metal particles. A regular vacuum ramp sweeper is not effective.

Timely notification, coordination, and action to this type of inflight emergency can prevent serious injury to personnel and many costly manhours required to clean up after the fact.

TAC TIPS

PAYING ATTENTION PAYS

A recent RF-4 incident could have been much worse had the aircrew failed to keep monitoring the malfunction

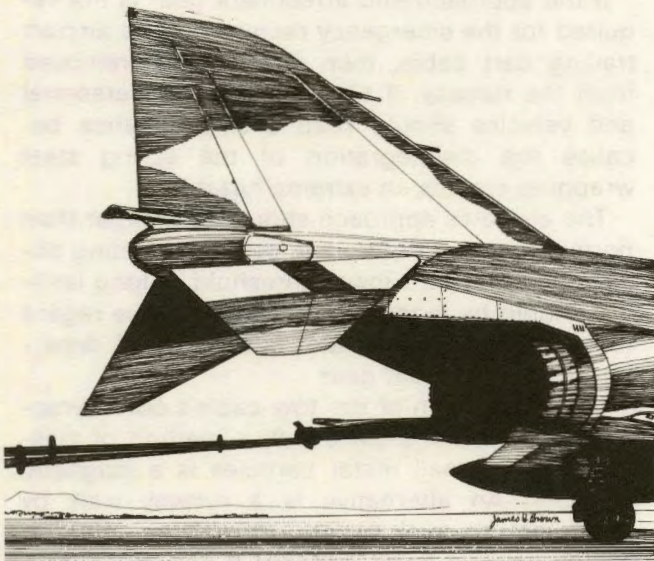
After completing the AAR portion of a routine night air refueling mission, the RH Generator-Out light illuminated. Three to four minutes later, the Bus Tie light also came on. All appropriate checklist items were accomplished and the SOF notified. About 5 minutes later, the crew detected smoke and fumes in the cockpit; once more accomplished all checklist items, and the smoke and fumes dissipated within 3 minutes. Descent to lower altitude was continued with vectors provided for a no-flap GCA. After the aircraft was configured for landing, 12 NM on final approach, the right engine oil pressure was noted at 1 to 2 PSI (previous right engine oil pressure had been approximately 40 PSI). The right engine was shut

down, the single-engine landing checklist was accomplished, and uneventful approach-end arrestment was made.

Investigation revealed part of the CSD gear failed and penetrated the CSD case causing a 1" X 4" hole, resulting in complete depletion of engine oil. After the loss of CSD oil, the scavenge oil from the oil coolers flowed to the CSD and vented through the hole in the CSD case. The smoke and fumes in the cockpit resulted from oil being ingested in the engine. Since 1976, there have been three reportable CSD failures -- however, this was the first time the CSD case was penetrated.

Had the crew failed to note the loss of oil pressure, a seized engine on short final, at night, could have resulted -- not exactly the ideal time. F/RF-4 aircrews should add this incident to their mental "data bank." The entire engine oil supply was depleted in a relatively short time. As you can see, monitoring all critical systems until engine shutdown is the only way to fly....

What's your BARRIER status ?



The January 78 issue of TAC ATTACK contained an article on aircraft arresting systems. The article used the term "barrier"

when speaking of arresting gear. When requesting information from ATC agencies and, more importantly, from Navy facilities, you will probably get a "negative barrier" response. This response has nothing to do with most arresting systems.

The FLIP IFR Supplement lists the BAK-9 and BAK-12 under the heading of "Cable" and the MA1A/BAK-9 system as "Barrier/Cable." This is only partly responsible for the confusion. "Barrier" has been the accepted term for arresting gear in the Air Force for many years. In the past few years, several mishaps have occurred because of misuse of these simple terms.

In the future, if you need to make an approach-end arrestment, say just that and leave the word "barrier" out of the conversation. Knowing the weather, facilities, nav-aids, and divert field data for your route of flight is only common sense. Use the NOTAM system to obtain the latest information available. Hopefully, you'll be prepared the next time the utility pressure drops to zero!

AIRCREW OF DISTINCTION



Capt Robert D. O'Dell
61 TFS/56 TFW
MacDill AFB, FL



the right fire light illuminated accompanied by high EGT on that engine. Capt O'Dell terminated afterburner, jettisoned the external wing tanks over water, and began a descending turn to the runway. The landing gear was lowered on short final, and the aircraft recovered uneventfully. Total time from takeoff to landing was less than 5 minutes.

