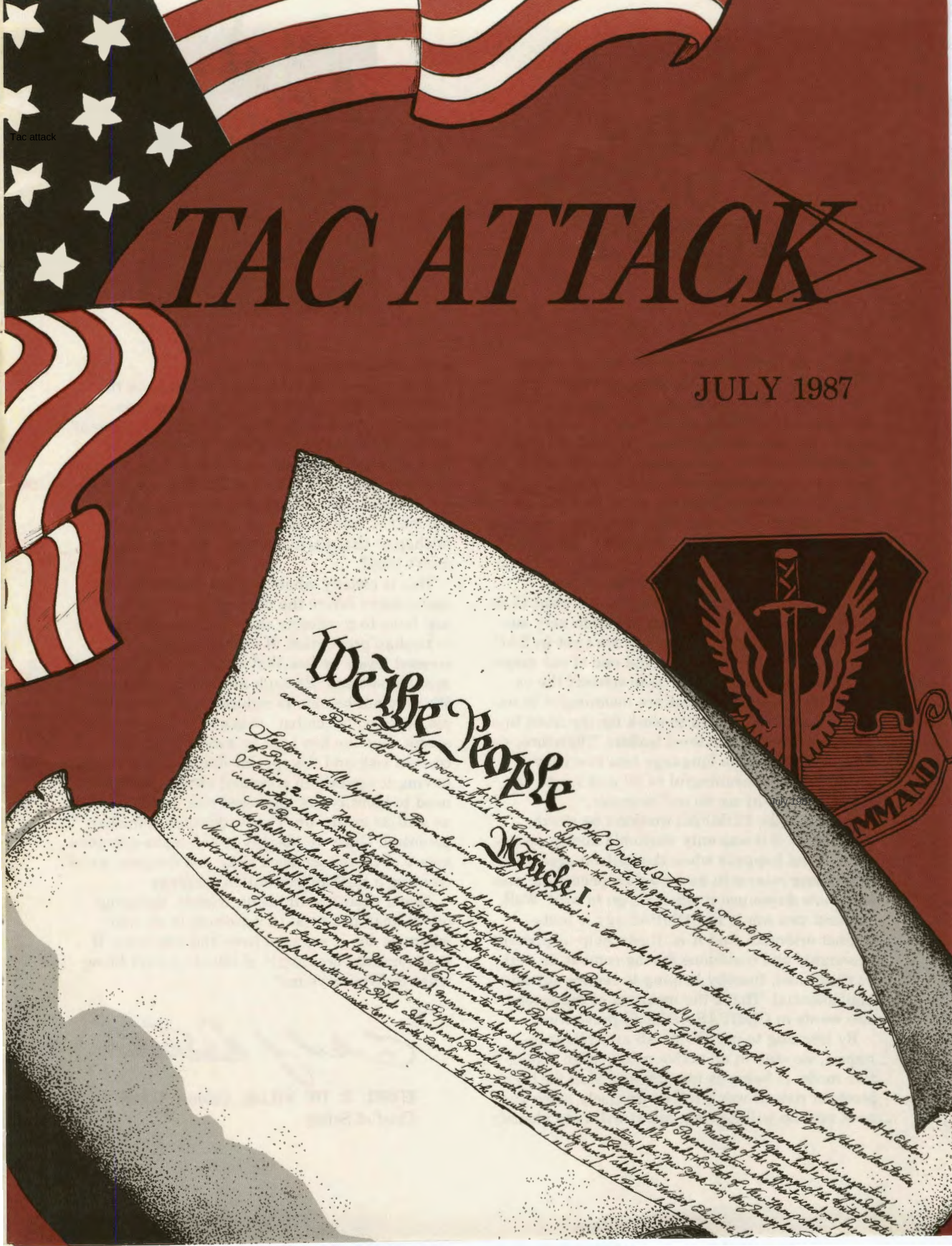
Tac attack

TAC ATTACK

JULY 1987



ANGLE OF ATTACK

We are coming down to the wire and hopefully will award the training contract for the Combat Oriented Mishap Prevention Analysis System (COMPAS) before August. This is a major first step in improving our methods and approach to mishap prevention. I'm convinced this systems approach will enable us to continue to reduce our overall mishap rates in all areas.

