TAC ATTACK

TAC Attack

MAY 1978

LASER SYSTEMS & HAZARDS ...Pg 24

TACTICAL AIR COMMAND

TAC ATTACK

MAY 1978 VOL. 18 NO. 5

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Angle of ATTACK

WELL DONE

In this issue of the magazine, we recognize the recipients of the 1977 annual TAC Safety Awards in the flight, ground, and weapons safety areas. The competition for these awards made selection of the winners extremely difficult. Although these individuals can rightly be called "the best in TAC," I would like to salute not only the winners and other nominees but, more importantly, all the men and women in the command who continue to support our mishap prevention efforts in their daily operations.

In the flight safety area, we experienced the lowest Class A mishap rate since 1974, even though we were training harder and with greater realism in Red Flag and numerous joint exercises. While there is room for improvement, it is evident that you, the aircrews, maintenance crews, and support personnel, were doing your jobs in the professional, dedicated way you always have.

Ground safety indicators for 1977 remained at the same low rates reached in 1976. Weapons mishap rates were also significantly lower in most areas during 1977 compared to 1976. Once again, these accomplishments are a result of you doing your jobs right -- the first time, and every time.

I am sure that you feel as I do, that one preventable accident is too many. We should not lose sight of that goal. To all the personnel who have been doing their part in all areas of mishap prevention ... WELL DONE!! To those of you who have not -- come on. >

George M. Sauls

GEORGE M. SAULS, Colonel, USAF
Chief of Safety

TACTICAL AIR COMMAND
Annual Safety Trophies

TAC DISTINGUISHED AIRCREW ANNUAL SAFETY TROPHY

This trophy provides recognition for the most outstanding individual or aircrew selected from the monthly Aircrew of Distinction winners. Major Alexander H. (Sandy) Murchison III, 1 TFW, Langley AFB, VA, is the winner for 1977 for his exceptional feat of airmanship in recovering his crippled F-15 aircraft on 4 Feb 77.

TAC COMMANDER'S TROPHY FOR FLIGHT SAFETY

This trophy provides recognition to the numbered air force with the lowest command controlled DOD Class A mishap rate. Ninth Air Force is the recipient for 1977 with a mishap rate of 2.0.

CHALLENGE OF THE

The single focus dominating our work in Tactical Air Command has been the necessity to squeeze all the combat capability possible out of what we have. To make readiness our profession, we made a conscious decision four years ago to accept the increased stress and the greater risks inherent in training the way we have to fight -- in the six Flag programs and particularly in RED FLAG. I wrote to you:

27 March 1976

TO RED FLAG Aircrews--

You know what we're trying to do--

How vital it is--

How hard it has been to get this far--

How far we have to go to improve it--

And what a little misplaced enthusiasm could do--

Let's do it right, together, or we'll set realistic training back to filling squares around the flagpole.

ROBERT J. DIXON, General, USAF
Commander

FUTURE

ROBERT J. DIXON
General, USAF

You accepted the challenge. RED FLAG is now regarded, by both our Allies and other interested parties, as the crucible in which professionals temper the spirit and hone the skills that will sustain them in combat.

We have begun another big next step -- an urgent modernization program. Five years from today most of you will be flying a different airplane. During that time and for some time thereafter, we'll be bringing new aircraft -- F-15, F-16, A-10, F-4G, E-3A and EF-111 -- into the inventory -- at a pace that we could and should accelerate. As a result, you will face still more challenges: for one example, the controlled chaos and strain inherent in your unit's conversion to new equipment under the READY TEAM concept. For another, the challenge of the unknown -- unknown capabilities, unknown limitations -- inherent in new equipment, until it is integrated into normal operations and its capabilities and its limitations are understood. When these challenges are added to the already stringent requirements of training the way we have to fight, you face the most demanding professional challenge you have ever had to meet.

I believe that each of you understands that we have the sworn obligation to continue to squeeze all the combat capability possible out of what we have -- readiness is our profession. You are familiar with what the Soviets have done and are doing to increase and improve their military capabilities. So is the President.

". . .In the meantime, the Soviets have continued to increase and to modernize their forces beyond the level necessary for defense."

President Carter
16 March 1978

The need for even more imaginative, inventive, dedicated ways of doing our work -- getting and staying ready -- is critical.

I need not remind you of your professional responsibilities in carrying out the present and developing new and better programs over the next few years. I believe you recognize that the only way to make it work is to free your minds, get out in front of the problems, and get the job done. Your past actions are clear proof that you understand that the real risk in realistic readiness training is in not doing it.

Do it right -- the first time -- and God speed.

SPO CORNER

HANDS TIED?

By Maj Gerald H. Felix
HQ TAC/SEF

Today's flight commander really has his hands tied, right? He can't fly with his flight members because the scheduler is more concerned with "square filling" requirements. Or he can't fly with his flight members because he's a member of the gray-haired Gold Flag set. It seems like overkill to have flight meetings when squadron and wing meetings are so frequent.

The "hands tied" philosophy is an easy one to adopt, and tempting also. It certainly lightens the work load. Climb in an aircraft whenever the scheduler calls, and leave the rest to the ops officer and squadron commander. It's a philosophy that will cripple a squadron. It's also a philosophy that doesn't have to be.

Let's take things one at a time, beginning with meetings. Squadron and wing meetings do not take the place of meeting with the people in your flight, either individually or collectively. You can't skip this step and know your people like you should. Knowing what's expected of them and what they expect of you is basic. At the bar, over a beer doesn't count. I'm talking about a formal meeting. When's the last time you had a flight meeting?

What good is knowing your people when you rarely get the chance to fly together? Scheduling priorities comes first; the training requirements must be filled. But have you ever collared the scheduler demanding a flight with Blue 4? That failing, have you gone to the ops officer or, if necessary, the squadron commander? As a last resort, roll up MCM 51-50 and beat all three over the head. Then unroll it and show them 1-2b and 1-2c on page 1-1:

"1-2b. Commanders at each level will comply with the policies in this regulation and, insure that safety is not compromised, and monitor the aircrew training to insure timely progression through appropriate training.

1-2c. Supervisors will identify areas where additional training is needed and direct training accordingly."

As a flight commander, you are one of those commanders and supervisors. You're also the key supervisor in the chain. You can't fully comply with the above unless you play an active role in your flight. That translates to getting into the air with your guys on a regular basis.

One last obstacle, right? Gold Flag. All the more reason for you to fly with your guys. Not only must you fly with Blue 4 to insure that he's discharging wingman duties professionally, but Blue 3 to assess whether or not he's ready to upgrade to flight lead status, and Blue 2 to see how he's doing as a flight leader. And you can't really make those assessments based solely on word of mouth information from other squadron members. Use all of that limited Gold Flag time to its fullest.

What happens to a squadron when flight commanders adopt the "hands tied" philosophy? Supervision shifts to the ops officer/sq commander. He can't give everyone his personal attention because he's got 20 people to supervise, not 4. So he must resort to the impersonal numbers game: square filling. And this is second best. It's up to flight commanders to get it back to where it belongs: a personal, individual basis within your flight vice an impersonal, unattached basis within a squadron.

Pull up your socks and go after it, guys.

HATRS

By Maj G. H. Felix
HQ TAC/SEF

The T-39 driver began his descent for a night GCA to a full-stop landing. Monitoring his ILS, he noted the GCA directions put him well below the glideslope. To the GCA controller's consternation, he levelled off, reintercepted the ILS glideslope, and landed.

HATR material? You bet. Was it reported? Nope.

A HATR should be filed by anyone observing any of the following conditions:

1. A near-midair collision.
2. Less than required separation between aircraft.
3. Comm or nav aids, publications or directive, people or facilities that contribute to a hazardous condition.

Now for one that was properly handled. Cleared for the TACAN approach, the A-37 pilot began descent on the final approach course. Shortly thereafter, he noted a white Cherokee 140 at 11 o'clock. He broke his rate of descent and cleared the 140 by about 50 feet.

The investigation indicated that the radar quality was good and that both aircraft were being operated within FAA and military regulations. This incident points out that approach control can give advisories on "known" traffic. It's up to you, the pilot, to pop your head out of that IFR womb and look around.

LESSONS

By Maj G. H. Felix
HQ TAC/SEF

The F-4 was on a Fighter Weapons School live Maverick tactics mission. Everything went normally until Maverick launch. The missile functioned as designed and hit the target, but fragments from the target and the missile struck the aircraft. After the investigation, it was determined that the missile was launched near minimum slant range.

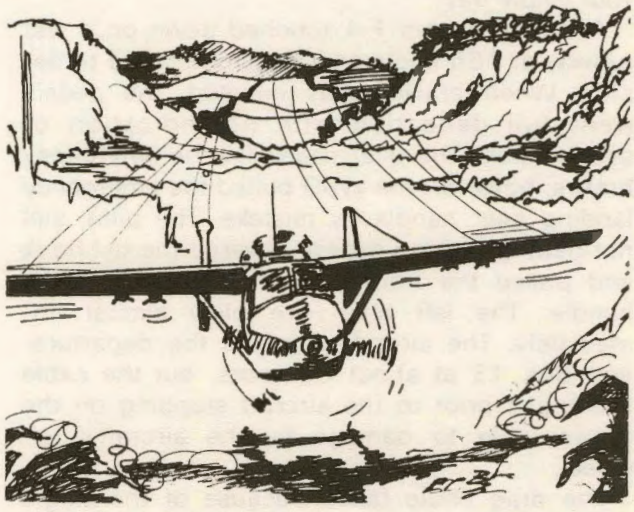
Lesson: Recognize the minimum slant ranges required for different weapons. A more aggressive pull-off might have helped too.

•••

Things have calmed down in the 0-2 community after a rip-roaring start in 1978. All three mishap boards have completed their investigations. No, the Sagebrush Triangle had nothing to do with any of these accidents; pilots, however, did.

The pilot of the first mishap 0-2 was looking for a new target to add to his squadron's VR program. Not being able to find it, he lowered flaps and slowed down for a better look. Sure enough, he got low and slow, added power, pitched up, and stalled.

The second and third are nearly identical -- the box canyon trick. Both crews flew into them and couldn't get out. They were flying at higher pressure altitudes into canyons where the rising terrain exceeded the climb rate of the aircraft. Without enough room to turn around, the ground won once more.



The final tally on these three mishaps is five airmen. The lesson on each is identical: A lack of professionalism. True, each was an honest mistake, but a pro doesn't make a mistake that will cost him his life.

TAC TIPS

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

If you do not think about the future, you cannot have one. Galsworthy

FOR WANT OF A NAIL....

How thin is the braided wire that holds the pilot chute closed on the drag chute? Yes, the same wire you pull on preflight. Although it's fairly thin, one strand is enough to keep your chute from deploying -- and possibly ruining your whole day.

A USAFE slatted F-4 touched down on a wet runway at 165 knots and the chute failed to deploy. When braking was initiated, the pedals went full deflection with no indication of deceleration. The pilot called for the emergency brakes; however, the WSO pulled the emergency landing gear handle by mistake. The pilot, still not getting braking action, lowered the tail hook and pulled the front cockpit emergency brake handle. The left main tire blew almost immediately. The aircraft engaged the departure-end BAK 13 at about 80 knots, but the cable broke just prior to the aircraft stopping on the runway due to damage by the aircraft's left wheel.