Postflight maintenance investigation showed that both variable inlet intake ramps had extended due to an air data computer malfunction causing a violent compressor stall in the left engine. The fire light on the right engine was caused by a BLC duct gasket that had deteriorated allowing 17th stage bleed air to escape in the engine bay and activate the fire warning circuit.

The superior airmanship, prompt reaction to a serious inflight emergency, and professional competence demonstrated by Capt O'Dell resulted in the saving of a valuable tactical fighter and qualify him as a Tactical Air Command Aircrew of Distinction.

Capt O'Dell, with a student WSO, was number two in a three ship F-4E air-to-ground continuation training mission. When afterburner was terminated following a formation takeoff, Capt O'Dell experienced a muffled "bang" followed by high EGT on the left engine. At that time, number three reported flames coming from the number two aircraft. Capt O'Dell shut down the affected engine and began an immediate turn to downwind, detting up a VFR straight-in approach. In order to maintain airspeed and altitude, Capt O'Dell was required to use afterburner on the good engine. While initiating the single-engine landing checklist and rolling out on downwind,

AUDIOVISUAL

A PHONE CALL AWAY

QUESTION, "Is there an audiovisual product available to meet my briefing or training need?"

Yes, and it may be only a phone call away.

**By Capt Lenard M. Kaufman
388 TFW/DOX
Hill AFB, UT**

Where to begin? The place to contact is your local base audiovisual library (BAVL). This facility is manned by audiovisual librarians whose job it is to help you get the best audiovisual products available to meet your needs. Your base AV librarian has available those AV products which are stocked at your base to meet recurring demands. They have access to AV products in the Air Force Central Audiovisual Li-

brary (AFCAVL) at Norton AFB, CA and, through them, can identify products in the DOD audiovisual data base.

The AFCAVL is the heart of the Air Force Audiovisual Library system. It is the focal point for the acquisition, distribution, storage, and accountability of Air Force audiovisual products; and they serve as the nucleus of a network of worldwide AV libraries. As an operating component of the Aerospace Audiovisual Service (AAVS), the AFCAVL provides extensive audiovisual service to regional audiovisual libraries (RAVLs) overseas, to AV libraries under the operational control of AAVS, and BAVLs operated by installation commanders. In addition, the AFCAVL provides audiovisual service to

all Air Force components, government agencies, and the general public.

The AV Services Branch serves as the primary point of customer contact at the AFCAVL. Your local AV librarian maintains contact with the branch AV product managers who are available to provide pertinent information for the right AV product to meet your need. To expedite their research, a remote unit is available to give the AV product managers access to information stored in the DOD data base relative to all DOD AV products. If the subject you've been looking for turns out to be produced by the Army or Navy, your base AV librarian will know how to request it for you.

You may find that a completed AV product is not available, but selected stock footage of your requested subject is and will fill your need. If this is the case, the AV product manager will refer your request to the USAF Central Audiovisual Depository.

The USAF Central Audiovisual Depository reviews all film and determines which have permanent or enduring value. They then catalog and store that portion of the AV product. Many government agencies draw upon the services of the depository for briefings or for use in their own AV productions. AAVS also uses this stock footage in production of Air Force programs.

Should your program require still photographic materials, your AV librarian will refer your requirement to the Still Photographic Depository, the 1361st Audiovisual Squadron, located in Arlington, VA. Their mission is similar to that of the Central Audiovisual Depository; they catalog, store, and make available Air Force still photographic materials to government agencies and the general public.

If your requirement still cannot be met through available Air Force or DOD resources, procurement of a commercially produced subject may be the answer. After the subject and source are identified, and funds are forthcoming, the AFCAVL will go through normal procurement channels to purchase, quality control, and make the print available to you through your BAVL. If you think the commercial subject may have Air Force-wide appeal, you can recommend Air Force adoption.

Now you know what you want and where you can get it, but you would prefer 3/4 inch videocassette rather than 16mm. Is that possible? Most probably, yes. Unless there are legal

or technical restrictions, AV subjects can be obtained in any required medium.

Through your base AV library and the AFCAVL, you will be provided research services, product information, and advice on the necessary steps to take to get the AV material you want. In short, you can obtain any AV product for which you have a valid requirement, providing it can be identified.