The kickoff is scheduled for a one-year test run at three TAC units. "Okay," you say. "If you're so convinced, why not teach the system to everyone right now, rather than at only three of our bases?" Well, the reason is simple. We want to do it right. Although the system has been very successful in other organizations, it isn't yet in TAC language. That's important, and one of our major goals during the trial year is to convert the existing terms into ones that are meaningful to us. This system is designed to work for the front line worker as well as top level leaders. Therefore, we first need to get the language into everyday terms that are meaningful to all and relate directly to the way *we* do our business.

For example, COMPAS wouldn't be worth much to us if it was only workable during peacetime. What happens when the balloon goes up? If everything relates to how we do a peacetime mission, how do we use it when we go to war? Well, the first two words in COMPAS say it best—combat oriented. And it is. It can help us prevent oversights and omissions during combat as well as peacetime, thereby helping to reduce our mishap potential. That's the meaning of the second two words in COMPAS—mishap prevention.

By learning to use COMPAS analysis techniques, we stay in an active rather than a reactive mode. It helps us identify and plan for high levels of risk. It won't tell us precisely when the next mishap will happen, but it will help identify periods for us to be on our toes.

This will enable the smart leaders from the front-line supervisor right on up to the commander to develop awareness programs that will reduce the potential for a loss. You know the type of programs I mean—remember the ones you normally have *after* a mishap occurs in your unit? What's the awareness like then? It's way up, isn't it, and chances of you having another mishap at that particular time are way down, aren't they?

This is exactly what we want to be able to do and achieve *before* the mishap. And we can. We just have to remember that awareness is the key to mishap prevention. If we are aware of the increased levels in risk that occur, we can reduce mishap potential through awareness programs. We may not be able to reduce a risk. For example, if we go to combat, that's a risk we have to accept. But the key is to be aware of the increased risk and the specific dangers involved in having to operate in a combat environment. We need to identify the increased risk on the ground as well as in the air. That's identifying mishap potential. Once we identify it and make everyone aware of those increased risks and dangers, we're creating a mishap prevention program.

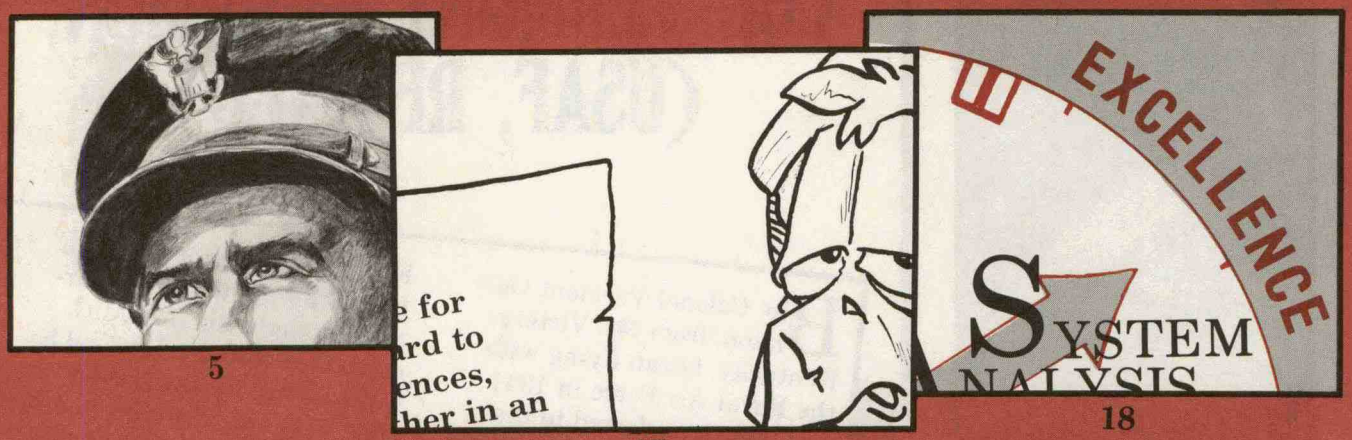
That's what it's all about, friends. Reducing our mishap potential to its lowest level, and when we do . . . we save lives and resources. If that's not the best angle of attack, I don't know what is. What's yours?