The drag chute failed because of the single strand of wire remaining in the pilot chute. The wire had been removed at a transient base by maintenance personnel for an engine run. A search at the base recovered the streamer and wire which matched the piece found in the drag chute. The wire had failed at the point where the drag chute door closed on it. The soldered end of the wire had also failed.

As for the lack of braking, it's possible that at 165 kts, with the absence of deceleration from the drag chute and the wet runway, the aircrew felt that the antiskid was inoperative and braking was lost. The right antiskid harness resistance was high and may have caused loss of antiskid. No other cause for loss of braking could be found. One other point, the pilot failed to use the paddle switch to disengage the antiskid when he felt the brakes were malfunctioning. He also had the brake pedals depressed when he pulled the emergency brake lever and things worked as advertised.

The WSO could only recall one instance in a simulator mission where he had been required to deploy the emergency brake handle. Since the engineers decided to put two identical emergency handles next to one another, it's up to us to keep from pulling the wrong one. Like it or not, it's the aircrew that bites the bullet -- especially in this case. Know your non-boldface emergency procedures -- when you're smoking down the runway, you don't have time to read the checklist.

KA-BOOM

An F-111 from another command recently caused minor damage to some buildings while flying a low-level TFR mission. Sonic boom? Yes and no, depending upon your point of view.

The aircrew became distracted by a conflicting aircraft on the route; and during subsequent maneuvering to remain clear of the other plane, the pilot initiated a climb and advanced power. After the aircraft were clear of one another, the F-111 pilot initiated a turning descent and realized he had inadvertently selected afterburner. He then noted a groundspeed of 580 kts and .95 mach. The increased airspeed caused a larger turn radius which brought the aircraft close to a town where the damage occurred.

The inadvertent AB selection happened because the AB detent was extremely difficult to detect. The sonic boom came from the wing root of the aircraft where, at mach numbers of .94 and up, a mach stem forms on the F-111. Under certain G loadings, the mach stem can separate from the aircraft and give the characteristic sonic boom. Just because the needle hasn't swung past the big "1" doesn't mean you can't "boom" someone. Ergo, exercise care anytime you're operating in the transonic area. The potential for a sonic boom is always there.

FOWL ALERT

We are currently in the middle of the bird migratory season. From the number of birdstrikes (or aircraft strikes if you happen to be a bird) which are occurring almost weekly, it doesn't appear that the migratory season has much to do with the incidence of birdstrikes. However, during the season it stands to reason that you run the risk of hitting more than one at a time and doing major damage to your machine.

A few points are worth considering:

1. Avoid areas of heavy bird concentration whenever possible.

2. Keep your speed down when in high exposure areas. A 2-pound bird at 250 kts equates to over 17 million foot pounds of energy. Ouch!

3. If there are two or more crewmembers in the aircraft -- discuss crew coordination and how you will communicate in the event of a birdstrike.

4. Above all, keep your head up and your visor(s) down. If you do see a bird, and you can't get out of its way -- duck -- and I'm not talking about mallards!

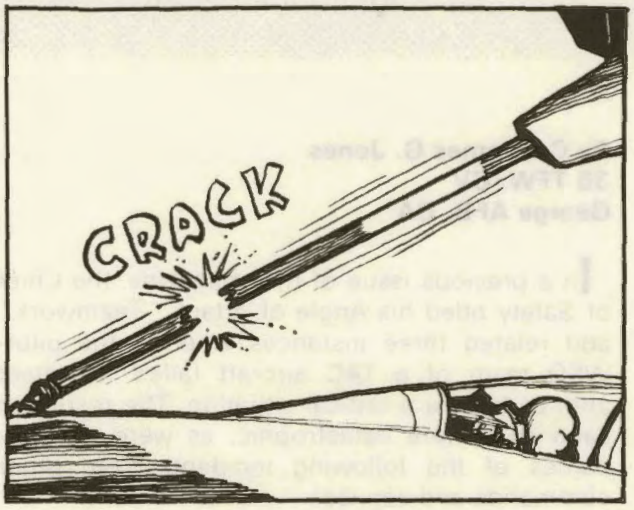
HOW NOT TO PASS GAS

Three recent air refueling incidents all came within inches of tragedy; only luck brought everyone out with their skins. All three incidents occurred over water, but the lessons learned are applicable to everyone involved in refueling operations.

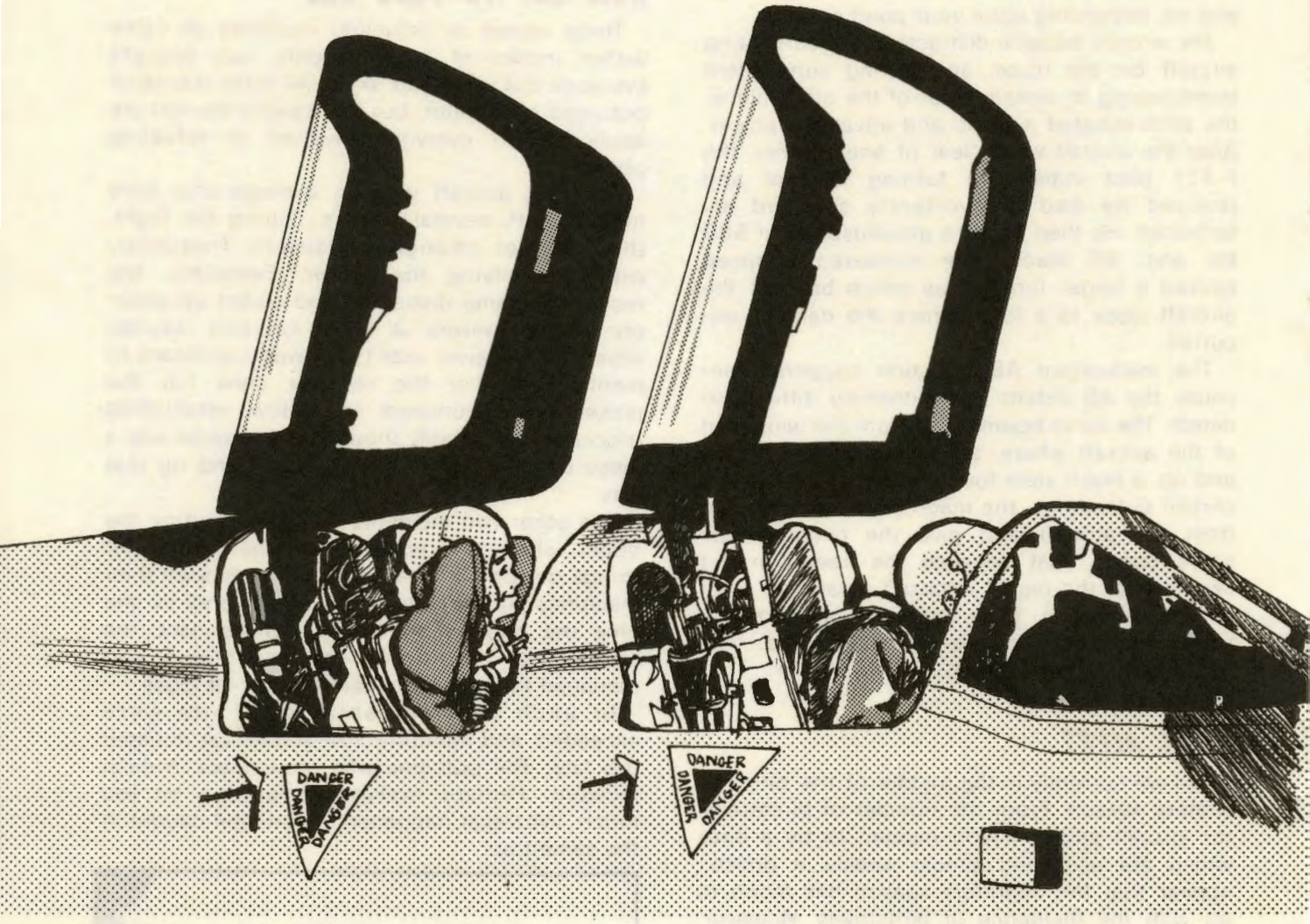
The first aircraft was on a single-ship ferry mission with several tankers. During the flight, the receiver changed positions frequently without notifying the tanker. Eventually, the receiver became distracted and ended up under one of the tankers. A minor collision resulted which the receiver didn't feel was significant to mention! Neither the receiver crew nor the tanker crew bothered to follow established procedures. Probably thought the mission was a piece of cake. Funny how it didn't end up that way.

The other two incidents both occurred on the boom where the boomer and the aircrew let things go too far. The crews failed to keep their machines in the proper envelope; and by the time the boomer attempted a disconnect, the boom was binding in the receptacle and damaged the receiver when it finally let loose.

In each case, established limits were exceeded, and the corrective action was initiated too late. The outcome was predictable in each incident. Perhaps everyone relaxed a bit too much. Whatever happened -- don't get caught in the same trap.



The DANGEROUS ART



By Col James G. Jones
35 TFW/CV
George AFB, CA

In a previous issue of this magazine, the Chief of Safety titled his Angle of Attack, "Teamwork," and related three instances wherein the pilot-WSO team of a TAC aircraft failed to detect and/or handle a critical situation. The results in each case were catastrophic, as were the outcomes of the following incidents from other commands and services:

- An F-4 crew continued their training mission in the weather despite known air data computer and altimeter problems. They made it to the tanker -- but crashed entering the range.
- An F-111 crew failed to monitor terrain clearance and impacted the ground. Witnesses said that the WSO often became complacent when flying with an experienced pilot.
- Two F-4s penetrated an undercast to enter a low-level route. Four pairs of eyeballs failed to note that the altimeter readings were approaching terrain elevation. The aircraft impacted in formation.

OF DOING NOTHING

• A Navy two-seater was catapulted with flaps up. Another was hurled seaward with the parking brake on. A lack of checklist accomplishment/crew coordination resulted in two destroyed aircraft.

• And the red-facer of all time (location and type purposely withheld) -- two troops flamed out their aircraft while trying to get a visual check of their landing gear. The gear had indicated unsafe UP but was "three green" in the down position when the jet fuel ran out.

The incidents chronicled above cost lives and/or combat aircraft, and then there were the near-tragedies:

• A fighter crew started takeoff with the canopy unlocked even though the "canopy" light was illuminated on both caution panels.

• The wingman in a flight of two F-4s was flying excellent formation in the weather when he noted that his leader had him in 120 degrees of bank. The leader's gyro had failed. (So had the #2 WSO).

• And a flight of two on a RED FLAG mission went precisely through the middle of a highly publicized restricted area. Four souls on board failed to notice that two nav systems and two TACANs were telling them exactly where they were.

Had enough? OK, here comes the test. "What four things do all of the above accidents/incidents have in common?"

ANSWER:

(1) They are all true.

(2) They all involved multi-seat fighter aircraft.

(3) In every case, the pilot needed help (either because he erred or was led astray).

(4) The WSO/EWO/NFO failed to jump in and save the day. All of the above? You bet!

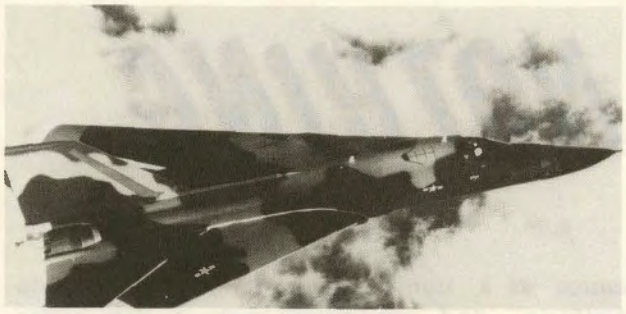
Answer number four holds the key to these incidents and it is this subject which I will address today. Why didn't the pilot get any help from the other seat? Where was the EWO/WSO/NFO when most needed? Was he practicing the Dangerous Art of Doing Nothing?