AIR FORCE SOURCES

AAVS Still Depository (Slides and Photos)
1361 AVS/DOSR
1221 S. Fern St
Arlington, VA 22202
AUTOVON 227-5817

USAF Central AV Library (Distribute ISD kits)
AAVS/LGHLU
Norton AFB, CA 92409
AUTOVON 876-3481/2394

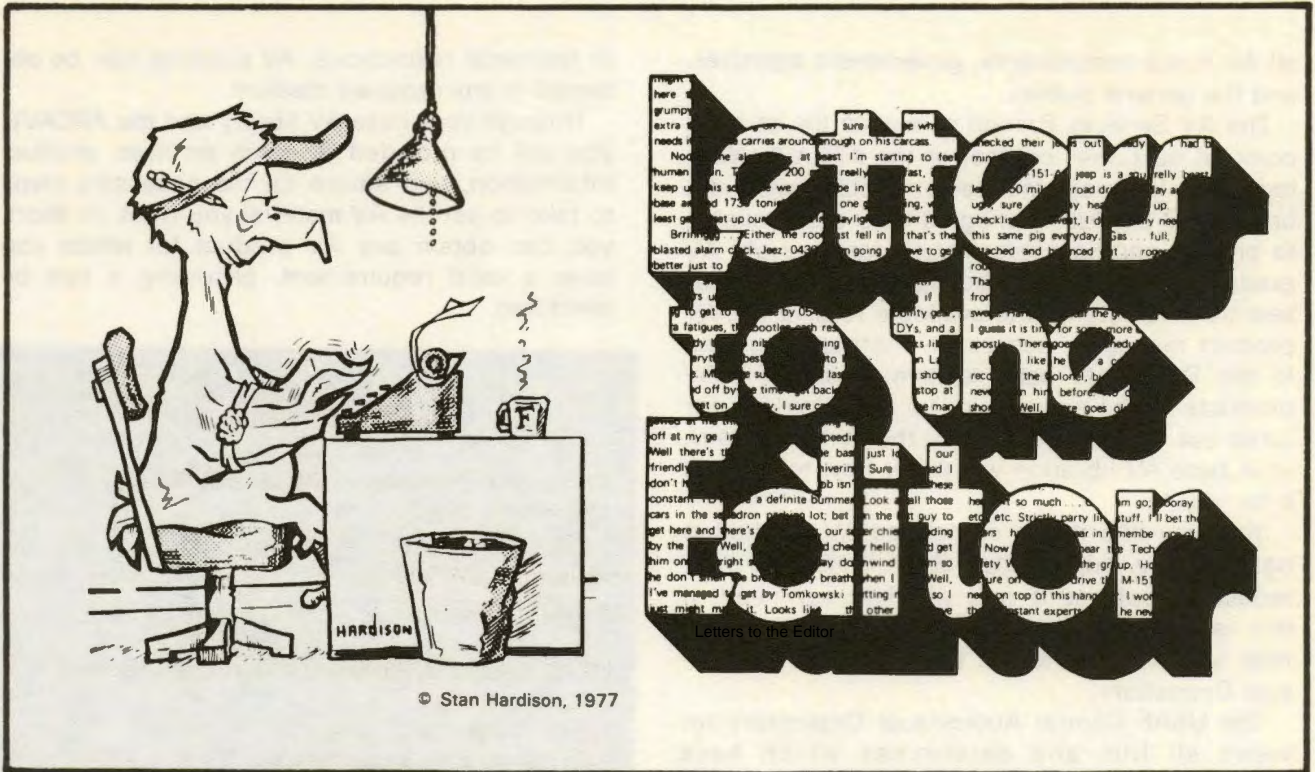
AAVS Film Depository (motion pictures)
AAVS/LGHDR
Norton AFB, CA 92409
AUTOVON 876-2385/2386

Wright Patterson Motion Pictures (R&D Type of film)
Det 2, 1361 AVS
Wright Patterson AFB, OH 45433
AUTOVON 785-3645/5868

Fighter Weapons Center
Nellis AFB NV 89110
Film Librarian
AUTOVON 682-2245
Fighter Weapons School Film Room
AUTOVON 682-4225/2380

Eglin Armament Development & Test Control
3246 Test Wing/TERPLO
Eglin AFB, FL 32542
AUTOVON 872-4351