Edsel J. DeVille

EDSEL J. DE VILLE, Colonel, USAF
Chief of Safety

TAC ATTACK

DEPARTMENT OF THE AIR FORCE



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TACRP 127-1

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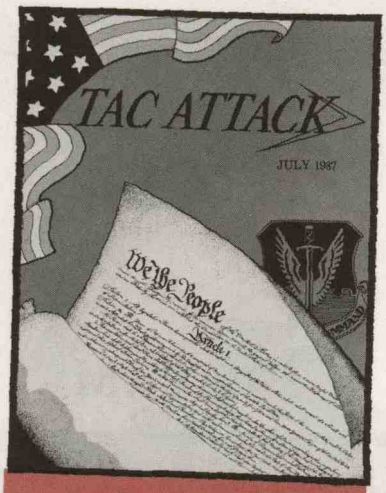

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COL VERMONT GARRISON, (USAF, RETIRED)

Bio: Colonel Vermont Garrison, from Mt. Victory, Kentucky, began flying with the Royal Air Force in 1941 and later transferred to the Fourth Fighter Group, flying with the 336th Fighter Squadron out of Debden, England. Flying the P-47, he gained his first air-to-air victories in December 1943 and January 1944. He then converted to P-51s and was considered to be a possible leading ace, but, on March 3rd, after claiming another victory which raised his total for the war to 7, Garrison was downed by ground fire and became a prisoner for the remainder of the war.

Garrison returned to the U.S. and active flying after the war. In 1953, he was reassigned to his old unit, now the 4th Fighter Interceptor Wing, in Korea. Flying the F-86, Garrison brought his first MiG down on February 21st and became an ace for the second time with two victories on June 5th. By July, he had scored four more kills for a Korean War total of 10.

Col Garrison's flying career totaled nearly 8000 hours, including nearly all the Century series aircraft, as well as the F-4 and B-57 in addition to those he flew during World War II and Korea. He served as commander of the 405th Fighter Wing when it was stationed at Clark Air Base and vice commander of the 8th Tactical Fighter Wing.

Col Garrison lives in Idaho and remains active with the Air Force Association.

TAC ATTACK: Colonel Garrison, how do you think a fighter pilot can best prepare himself to fly and fight?

GARRISON: Well, the obvious thing is to know your equipment to start with. Train as much as possible in what that equipment is supposed to do. If you're supposed to be air-to-air, air-to-ground or both, learn how to do your mission as well as possible. If you can, know a little bit about what you're going up against, what the other fellow has and how to beat him. I guess the best thing is to be able to fly your equipment to the feathered edge of its capability.

TAC ATTACK: Without going over that edge.

GARRISON: Yes. That's right. Because you may have to. Those were my primary goals—to know my equipment, know the mission that we were

INTERVIEW WITH A DOUBLE ACE

Maj Don Rightmyer
Editor, *TAC ATTACK*

tasked to do and and then know how to do it to the best of my ability.

TAC ATTACK: Your record shows that you were successful in doing that.

GARRISON: You hope you are better than the other guy. Assuming you are pretty well equal in equipment, if you are better than him, then you may beat him. At least you hope you will. In World War II and Korea, the equipment was pretty even in performance. Sometimes one side had a little edge, sometimes the other side had it. You can get a lot of arguments about Korea—the MiG-15 and F-86 Sabrejet. For my money, I would take the Sabrejet. Overall, it was a better airplane—more dependable and a better gun platform. I sure think our pilots were better. That was what made the difference. They had a lot more MiGs than we had F-86s, but they were short on good leadership.

That's important—good lead-

INTERVIEW WITH AN ACE

ership. The people that are going to follow you, that you command, must have confidence in you. I think a lot of good fighter pilots will do well whether they have a good leader or not. That's been proven. But more of them will do better under good leadership.