He probably was, but why? Most likely because, as a non-pilot, you can sometimes "do nothing" and get away with it. On some missions you can get by working only 50% of the time, or you can do a total job and stay busy. To illustrate, let me use a portion of an F-105G Wild Weasel mission to the Tonopah EW Range. The EWO can get by doing a widely varying range of activities from takeoff to range entry. He can merely read the checklist, tune the TACAN, and check out his electronic warfare equipment; or he can also check fuel distribution and feed, monitor engine and flight instruments, align secondary flight instruments with primary, update the navigation computer, control the radios, keep track of the nearest emergency field, monitor the position of other aircraft in the flight, search for bogies both visually and by radar, etc. In either case, the aircrew will arrive at Tonopah with basically the same capabilities ... most of the time. However, it is the hard working navigator that turns "most of the time" into "all of the time," and it is he who holds the key to making the two-seat aircraft realize its implied safety and operational potential.

One EWO recently aided the TAC program by detecting that the old Thud's engine RPM had gone well above maximum allowable while the pilot was busy weaving through the mountains on a low-level route. This discovery led to immediate corrective action and a safe recovery. Another EWO noted a decrease in oil pressure that prompted an expedited and safe recovery before things got either too serious or too quiet. Two "well dones." These troops were doing their whole job, but what about those other WSOs/EWOs who sometime become a passenger when they should be a crewmember? We know they do it. Statistics say they do, but why?

A look at the background of a navigator will enable us to answer that age old question, and once the "why" is determined, we can proceed to look for the cure.

A basic reason why WSOs/EWOs may have a tendency to practice the dangerous art of doing nothing has its roots in Nav School where the



instructor came around and collected the in-flight paperwork and maps 15 minutes prior to landing. This procedure basically told the young navigator, "you are a specialist. Your work is finished. You did your primary job, and the pilot will do the rest on his own." Hence, a bad habit pattern was born.

The nav then gets to the tactical air force where this habit pattern is sometimes reinforced by a pilot who, for whatever reason, chooses to ignore his WSO/EWO except when his specialty comes into play. The reasons for this cold shoulder treatment are varied and range from the pilot's personality to the WSO's performance or his faulty perception that he is a specialist whose work is done when the sharp end of the mission is complete. In any case, crew coordination and safety are the casualties.

Rank, age, and/or flying experience can also lure a WSO/EWO into the "do little" trap. Young officers just out of Mather and/or RTU are often crewed with the more senior and experienced pilots. A move that may lead initially to a feeling of well being and dependence on the pilot and, in the long run, to the sometimes fatal conclusion that "the guy up front never makes a mistake."

A final reason that some WSOs/EWOs may be found guilty of non-support is what I see as a lack of stress testing. A young navigator has probably never been fully stress tested. He has seldom, or never, been put in the position where the bullet was his to bite. Pilots can't avoid it. Stress testing comes from shouldering responsibility. In UPT, the pilot is given an aircraft and told, "take it up alone, it's your responsibility to bring it home ... every time." That in itself is a form of stress testing, and it is amplified through his career on every flight. WSOs/EWOs don't necessarily have the built-in opportunity to get this stress testing, so they are an unknown quantity until you take a chance on them or see them in combat or an emergency situation. Hence, in a serious emergency such as a maneuver that is destined for trouble or a departure from controlled flight, some nav's may not be sufficiently stress tested to make the abort or bailout decision that would save the aircraft and/or crew.

So we have seen that the WSO/EWO can sometimes get by doing very little, and that there are factors, taken either singularly or in combination, that can lure the vulnerable into practicing the fine art of doing nothing. Old habit patterns, a varying reliance on WSOs by different pilots, rank, age, experience, and/or an unknown quality called stress testing can all come into play. Hence, the potential accident WSO/EWO may at times go into the "do-little-or-nothing" mode due to the above factors. We must now discuss some ways to overcome his tendency to do this.

The most important element in the corrective action is the WSO/EWO himself. A good, hard-working GIB is the first step in fighting the do-too-little problem. As a starter, he must have, in addition to special knowledge, a total understanding of all aircraft systems and a good working knowledge of all flight directives such as regulations, departures, arrival plates, etc. Then, he must be an expert on actions to be taken in case of emergency, to include all those little items not in the checklist, plus the prescribed ejection envelope for his particular aircraft. And finally, a good WSO/EWO will know what the pilot is doing at all times, when he most needs assistance, and what type assistance/information he requires.

So the key to our crewmember staying busy is his acquisition of a great amount of knowledge ... and this is logical, as you can't do anything unless you know what to do. The WSO/EWO can acquire a lot of this required knowledge on his own, but the pilot must also play a strong role. To wit, he must teach and then demand. The pilot must talk his working partner through all the phases of every type mission so that the WSO learns what to expect in a given situation, what is normal procedure, and what options are available. Only in this way will the crewmember learn the total aircraft situation, how he can be of maximum assistance, and very importantly, how to recognize the abnormal situation. Once this teaching is accomplished, the pilot must then demand performance from the other half of his crew.

People will remain keen in an area only if their knowledge and/or capabilities are used; hence

Col James G. Jones is this month's Fleagle T-shirt winners

the pilot must consistently employ the WSO/EWO for maximum mission capability and safety. If the data and help that you need is not forthcoming, ask for it. Don't open the air refueling door or put the gear down without hearing a checklist, do ask for heading and distance to the nearest emergency field, do demand altitude calls on descent, do cross-check your minimum altitudes before commencing weapon release passes, etc. Once the requirements and desires of the pilot are known, all the information will flow correctly, and on-time, without prompting. This is the start of that age-old procedure known as crew coordination.

Crew coordination also requires a lengthy discussion between pilot and WSO/EWO on individual crew duties and responsibilities. Crew duties are outlined in directives, and the crew must expand on these in every specific area from preflight to engine shutdown. Responsibilities are implied in the crew duties assigned, but other specific responsibilities must also be detailed to reduce the margin for error. Requirements such as hook extension on an abort, jettison of stores during certain emergencies, etc., are areas where the WSO/EWO can literally save the day. And such responsibilities give the non-pilot a "bullet to bite," and hence a leg up on our final requirement -- stress testing.

Once we have a knowledgeable WSO/EWO, being utilized to the maximum through good crew coordination and delegation of responsibility, we need only to insure that the WSO/EWO can make the hard, quick decision to realize the full potential of the two-man crew. This is obviously the most difficult training task; but it can be done, at least to an acceptable extent. Stress testing starts with the crew coordination responsibilities mentioned above, and those can be augmented by letting the WSO/EWO control portions of the mission. An example of this is letting the WSO run an air-to-air mission one-V-one. The pilot flies the aircraft, the WSO directs the moves and keeps up a constant description of his thoughts and tactics. This training teaches situational awareness and builds confidence through responsibility. This same type stress testing can be accomplished by letting the WSO direct other mission areas and by letting him analyze dive angle and airspeed, in addition to altitude for the pickle call. A little steep, a little slow. Do I pickle slightly high or slightly low? How much ... and let him analyze the film. All of this builds confidence and a sense of responsibility; the foundations of stress testing.

So there is a cure for the dangerous art of doing nothing. The cure is found in a knowledgeable WSO/EWO, a demanding pilot, planned and considered crew coordination, a division of responsibilities, and stress testing ... but these things do not come easily. They take a strong commitment and hard work. Work that must be done if the two-man crew is to realize its maximum potential for both mission accomplishment and safety. It's up to you!

Now go back to the examples at the beginning of this article. WSOs/EWOs, would you have done better than your counterparts? Would you have saved the day? Pilots, are you confident your partner would have pulled you through in similar situations?

If the answers are all "yes," keep up the good work. If any answer is "no," or "I don't know," it's time to reevaluate your aircrew performance. Someone is, at times, practicing "The Fine Art of Doing Nothing." Don't let it be you!

Colonel James Jones, presently Vice Commander of the 35 TFW, was born in Hamilton, Ohio, and attended Waynesville High School in Ohio. He graduated from Miami of Ohio with a B.A. in Math and received his commission through ROTC in 1956. After Nav training and EWO school, Col Jones flew on the ERB-47 and the B-58. After a tour at SAC HQ, Col Jones went to SEA, flying 103 F-105 Wild Weasel missions. Following an exchange tour with the RAF, he was an instructor EWO at Nellis. Col Jones is a Master Navigator with over 2,800 hours. His decorations include the DFC, Meritorious Service Medal, and the Air Medal.

chock talk

...incidents and incidentals with a maintenance slant.

JUMPING THE CHOCKS

By Harold Poehlmann
Fairchild Republic Co

Recent mishaps involving aircraft "jumping the chocks" is evidence that we may not be utilizing the USAF #42D6594 standard wheel chocks properly. In fact, the correct procedures may not be widely known. If you believe the rope handles are primarily for convenience of pulling them free of the tire and dragging them around the ramp, I direct your attention to Figure 1. As you can see, when the chocks are positioned and interconnected as shown, the main cause of "jumping the chocks" (the chocks not firmly seated under the wheels) can be avoided. "Jumping the chocks" is a misnomer. In most instances, the chock displaces sideways and kicks out of position, particularly when being used under conditions of running engines. It goes without saying that the Aircraft Maintenance Handbook restrictions on the maximum power allowed when restrained only by chocks must be followed closely.

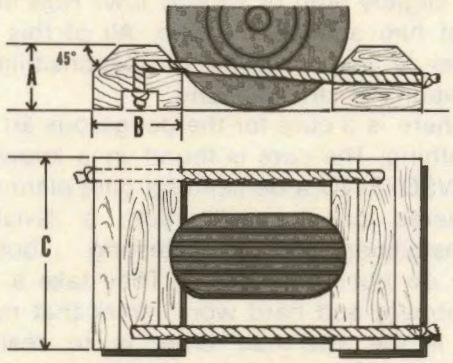


Figure 1

This safe "RPM" limit has been established by testing and is only valid when the correct size (dash number) chock is used and positioned and interconnected as illustrated. Don't underestimate the chock security that is obtainable when the interconnecting system is used. Notice again in Figure 2 that there are six different size chocks listed ... consult the chart to be certain the chocks you are using agree with your aircraft's maintenance instructions. Do not substitute, especially for engine run purposes.

A good substitute for a medical coronary susceptibility test is to run up an aircraft while devoting your attention to recording engine instruments, and suddenly you feel an odd vibration. Thinking it is your assistant banging on the fuselage to get your attention, you pay no attention until you realize the vibration is not your buddy but the aircraft "taxiing" across the ramp. My experience had a happy ending because luckily we towed the aircraft to an uninhabited ramp location before the engine run. Any mishap you may be unfortunate enough to have could be "unreportable" if you request that the aircraft be towed to the proper runup area. It is interesting to note that maintenance instructions usually neglect to mention that you "should" be holding the brakes when you are accomplishing all limited power engine runs .... The chocks are a secondary safety item. Remember, if parking brakes are installed and required to be set, they can have a habit of releasing when you least expect it. So don't trust them.