Contact your base AV librarian when you begin planning your next briefing or training program. Audiovisuals can add a new dimension to your project. ➤



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Editor

Capt Balbin's letter in your Dec 77 TAC ATTACK referenced AFR 66-33 as requiring "bunny" suits when performing intake inspections. In addition, AFR 127-101, Ground Accident Prevention Handbook, para 8-2x(c) states, "When maintenance personnel are required to enter the intake ducting of a jet engine, a pocketless coverall such as FSN 8415-292-9978 or equivalent will be worn." The Propulsion Branch here has utilized the standard type coverall (they are easier to acquire) and by sewing the pockets shut and replacing the buttons and zippers with velcro tape they have made very effective "bunny" suits.

MSgt Anthony J. Mankewitz
 834 FMS
 Eglin AF Aux Fld #9, FL
 Answers to Ltrs, TAC ATTACK Feb 78

Thanx for the tip. I'm sure other units might pick up on your suggestion.

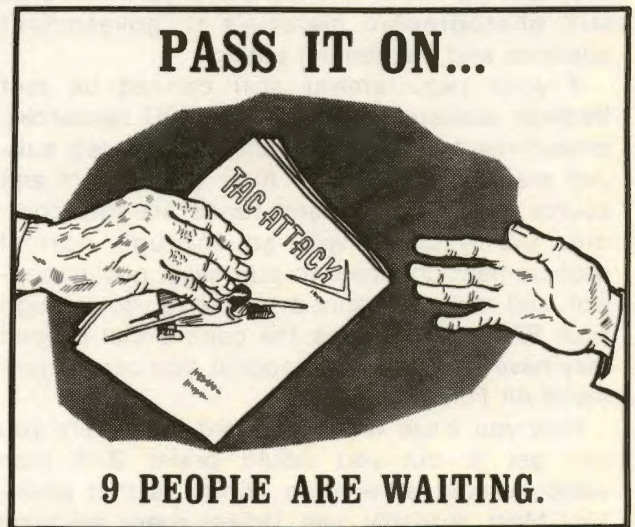
ED

The January 1978 TAC ATTACK article on arresting gear included a chart which contained several er-

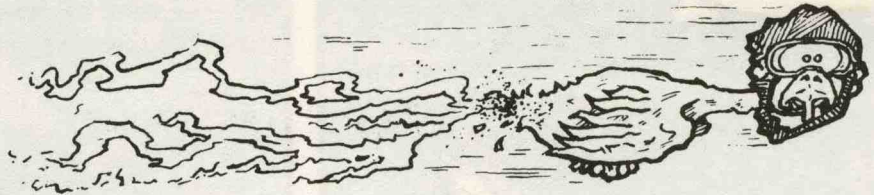
rors. Runway 03/21 at George AFB has BAK-12 and BAK-9 cables. Also, the primary and secondary runways at Luke AFB are reversed on the chart.

• • •

HELP! Any units out there who haven't cleaned out their magazine racks for a couple of years – if you have in your possession a Jan 1975 issue of TAC ATTACK, please forward same to HQ 934 TAG/SE, Mpls-St Paul IAP, MN 55450.



TAC TALLY



	TAC			ANG			AFR		
	JAN	thru JAN		JAN	thru JAN		JAN	thru JAN	
		1978	1977		1978	1977		1978	1977
CLASS A MISHAPS	6	6	0	0	0	0	0	0	0
AIRCREW FATALITIES	3	3	0	0	0	0	0	0	0
TOTAL EJECTIONS	6	6	0	0	0	0	0	0	0
SUCCESSFUL EJECTIONS	6	6	0	0	0	0	0	0	0