TAC ATTACK: You started out as a wingman and eventually became a flight leader. When you went out on a mission, what did you try to instill in your wingmen? What sort of things would you attempt to teach them so that they could eventually become flight leaders as well?

GARRISON: Well, how to offer each other mutual protection and to keep a "swivel" neck. Times have changed a little bit. There's a lot of electronic gear today that's going to tell you who's out there, but the things that were going to tell you that in those days were your eyeballs. Sometimes you might have radar telling you they're coming up; but when you get close in to the fight, well, it's your eyeballs. Look around and know how to look, too. You have to remember that that was all gun firing.

TAC ATTACK: I understand. As you say, you didn't have as many electronic means of detecting the enemy as we do today but visual contact is still key. Getting your eyes on the target is vital.

GARRISON: Certainly and it will be in the future as well.

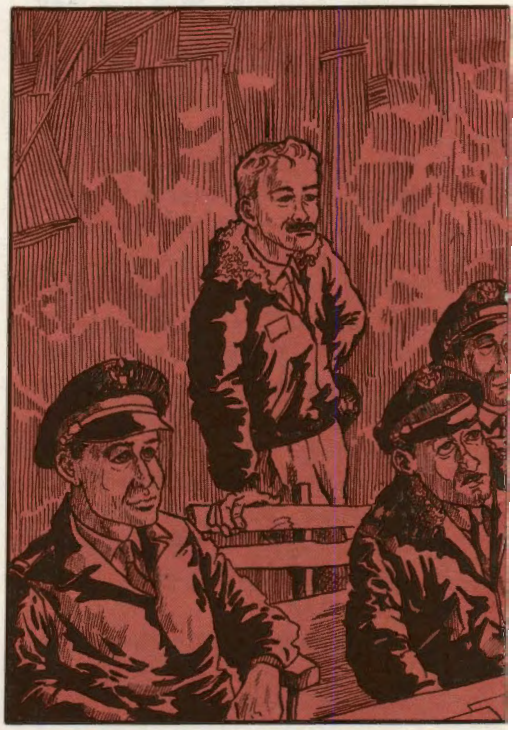
TAC ATTACK: It's been said that no one has figured a new way to crash airplanes. What sort of mistakes did you see guys making in World War II and Korea that led either to an airplane crash or a loss in an air-to-air engagement?

GARRISON: I saw what I thought was lack of skill causing landing accidents sometimes. Even though, in theory, they'd had good training, they still made mistakes.

In combat, I occasionally saw foolhardy aggressiveness lead to mistakes. Now, aggressiveness is absolutely necessary. A fighter pilot in air-to-air combat certainly isn't going to be successful without it. But stupidity is another thing. Don't allow yourself to get in front of somebody and leave him sitting back there where he can shoot you while you're trying to shoot somebody else.

TAC ATTACK: During World War II, Korea and Vietnam, did you ever do any training sorties as such or was every sortie totally committed to combat?

GARRISON: We were able to do a little training. Not a great deal because the pilots were supposed to already have that. A lot of fighter groups ran a "Clobber College" (for want of a better name) to break in the new guys, give them a flight or two and show them what you could. In Korea, we had a rule that you had to take them up and show them where the front lines were for obvious reasons. But, no, we didn't send a new pilot into combat right off on the first flight he made over there. We took him up and tried him out. We'd say "This is the way we want you to fly." Obviously he was going to be a wingman if he was a young kid. We broke him in as best we could. Unfortunately, you might not do as much as you wanted to because of pressing



needs for the aircraft.

TAC ATTACK: Did you fly the same airplane every day during World War II and Korea or did you switch airplanes on different days?

GARRISON: I flew ninety percent of my missions in World War II and Korea in what I called "my airplane"—the same airplane. You didn't fly it on every mission. If your airplane was broken, then you flew another one. But if my airplane was ready to go, then I almost always flew it.

TAC ATTACK: What sort of relationship did you have with your crew chief and the people that maintained your aircraft?