PART NO.	A HEIGHT	B WIDTH	C LENGTH	ROPE LENGHTH
-1	6	8	20	92
-2	4	6	14	60
-3	6	8	56	44
-4	6	8	36	92
-8	2	4	16	60
-10	4	6	24	60

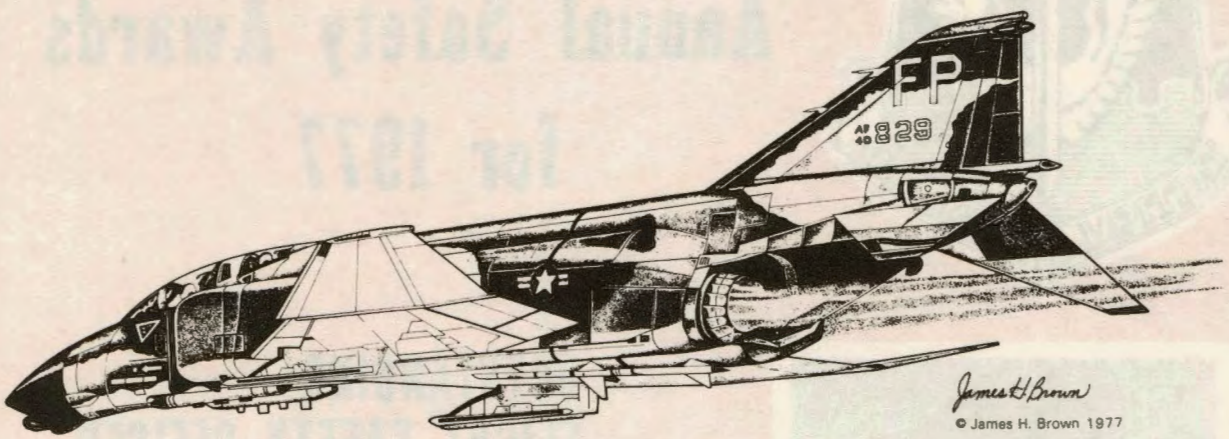
Figure 2

It appears that accomplishing engine runs in a congested parking ramp may become a "thing of the past." While mentioning "things of the past" ... do not expend any time looking for "ice" chocks. This family of chocks was tested many years ago. Every possible version of a chock usable on ice or snow was evaluated and no particular benefit was noted. Getting the standard chocks down to the "bare" ramp surface and insuring correct usage has proven to be the most effective method.

CONCLUSIONS:

* Use only the designated size chocks.
* Utilize the dual chock interconnect rope system if intending to operate engines.
* Consider moving engine runs away from parking area and other obstructions.
* If your craft has an engine Mil Power tie down restraining requirement, tie it down; don't deviate.
* Realize that holding the brakes is a necessary requirement.
* Do not exceed specified power limitations ... If in doubt, or you anticipate a long engine-run, use the restraining equipment.

F-4
Emergency Situation Training



By Capt Dick Stamler
35 TFW/DOV
George AFB, CA

SITUATION: You're returning to home station with complete utility failure. Position is on an extended PAR Final in the weather with a 500' ceiling and 2 miles visibility. As you approach 15 miles on final, you notice the oil pressure dropping on the right engine. You run the checklist and you can't maintain 30 PSI in Mil or 12 PSI in Idle. Got any ideas?

OPTIONS: A. If practical, attempt to divert to a nearby field where VFR conditions exist.

B. Shut down the right engine IAW the engine oil failure checklist.

C. Disregard the oil pressure gauge if other engine instruments do not indicate engine oil problems.

D. Place the throttle of the affected engine between 80 - 90%, avoid high G forces, avoid unnecessary throttle changes (affected engine) and land ASAP.

DISCUSSION: Option A, if practical and expedient, is the best choice, but notice the key words, "practical and expedient." Any fighter jock knows a VFR emergency is better than thrashing about in the clouds. But in this case, you'll be hard-pressed to find a divert base with VFR weather. If this same situation happens in a position where divert to VFR alternate is feasible, do so. On the other hand, Option B is also OK by the checklist; however, we will consider this option shortly to see why it's unwise. Option C would probably create a great deal of visibility come OER time and ruin an otherwise outstandingly high rating.

If Option A is not possible, as it appears in this case, and you are faced with a low-weather approach, Option D is probably your best option. The Dash One says to shut down the engine as early as possible if oil pressure failure occurs. However, as far back as UPT (remember that?), they drummed into us the first three rules in an emergency: Maintain aircraft control, analyze the situation, and land as soon as practical (M.A.L.). Upon analyzing the situation, it is obvious if the engine is shut down, the emergency is seriously compounded (single-engine/utility failure). IAW the NOTE under oil system failure in the Dash One, Option D would help reduce asymmetric thrust, in addition to prolonging engine operation.

Once this has been accomplished, it's not time to sit back and relax, you should ANTICIPATE loss of the engine and mentally prepare yourself for a single-engine/utility hydraulic failure approach.

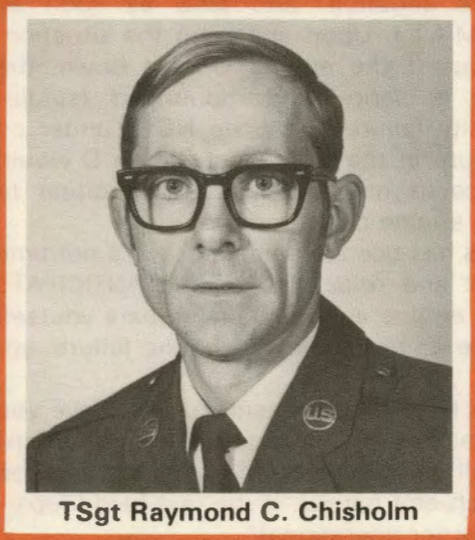
You also have other considerations. Have you advised the SOF of the deteriorating situation? Are you still going to drop the hook and plan on an approach-end barrier. Is the mid-field/departure-end barrier operational? →

TACTICAL AIR COMMAND Annual Safety Awards for 1977

Maj Leslie R. Mazzarella

OUTSTANDING FLIGHT SAFETY OFFICER

Major Leslie R. Mazzarella, 355th Tactical Fighter Wing, Davis Monthan Air Force Base, Arizona, was selected to receive the Tactical Air Command Outstanding Flight Safety Officer Award for 1977. Major Mazzarella will receive a letter of appreciation from the Vice Commander, Tactical Air Command and an engraved plaque.



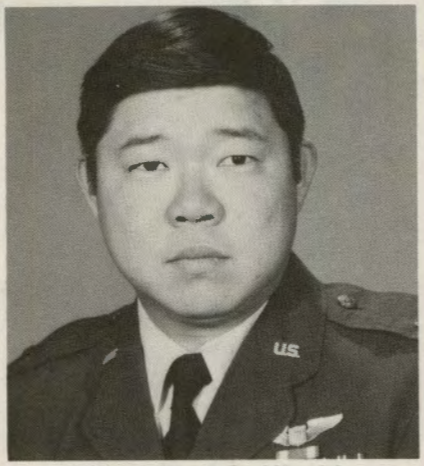
TSgt Raymond C. Chisholm

OUTSTANDING GROUND SAFETY AWARD (Individual Category)

Technical Sergeant Raymond C. Chisholm, 549th Tactical Air Support Training Group, Patrick Air Force Base, Florida, was selected to receive the Tactical Air Command Outstanding Ground Safety Award (Individual Category) for 1977. Sergeant Chisholm will receive a letter of appreciation from the Vice Commander, Tactical Air Command and an engraved plaque.

OUTSTANDING WEAPONS SAFETY OFFICER

Captain Fred S. Higaki, 388th Tactical Fighter Wing, Hill Air Force Base, Utah, was selected to receive the Tactical Air Command Outstanding Weapons Safety Officer Award for 1977. Captain Higaki will receive a letter of appreciation from the Vice Commander, Tactical Air Command and an engraved plaque.



Capt Fred S. Higaki

OUTSTANDING CONTRIBUTOR TO WEAPONS SAFETY

Master Sergeant Peter C. Peterson, 1st Special Operations Wing, Eglin AF Auxiliary Field 9, Florida, was selected to receive the Tactical Air Command Outstanding Contributor to Weapons Safety Award for 1977. Sergeant Peterson will receive a letter of appreciation from the Vice Commander, Tactical Air Command and an engraved plaque.

MSgt Peter C. Peterson

OUTSTANDING WEAPONS SAFETY NONCOMMISSIONED OFFICER

Master Sergeant Frank E. Smith, Tactical Training, Luke; Luke Air Force Base, Arizona, was selected to receive the Tactical Air Command Outstanding Weapons Safety Noncommissioned Officer Award for 1977. Sergeant Smith will receive a letter of appreciation from the Vice Commander, Tactical Air Command and engraved plaque.

MSgt Frank E. Smith

AIRCREW of DISTINCTION

On 5 December 1977, Captain Nadolski and Lieutenant Mohrmann were flying an RF-4C aircraft on a deployment from Shaw AFB, SC, to Nellis AFB, NV. Thirty minutes into the flight, at FL 280, the aircraft suddenly rolled left 20 degrees and then violently rolled to 60 degrees of bank. At the same time, a small explosion was felt in the rear cockpit, accompanied by smoke and a loss of pressurization.

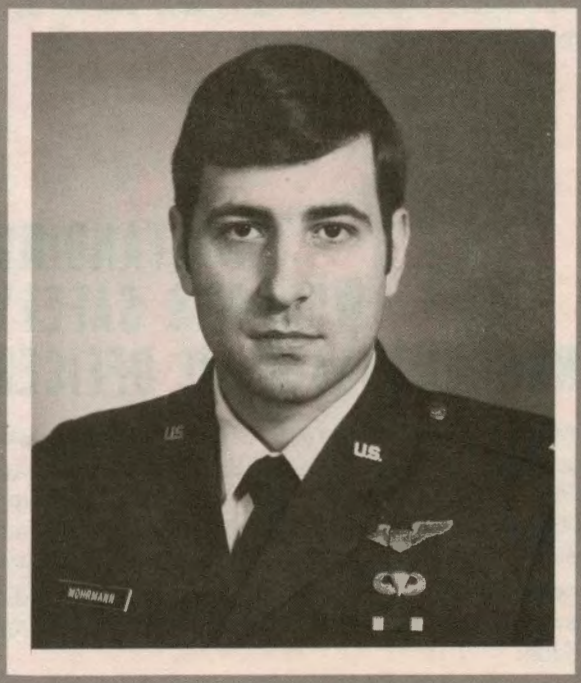
Captain Nadolski depressed the paddle switch, leveled the wings, and directed the use of 100% oxygen. A check of the instruments revealed the left generator had failed and the bus tie was open. Captain Nadolski received vectors toward Warner Robins AFB. As they were descending, the bus tie started cycling rapidly; and the aircraft experienced violent bank and yaw oscillations. The rear cockpit once again filled with smoke. The vent knob was pulled, and the smoke dissipated.

The "right generator off" light was flickering, but the generator was not actually off. The decision was made to extend the RAT and to turn the right generator off. Since the aircraft would have to fly a fast, no-flap final approach and landing, its final approach speed exceeded the capabilities of the BAK-9 at Warner Robins. The crew could not dump fuel on RAT power and a complete undercast made jettisoning of the external tanks unwise.

The crew decided to fly to Dannelly Field, AL, to burn off fuel and have a BAK-12 available. Fifty miles out, the gear was blown down; and the crew flew an ASR approach through the undercast to a safe landing and successful engagement.