CLASS A MISHAPS	➔
AIRCREW FATALITIES	➔
TOTAL EJECTIONS	➔
SUCCESSFUL EJECTIONS	➔

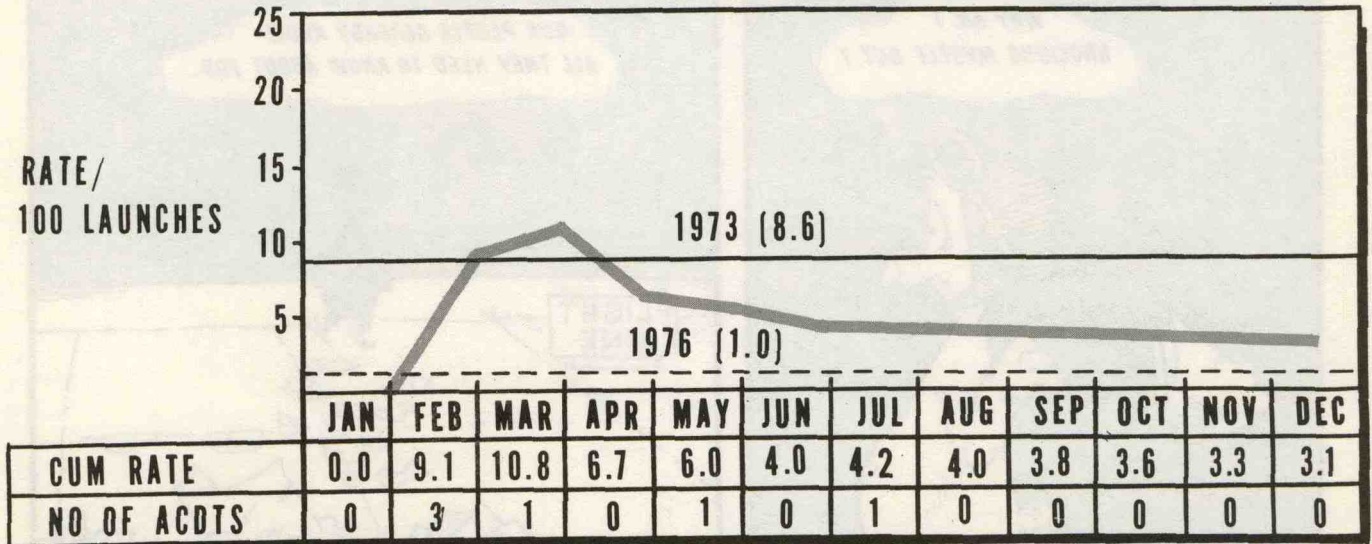
TAC'S TOP "5" thru SEP

TAC FTR/RECCE	
class A mishap free months	
21	474 TFW
19	56 TFW
15	35 TFW
13	347 TFW
11	1 TFW

TAC GAINED FTR/RECCE		
class A mishap free months		
70	127 TFW	ANG
36	156 TFG	ANG
25	434 TFW	AFRES
25	162 TFTG	ANG
22	131 TFW	ANG

TAC/GAINED Other Units		
class A mishap free months		
126	182 TASG	ANG
106	135 TASG	ANG
95	193 TEWG	ANG
87	110 TASG	ANG
82	USAFTAWC	TAC

RPV CLASS A MISHAP RATE



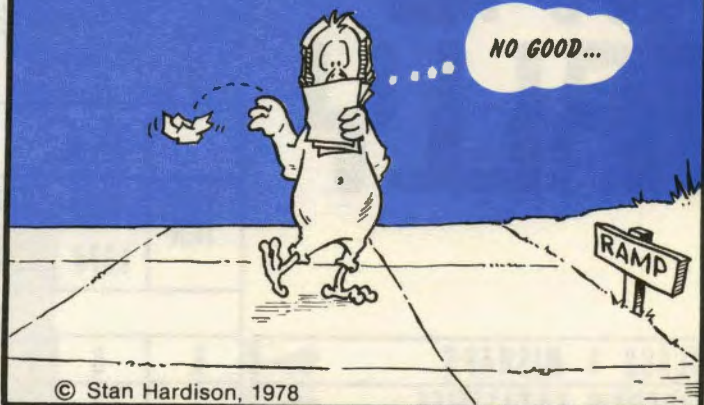
FLEAGLE

DON'T MESS UP THE GOOD OLE SOD.
STOW YOUR TRASH... THINK OF FOD.



HARDISON

FOD CAN HURT OR EVEN KILL.
GIVEN A CHANCE WE KNOW IT WILL.



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PICK UP TOOLS, AFTER A JOB.
THEY COULD BECOME, A PIECE OF FOD.



MAKE PLANS TODAY, TO KEEP NEAT AND CLEAN.
FOD WE ALL KNOW, CAN BE AWFUL MEAN.



WHY AM I
KNOCKING MYSELF OUT ?



OUR PEOPLE ALREADY KNOW
ALL THEY NEED TO KNOW ABOUT FOD.