Postflight analysis revealed that the AC power connections in the rear cockpit short-circuited causing the flight control transients and a small electrical fire in the rear cockpit. The rapid reaction and thorough analysis of the situation displayed by Captain Nadolski and Lieutenant Mohrmann resulted in the saving of a valuable fighter aircraft and prevented possible injury or loss of life. Their actions qualify them as the Tactical Air Command Aircrew of Distinction. →

Capt John M. Nadolski
62 TRS/363 TRW
Shaw AFB, SC



1st Lt Henry W. Mohrmann III
62 TRS/363 TRW
Shaw AFB, SC

fuel exhaustion

The following is quoted from an NTSB safety release dated 10 January 1978.

This was his (the pilot's) first solo and cross country in a Piper Arrow aircraft, and he reported that for the next 4 hours of flight, 'I kept the fuel tanks balanced almost exactly.' But at a point 5 miles southwest of Glenn's Ferry, Idaho, the engine quit. The plane, to the pilot's surprise, was out of fuel.

In his report, the pilot said he had leaned the engine to 11.5 gallons per hour. Considering the flight plan, true air speed of 135 kts, time to climb, and a total distance of 571 nautical miles to Glenn's Ferry, it would have taken 4 hours and 20 minutes en route and required 49.5 gallons of fuel.

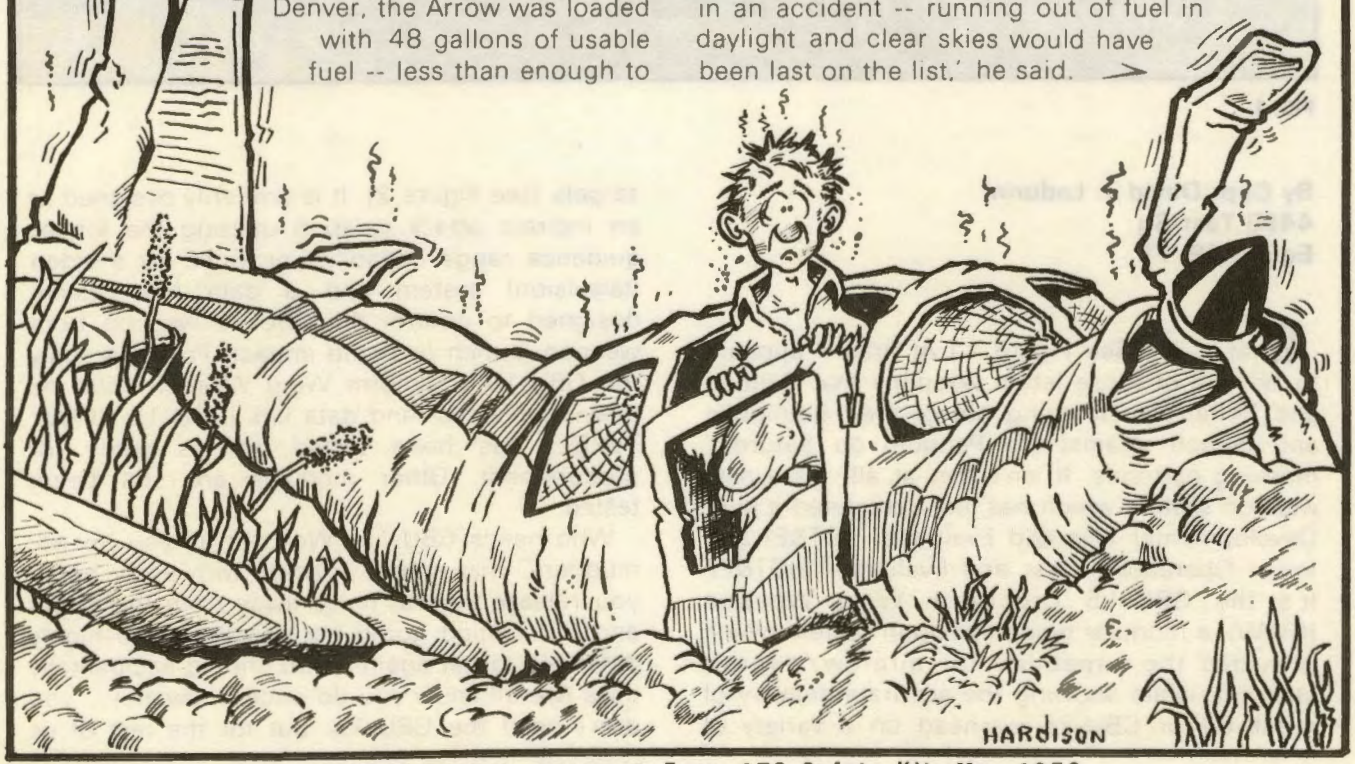
How much fuel did the pilot have on board? When he left Denver, the Arrow was loaded with 48 gallons of usable fuel -- less than enough to get him to Glenn's Ferry, not to mention Friday Harbor, Washington.

What happened? The Board's official determination of cause included these reasons: (1) inadequate preflight preparation, and (2) mismanagement of fuel.

The pilot's explanation? He said he had it stuck in my mind' that the Piper Arrow would have the same range as the Cessna 182 he normally flew, which carried 79 gallons in long range tanks.

Needless to say, with his engine out, the pilot faced an emergency situation. He managed to land at Glenn's Ferry Airport, but he landed short of the runway, hit a dirt embankment, broke through a fence, and came to rest on the airport. The pilot and two passengers suffered minor injuries and the plane was badly damaged.

As others before him, this pilot found it hard to understand that he could have been so careless. 'If I had been asked before this incident what of all things could possibly ever involve me in an accident -- running out of fuel in daylight and clear skies would have been last on the list,' he said.



NTSB SAFETY RELEASE From ATC Safety Kit, May 1978

GBU-15 MODULAR GUIDED WEAPON SYSTEM

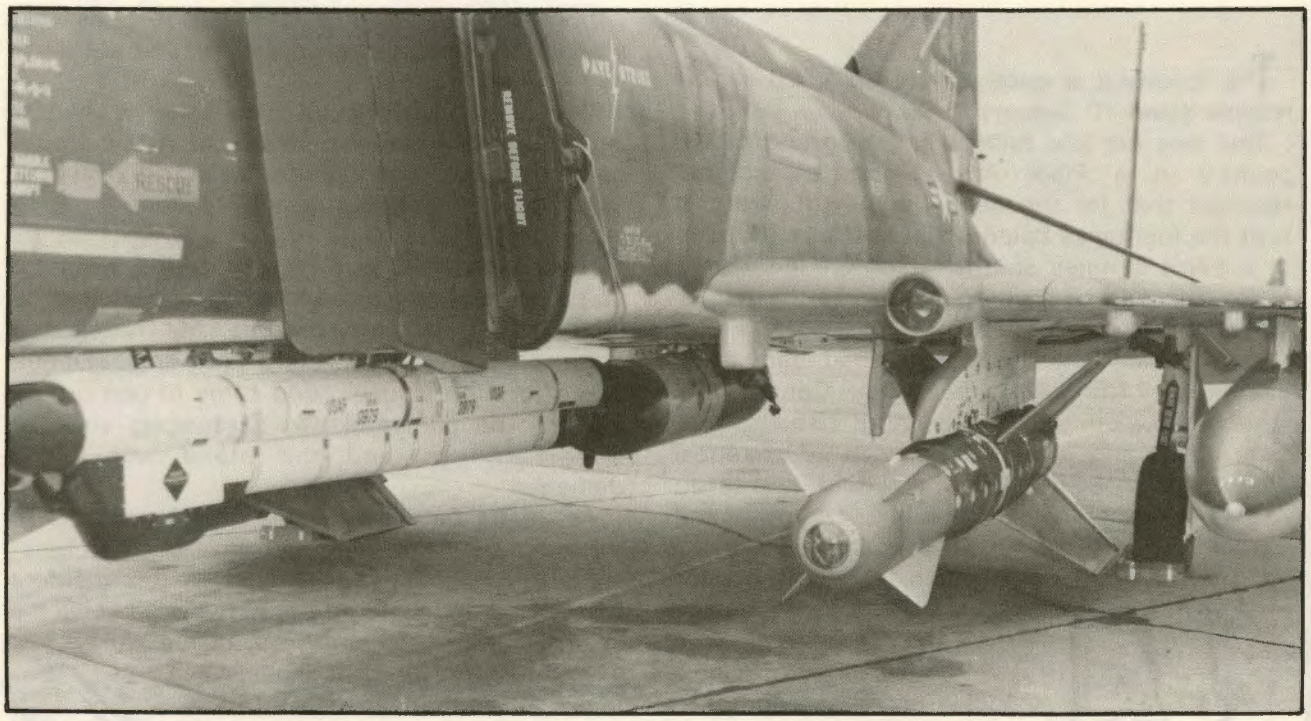


FIG. 1

By Capt David J. Ladurini
4485 Test Sq
Eglin AFB, FL

What is it? (See Figure 1.) At first, it appears to be one of those lethal weapons that Batman and Robin would spring out of their Batmobile and launch against the Penguin on Saturday morning cartoons. It isn't that at all! It's a new weapon system which has just completed a joint Developmental Test and Evaluation (DT&E) and Initial Operational Test and Evaluation (IOT&E). It's the GBU-15 Cruciform Wing Weapon (CWW), a modular guided weapon system which provides the capability for aircrew/aircraft standoff, while allowing the accurate delivery of a MK-84 or CBU-75 warhead on a variety of targets (see Figure 2). It is primarily designed as an indirect attack weapon utilizing the longer guidance range capability provided by a video (television) system and a data link system designed to control the GBU-15 weapon from weapon launch to bomb impact. Presently, only the GBU-15 Cruciform Wing Weapon with the television seeker and data link (GBU-15 CWW/TV/DL) has been tested and is ready for procurement. Other modules are still being tested.

Who needs GBU-15? Well, for all you "air-to-mudders" that score "shacks" with every bomb you release several miles away from the target and don't mind going back to the same highly defended target again if you should accidentally miss (we all know you do once in awhile) ... you don't need the GBU-15. But for the rest of us

"mud beaters," the GBU-15 offers a capability to strike a target without penetrating the bad guys' defenses, do it with pinpoint accuracy, and help insure the destruction of the exact target (or its most vulnerable part) with one weapon.

Okay, so we need the GBU-15, but I've heard about other TV bombs; ones that really are not, well ... quite the ultimate weapon. The GBU-15 does not claim to be the ultimate weapon; but it is designed to eliminate some of the deficiencies of other TV weapons, and to complement other weapons currently or projected to be in the Air Force inventory, i.e., Imaging Infrared (IIR) and laser guided weapons.

Did they really improve the GBU-15 over other TV weapons? Roger that! The engineers designed the GBU-15 to produce a picture that is as good as, if not better than, what you can see looking out the windscreen. They also designed the weapon to be launched as low as many of you jocks dare to fly and still provide a standoff capability better than that of any other weapon in the inventory. The operator also has the capability to update the GBU-15 aimpoint after launch. This means you can launch either blind (not seeing the target area) or launch with just the target area in view and acquire the exact aimpoint after launch. This capability also allows the aircrew to launch when clouds obscure the target or when the sun does not permit any shadows or contrast (needed for other electro-optical (EO) weapons).

With all these advanced capabilities, is there anything you can't do with a GBU-15? Well, yes! But as the basic weapon system is modular in design, new subsystems or modules can be incorporated into the GBU-15. These new subsystems or modules could greatly expand the GBU-15 operational effectiveness and military utility. What are some areas of concern which require an advanced systems capability? Well for one, night attack. Presently, the GBU-15 CWW is a daytime weapon but, with an IIR seeker, the GBU-15 could become a highly accurate standoff night attack weapon. Another is adverse weather. With the Precision Location Strike System (PLSS) module, the GBU-15 could become a highly effective adverse weather weapon. Hold it! You mean the GBU-15 could be configured differently depending on the environment in the battlefield area. Yes, but remember some of these new modules are still in Research and Development (R&D).

With the above in mind, how do you launch

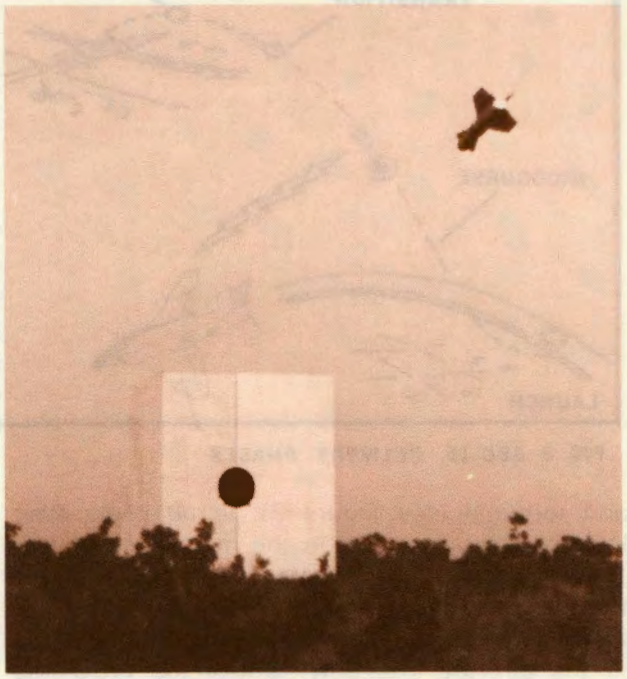


FIG. 2

and control the GBU-15? There are as many tactics/missions with the GBU-15 as Fighter Weapons School graduates. Let's take a look at two basic concepts -- the single-ship and two-ship profile.

In the single-ship profile, the aircraft is configured with one or two GBU-15 weapons and a data link pod. The aircraft ingresses the target areas to the Launch Point (LP), which you will remember can be several miles from the target. This can be done at high or low altitude, depending on the threat and other tactical considerations. Upon reaching the LP, the aircraft launches the weapon, turns and egresses the area. During egress, the Weapon Systems Officer (WSO) controls the weapon through the data link pod to the target.

In the two-ship profile, the weapon aircraft is configured with one or two GBU-15 weapons and the controlling aircraft with a data link pod. The weapon aircraft ingresses the target area to the LP, again either at high or low altitude, and launches the weapon. After launch, the weapon aircraft is clear to maneuver as needed for survivability. The data link aircraft, positioned in a low threat area miles behind the LP, takes control of the weapon and controls it to impact on the target.

After launch, the flight profile of the GBU-15 is in three parts: Midcourse (glide), transition,

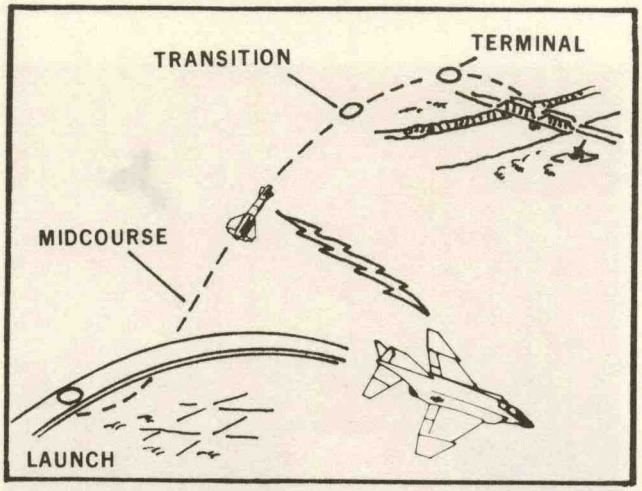


FIG. 3 GBU-15 DELIVERY PHASES

and terminal (see Figure 3). Immediately after launch, the weapon is in the midcourse phase. During this phase of flight, the WSO acquires the target area by searching with the TV seeker in the weapon through the radar control handle in the aircraft. The only control the WSO has over the weapon during midcourse is the capability to change the weapon heading by one degree increments. The WSO can keep the weapon on course if the weapon was off the correct course at launch, or if it has drifted off course because of a cross wind. The WSO actually flies the weapon using dead reckoning (DR) and the presentations on the TV scope as his only aids to navigation. The weapon spends the majority of its flight time in midcourse. Whenever the weapon reaches the end of the midcourse phase of flight, the transition phase of flight begins when the WSO selects Transition Enable on the control panel. The weapon is now able to respond in yaw whenever the WSO moves the radar control handle left or right. When the weapon reaches the correct dive angle, the weapon either enters the terminal phase automatically or the WSO selects Terminal on the control panel. The distinctive feature of the terminal phase is that the weapon is controlled solely by the WSO with the radar control handle in pitch as well as yaw. The weapon may be either locked on or manually guided to the target. Does all this sound too easy? Well, remember the GBU-15 is a glide weapon; should you launch it too far away from the target or have a headwind that you did not plan for, you will have a short bomb. In other words, aircrew mission planning must take into consideration winds, D value, cloud cover, and target characteristics when computing the launch range.

As can be seen, the GBU-15 weapon system is by no means the ultimate weapon system, but it does perform far beyond the designer's specifications and gives us, the aircrew, a target kill capability we don't have today. Adding the basic GBU-15 CWW/TV/DL to our inventory will offer the aircrew increased survivability; and at the same time, increase our capability to destroy a target with a single weapon. The result will be a greater conventional weapons deterrent and a more effective tactical military arsenal.

Postscript: This article was originally intended to be the last of a series of five articles (see "We Do It First," TAC ATTACK, Jan 78) describing new test items being operationally tested by the 4485th Test Squadron. However, next month we will be giving you a rundown on the new Chemical Warfare Defense Equipment for aircrews. Since this new equipment is designed to save your skins (and other parts), I'm sure you'll be interested.

Captain David J. Ladurini was commissioned in 1970 through OTS. Following Nav training, he completed F-4 RTU at Homestead AFB, FL. Before a tour in Thailand, he also attended Terminal Guidance School at Nellis. David completed his SEA tour at Ubon, Apr 73, and is currently assigned to the 4485 TESTS where he is presently working on the GBU-15. His decorations include 5 DFCs and 16 Air Medals.

Save yourself from DROWNING DOWN TO EARTH

By TSgt James O. Bunkley, Jr.

Drowning ranks second only to private motor vehicle mishaps as the greatest cause of accidental death in the Air Force. Ironically, most drownings involve good to excellent swimmers and nearly half of the drownings happen within 20 feet of safety.

Swimmers often do things they know are hazardous in order to show off or keep pace with their friends. Complacency and overconfidence of the swimmer are factors in most drownings or near-drownings.

Nonswimmers that drown are usually caught in an unexpected emergency situation such as falling from a boat or stepping into a hole while wading. Often nonswimmers do not wear personal flotation devices (PFD, the new name for life preservers) because they feel secure in what they are doing or are following the example of their friends who are swimmers.

You will find that saving yourself from a potential drowning situation can be scary at first, but you'll have a better chance if you keep your cool. A sudden fall into the water without a PFD or a step into water over your head can throw your mind right out of gear, so above all -- try not to panic.

We know this is easier said than done, but this is where the battle against drowning is often lost. Struggling to stay afloat wastes precious energy and decreases buoyancy by releasing any air that may be trapped in clothing or lungs.

Don't try to keep your head completely out of the water. Holding your head above the surface creates a force that pushes you straight down. The head-up position can make it almost impossible to make progress toward shore or a boat. Instead, take a deep breath and put your face under the surface. This will increase your buoyancy and make it easier to get into the right position for swimming to safety or rescue if you are a nonswimmer.

If help doesn't come right away, you can keep yourself afloat indefinitely by using this "drownproofing" technique. With your lungs full of air, float relaxed, face down, with your arms and legs dangling freely below the surface. The back of your neck should just be on the water's surface. Hold your breath for 3 to 10 seconds. When you need more air, paddle slowly with your hands, kick easily with your feet, and lift your head just far enough to exhale and take a new breath. Return immediately to a face down, relaxed position to save energy and stay buoyant. You do not have to be a swimmer to successfully use this technique.

Commanders and supervisors should encourage their people to become proficient in "drownproofing." They should also motivate them to use restraint and not exceed their physical limitations when engaged in water sports.

This article strikes close to home for me because one drowning victim last year was a friend and one of my best workers. If only I had talked about "drownproofing" with him ....

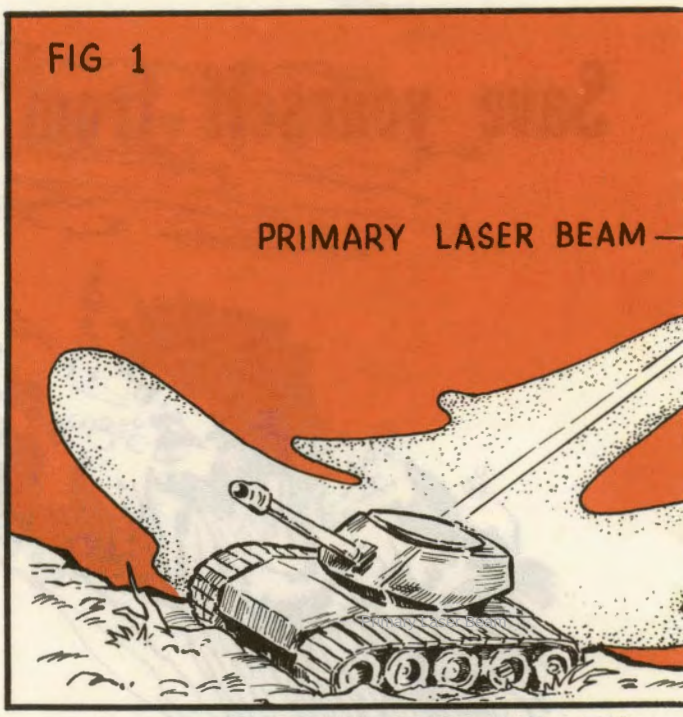
LASER systems & hazards

By Maj Jack A. Labo
Maj Gary E. Vice
USAFSAM/RZL
Brooks AFB, TX

So you have just qualified as a Pave Spike aircrew; great, but you're still not the fastest gun around. The hottest pilot and systems operator simply cannot outrun or outmaneuver the bullets from the Neodymium: Yttrium Aluminum Garnet laser (Nd:YAG). I'm speaking of the Nd:YAG laser pulse emitted from current Air Force designator pods. The use of lasers in the military has increased dramatically during the past decade, and the USAF currently uses precision laser-guided weapons on most modern fighter aircraft.

Laser Target Designators (LTD) such as Pave Spike are used with the "smart" bombs (LGB) and Laser Maverick to greatly improve circular error probabilities in destroying pin-point targets at increased ranges. The LTD emits a narrow beam of nearly parallel infrared radiation consisting of extremely short pulses of energy. Each pulse is about 1/100,000,000 of a second in duration and invisible to the unaided eye.

The laser beam can be precisely directed at the target by either a ground handcarried designator or the airborne pod; the result is a spot 10 feet in diameter or smaller depending on slant range to the target. The laser guided ordnance homes in on the reflected energy and a direct hit is on the agenda for the target (Fig 1). By increasing the energy in each pulse or decreasing the total beam divergence, greater standoff ranges are possible; highly desirable for the aircrew or ground designator in combat situations. These two improvements, however, also increase laser hazards to all personnel.

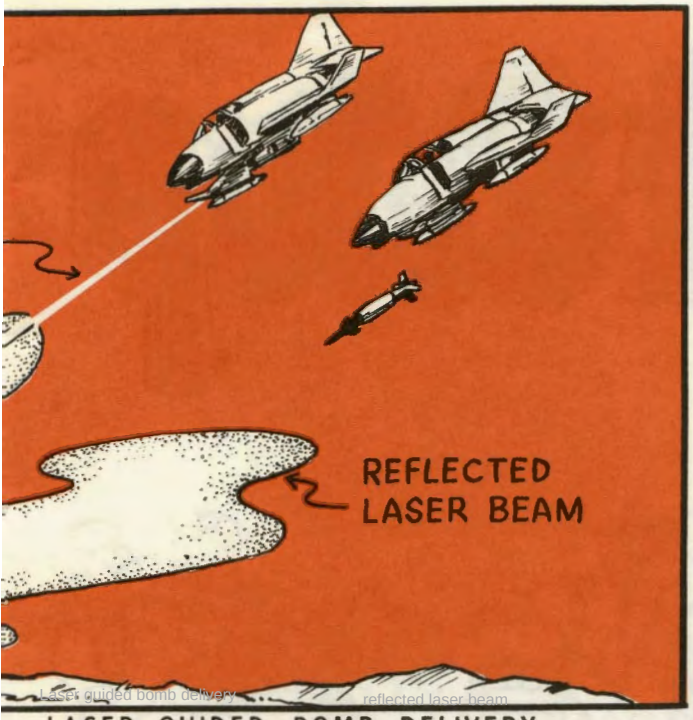


PAVE SPIKE LTD AND

The Laser Effects Branch of the USAF School of Aerospace Medicine has conducted numerous laser hazard evaluations of developmental and operational systems such as Pave Spike and Pave Tack. Controlled laboratory exposures show that the laser pulse from these and other tactical systems can produce both ocular and skin damage.

Serious eye damage can occur by viewing direct or reflected (mirrored) laser beam energy -- even one pulse. The type and extent of the damage depends on the laser output parameters, the exposure location and duration, and the amount of total energy absorbed. The eye, due to its ability to focus visible and near infrared wavelength radiation, is the most sensitive body organ. Since the laser energy reaching the eye is nearly parallel light, the beautifully efficient cornea and lens of the eye focus the beam to an extremely small image on the retina, i.e., the energy density reaching the cornea is increased approximately 500,000 times at the retina.

Recently, a research scientist was accidentally exposed to a reflected single Nd:YAG laser pulse. He received permanent damage to the



LASER GUIDED BOMB DELIVERY

retina. His words to others: "The effect of the large blind area is much like having a finger continuously placed over one's field of vision." The kicker to the aircrew -- the pulse from a Pave Spike laser is 20 times more powerful than the scientist received: For a complete narrative of his frightening experience, see a reprint of the "Laser Focus" article available at your Safety office.

Skin is not nearly as sensitive to visible and near-IR wavelength laser radiation, but reddening and blistering can occur. A laser system can be hazardous; but with a few precautions and a lot of respect, the laser can be safely used.

How do safety and medical service personnel determine if a laser system is safe or not? First, one needs a safety standard from which the Maximum Permissible Exposure (MPE) is determined. The MPE is defined as the radiant exposure on the skin or cornea which personnel may receive without adverse biological effects. As indicated above, research scientists at Brooks AFB have determined the damage thresholds for laser energy. A safety factor is then added, and the MPE is established. The laser wavelength, pulse width, pulse repetition frequency, and exposure duration are all considered when the particular MPE for your system is determined. That MPE is compared to the system output, and this determines if the laser is hazardous. If the system is hazardous, suitable safety precautions should be used. Soon to be available for TAC aircrews is a protective spectacle similar to AF issue sunglasses. The Tactical Air Warfare Center (TAWC) is currently evaluating the EDU-1/P spectacle designed by USAFSAM, which is nearly opaque to the Nd:YAG wavelength. These are not sunglasses, however, and cannot be used for any purpose other than laser protection. Since the laser is a line-of-sight device, one can also calculate a safe distance from the laser.

The Safe Exposure Distance (SEED) is defined as the distance from an operating laser at which the radiant exposure is equal to the MPE. For a pulsed system, both single and multiple pulse MPEs and SEEDs are determined. The multiple pulse criteria in the standard (more hazardous than a single pulse exposure) is used when the aircraft LTD is tracking a target or for maintenance personnel in the shop. Personnel in the target hazard zone, i.e., near the primary beam, require higher optical density eye protection than aircrews. Typical airborne LTDs single-pulse SEEDs vary from 3 to 5 miles while multiple pulse SEEDs may extend to 20 miles or more.

Since most tactical laser systems have extremely long SEEDs, the use of proper control procedures is the key to preventing accidental exposure to hazardous laser radiation. A controlled area or hazard zone is designated around laser ranges and target areas to ensure that unprotected personnel are not exposed to hazardous radiation. The extent of the hazard zone will vary with the laser system and the operating scenario, i.e., laser output parameters and aiming accuracy plus range tactics and geography. Obviously, the final responsibility lies with the aircrew.

Remember, LTD laser radiation is invisible, and personnel in the vicinity of the beam or target area may be unaware of laser operations and have no warning before receiving a direct or reflected pulse in their unprotected eyes -- irreparable damage can occur.

The Laser Effects Branch of USAFSAM stays ready to support the operational aircrew and maintenance personnel by assessing the biomedical hazards associated with the use of lasers. But we just define the hazard and recommend laser safety procedures. It is then up to the system's operator -- now that he realizes the hazards involved -- to prevent exposure to unprotected personnel.

The Great Setup

Oh yes -- it's been one of those cross-countries. The drinks were watered, the dollies unfriendly, and you left your B-4 bag in base ops. Now the weather has turned sour, and the weather wizard at your refueling stop tells you all 8,000 feet of the runway is wet. "Nonperspirus," you say, "this Phantom's got the new Mark III anti-skid and can stop anywhere."

You cinch up tight, recheck your gauges, do a descent check, and descend into the goo. After what seems like ages, you finally break out. There it is -- the runway, 4,000 feet shorter than you're used to and glistening in the glare of your landing light. Your brain does a lightning-like

By Capt Mike Shub
4 TFW/SEF
Seymour Johnson AFB, NC

computation and says to your boots, "damn, that's short -- better get right on the binders!"

Just after a perfect touchdown, you apply pressure to the brakes. Oops! Your trusty Phantom starts to fishtail, but it's still tracking straight ahead. What's that you hear -- a blown what? That's the icing on the cake as far as directional control is concerned, and you slide merrily off the runway. OK -- shut 'em down and egress. Up to your bloomers in mud, and here come the staff cars.

OK -- what happened? A failed anti-skid? Wrong again, Ace. You've been set up by the Phickle Phantom and the hydroplane hassle. How so? Thought you'd never ask.

The first part of the problem is hydroplaning. The minimum speed for total dynamic hydroplaning in the basic F-4 with recommended tire pressure is approximately 110 knots for the nose gear tires and 140 knots for the main gear tires (8.6 tire pressure = knots). Because these speeds are below the average touchdown speed for the F-4, you can expect to hydroplane when landing on a wet runway; and nose gear steering may be of little help until below 110 knots. The problem occurs when your trusty jet is hydroplaning down a wet runway and the hydrodynamic pressure between the tires and the runway lifts the tires off the runway surface to the extent that wheel rotation slows or actually stops.

The other part of the problem is in how the anti-skid system operates. When the system detects a difference in the frequency of rotation between the main gear tires, such as one wheel starting to skid, it relieves brake pressure. Brake pressure is regained when the frequency is again matched. The kicker is when the rollers begin to rotate at the same rate or cease to rotate -- like when you're hydroplaning. Being just a dumb machine, it says, "OK Ace, you've got brakes again," and it locks up your wheels. Should you slide out of the wetness onto one-each piece of dry concrete with locked wheels -- KAPOW!

As you can see, although you've done nothing wrong and the anti-skid is working correctly, you can still blow tires. However, you can do a few things to minimize the probability of this occurring to you.

First, fly an ON SPEED approach. Those extra knots for Mama and the kids can get you into deep serious. Brakes absorb kinetic energy -- the more knots you've got, the more (like knots squared) kinetic energy they have to absorb to stop your jet ($KE = 1/2\ MV^2$).

Second, touchdown firmly near the end of the runway. This will help dissipate some of your airspeed, as well as get the tires through the water to the concrete. Get the drag bag out early -- but be prepared to jettison it if directional control becomes marginal.

Finally, even with the anti-skid working the way it should, you can still blow a tire. Should this happen, the anti-skid will see the blown tire as a skid and will relieve brake pressure; so, you have to paddle it off to regain braking on the good tire.

While all the above information is good poop and can help minimize your chances of being hassled by hydroplaning, it's sometimes the best course of action to go to your preplanned alternate. So plan your landings on wet runways carefully -- and don't let the Phantom skate away with you.

Captain Stephen M. (Mike) Shub graduated from Rice University, Houston, Texas, with a B.A. in Fine Arts. He entered the service through OTS in 1971. After pilot training, Mike flew O-2s and then F-4s in Thailand and at Kadena AB. He is presently a Flying Safety Officer with the 4 TFW.

AN F-5E MISHAP OCCURRED ON 28 MARCH. THE CANOPY FAILED, INJURING THE PILOT WHO SUCCESSFULLY RECOVERED THE AIRCRAFT WITH THE AID OF HIS FLIGHT LEADER. A FULL ARTICLE WILL APPEAR IN THE JUNE ISSUE OF TAC ATTACK DETAILING THE ENTIRE INCIDENT.

An Open Letter To All Aircrews

Do you know what the crew rest requirements are? Do you know your weather category? Do you know the rules for self-medication when on flying status? Has your commander or operations officer ever told you to take yourself off the schedule should you ever not feel up to par because you're just plain beat?

You should answer yes to all of the above. I could go on listing all the rules, regulations, and restrictions we live and fly by but I am confident you know all the right answers. You ought to. We in TAC spend enough time and effort ensuring you do. Yet, we continue to have fatal aircraft accidents each year, some years more than others; but the average number of TAC fighter major accidents for the past 5 years is 25 with an average of 15 fatalities per year.

After each one of these accidents we form an accident board to determine the cause and corrective actions and another rule or restriction is written in blood. (Fortunately these accidents and ensuing restrictions have not diluted the most realistic training TAC has ever conducted.) We may fire commanders, get another CORONET MORE message, and a plea from above for help in cutting down our accident rate, but they still happen and for basically the same reasons. Our accident boards may tell us what happened but have we ever dug deep enough in today's demanding environment to find out the real WHY?

Well, here's one more old fighter pilot's opinion on what you can do to save your life. First, I know you're working too damn hard, with too long a crew duty day doing many things not related to your primary job -- flying airplanes. The 12-hour day has become the rule and not the exception as intended by crew rest regulations. You have duties that were nonexistent when I was in your boots. You're also putting in more time on furthering your education both in PME and civilian fields than my contemporaries. Your wife probably works or goes to college which gives you a few household chores. You have little, if any, time to swap lies and tell war stories. Okay, we agree on that problem; TAC is also working that problem. But it's not going to go away.

Where is my preaching to the choir leading me? -- the effects of "Long Term Mental and Physical Fatigue." We agree on the long, demanding hours. We also agree (I hope) that demanding training, restrictions, qualification categories, etc., are designed to not only systematically train you to peak performance, but to keep you from doing something in your war machine that you are not qualified to do as you train toward that goal. However, our rules, regulations, and restrictions are for the most part absolute and so is your fighter pilot pride and keen competitive spirit. The only ingredient we have no control over and can't regulate is your own judgement; and it's your judgement of your own physical and mental capabilities on each and every mission you fly that determines the success or failure of that mission. It's a complex business we are in with high performance demands and margins for error very critical. You must be at your best each and every time you fly, but you won't be. There are days when you should take yourself off the schedule, but you won't. When is the last time you did? How many times have you come back from a mission wishing you had stayed in bed? In some instances, you were lucky you came back, and you know it. Sustained mental effort decreases performance just as does physical work, and you're doing a lot of both. You and only you know when you are fatigued to the point where you are not capable of peak performance.

Guys, the stick is in your hands. When you're not up to par, back off. I'd like to think you would not fly on your "down" days, but I know better. I've been there myself too many times. I've lost a lot of dollars on range rides because I've backed off. Oh, I met all the crew rest requirements, my 72-hour history was "insignificant," and I was well trained and supervised. But I was a little "bushed" on those days and knew it. Don't become another statistic because of pride, competition or peer pressure. You're a "Special Breed of Cat" -- a proud professional with no task too challenging -- you are the best trained, best equipped aviators in the world. Just remember, a real pro knows when he's at his best and when the task is too great on a given day, but that he'll be back tomorrow capable of meeting the challenge.

We can't write a regulation or put enough supervisors in the air to prevent accidents. In the final analysis, you have the stick and your life in your hands.

By Col Kenneth W. North
Vice Commander, 388 TFW
Hill AFB, UT

TAC

SAFETY AWARDS

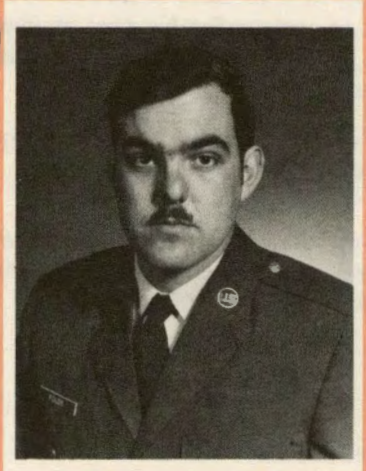
INDIVIDUAL SAFETY AWARD

Senior Master Sergeant James E. Lovorn, 27th Field Maintenance Squadron, 27th Tactical Fighter Wing, Cannon Air Force Base, New Mexico, has been selected to receive the Tactical Air Command Individual Safety Award for this month. Sergeant Lovorn will receive a desk set and letter of appreciation from the Vice Commander, Tactical Air Command.

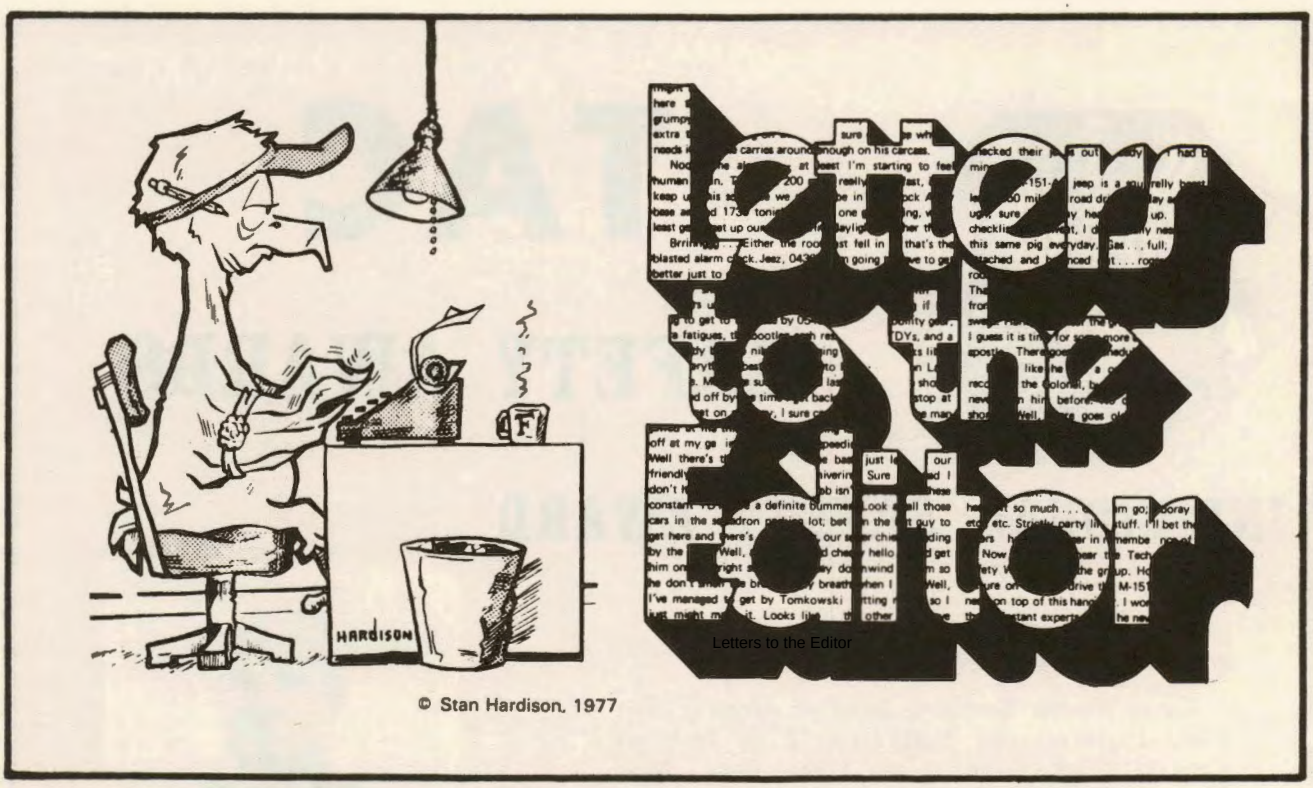
SMSgt James E. Lovorn

CREW CHIEF SAFETY AWARD

Senior Airman Glen A. Folds, 35th Organizational Maintenance Squadron, 35th Tactical Fighter Wing, Tactical Training, George; George Air Force Base, California, has been selected to receive the Tactical Air Command Crew Chief Safety Award for this month. Airman Folds will receive a desk set and letter of appreciation from the Vice Commander, Tactical Air Command.



SrA Glen A. Folds



Editor

Lt Barbour's article, "Red Flag Mistakes," in the March 1978 TAC ATTACK was read with interest by this unit, especially his remarks as to FAC capabilities and performance.

It is obvious that Lt Barbour has a high degree of expertise in FAC operations, and we can only hope that we may someday benefit from this knowledge. In light of this, we have requested MPC to allow Lt Barbour to join us for his next assignment. We will be very glad to see him. In the meantime, Lt – "Check six."

Members of the 23d Tactical Air Support Squadron
Bergstrom AFB, TX

All you Hemingways out there in FACDOM. You've heard the fighter side. How about some articles telling your side of the story?

ED

•••

431st Red Devils

The 431st is approaching its 35th anniversary. Would all former members of any 431st unit call or write the 431 TFTS/CCE, George AFB, CA 92392; 353-2008/2487 to allow further contact.

Readers,

I have received a number of letters and phone calls concerning Lt Barbour's comments on FAC performance at Red Flag. His comments were not intended to "point the finger" at any person or group of people. Both fighters and FAC's have made their share of mistakes at Red Flag. After all that's what it's for. Hopefully, we won't have to make them should we have to do it for real. If we work together to solve our mutual problems, the relationship will be more harmonious; and, above all, we will be more effective.

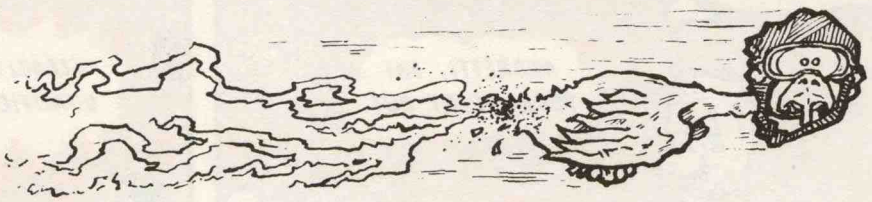
•••

WANTED

TAC ATTACK needs an illustrator (AFSC 231X1 ... Sgt - TSgt).

Must be familiar with all art media and have talent for figure drawing and accurate aircraft rendering. Knowledge of magazine layout and production desired, but not required. Applicants must be PCS eligible. If interested, call Capt Abler or Stan Hardison, Atvn 432-2937/3373.

TAC TALLY



TAC tally

	TAC			ANG			AFR		
	Mar	thru Mar		Mar	thru Mar		Mar	thru Mar	
		1978	1977		1978	1977		1978	1977
MAJOR ACFT. ACCIDENTS ►	1	10	7	1	2	1	1	1	1
AIRCREW FATALITIES ►	1	8	2	0	0	0	0	0	0
TOTAL EJECTIONS ►	2	9	7	1	2	1	1	1	1
SUCCESSFUL EJECTIONS ►	1	8	7	1	2	1	1	1	1

TAC Flight Safety Trophy Winners

49 TFW
HOLLOMAN AFB NM
24 MAR77–23MAR78

131TFW(ANG)
ST. LOUIS, MO
24MAR 77–23MAR78

THE PEN IS MIGHTIER THAN THE SWORD. WITH ONE STROKE LAST MONTH WE MOVED THE 31st TFW FROM HOMESTEAD TO EGLIN. OUR APOLOGIES.

CLASS A MISHAP COMPARISON RATE 77/78
(BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	77	0.0	5.3	5.8									
	78	16.0	12.4	8.7									
ANG	77	0.0	3.1	1.9									
	78	0.0	3.4	4.1									
AFRES	77	0.0	0.0	10.1									
	78	0.0	0.0	11.2									

★ U.S. Government Printing Office: 1978 735-074/12


FLEAGLE
ANDRETTI, EAT YOUR HEART OUT.
PIT
HARDISON
FLEAGLE'S LAST QUALIFICATION RUN.
BRROOOMM!!
INDY
COME ON BABY, JUS GIMME A LITTLE MORE SPEED.
5
THERE'S THE RED LINE, BUT I GOTTA GO FOR IT !
KLUNK!
KLANK!
RATTLE!
SHAKE!
BLAM!
MACHINES DO HAVE THEIR LIMITS.
YEAH, TOO BAD FLEAGLE DON'T KNOW HIS.
PIT NO 1
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