GARRISON: Outstanding. I don't think you could ever go back totally to that but I know that they are doing more of that now. You buy a whole lot. You get a feel for the airplane and your crew chief. It's the crew chief's airplane and the armorer's, too. My crew chief and armorer in Korea asked if they could have their names on one side with my name on the other. It was all right with me. They said, "Every kill that this airplane gets, we're going to put it under our names over here. The ones that you get, you can put on the other side." I thought that was great.

From my own experience, the crew chief-pilot relationship in nearly all cases was outstanding.

TAC ATTACK: You mentioned some thoughts on how a pilot can best prepare himself. What gave you the decisive advantage over your adversary during your air-to-air victories?

GARRISON: This is going to sound a little like self-aggrandizement. I had good eyes for one thing. I could shoot. And I thought I was a pretty fair pilot. I thought I could make the airplane do about anything that anybody else could make it do.

TAC ATTACK: No matter how good our eyes are, there is a lot that you can do with the way you use them. As you said, knowing how to look and keeping your head on a swivel is important. If you have the best eyes in the world but don't use them effectively, they won't do you much good. Some of your ability obviously came as a result of the practice and experience you had.

GARRISON: Well, I was always interested in that and did lots of shooting. I don't know how good I was. I won several gunnery awards. I led the first worldwide weapons meet. Of course, I did a lot of shooting. Before going to Korea, I had just spent a couple of years at Nellis. That was our business.

INTERVIEW WITH AN ACE

TAC ATTACK: So you were a weapons instructor there at Nellis?

GARRISON: Part of the time. I was a squadron commander most of the time; of course, you're in the same business. We trained for both air-to-air and air-to-ground—strafe, dive bombing and just air-to-air dogfighting.

TAC ATTACK: You obviously had a few hours of experience under your belt from your World War II experience and postwar flying before you arrived in Korea.

GARRISON: Not so much in World War II, compared to Korea. But, going to Korea I had quite a few hours. Nobody had very much flying going into World War II. I thought they were all kids. I was a little older than everybody else. We had 21-year old majors, colonels that had to be accompanied by their mothers into the bar and things like that.

TAC ATTACK: You had the opportunity on several occasions to serve in leadership positions. What did you consider to be your greatest challenges as a leader of fighter pilots?

GARRISON: I don't know if motivating them is the right word or not. Some people can motivate them right. It seemed to me that among fighter pilots, some people were just automatically motivated. Give them the guidance and experience they need and hope they listen. If they respect you, they will. Go through the training that you need to to keep them up on that feathered edge all the time.

TAC ATTACK: How do you feel a squadron commander goes about getting the respect of his people?

GARRISON: I think being honest is very important. If your people don't trust you to be honest about things, they're not going to respect you very much. Let them know that you have their welfare and their training under consideration at all times. Everybody likes to get promoted but don't give your people the feeling that you're just using them as a stepping stone to further your own career.

TAC ATTACK: What is your view of the role of the flight leader and the wingman?

GARRISON: In my view, two people fighting together are about 10 times as strong as one alone. I always figured I was going to see the enemy. Of course, you hope your wingman does as well. Fortunately, I looked around myself. I didn't depend on my wingman or my element lead to do all the looking back there. You shouldn't. Do your own looking. Everybody should be looking around at all times.

In Korea, I had a wingman that shot an aircraft down when I switched places with him. We were flying pretty high over there—45 to 50,000 feet some of the time. You just don't horse an airplane around up there, especially with those airplanes, because you're just about hanging there. When we got attacked, he was in the best position for the kill, so I said, "Go." My wingmen knew that and it helped morale, too.

TAC ATTACK: What were some of the qualities that you most admired about the instructor pilots or flight leaders you served under in your early days? How did they help you learn to become a better pilot?

GARRISON: In combat, having a leader who knew what he was doing—what he was about. We had some good ones in every outfit.

Experience, assuming you have everything else, has a lot to do with it. I followed a guy named Don Blakeslee, our group commander. He probably had more fighter experience than anybody else in Europe, maybe in the entire Army Air Forces. He knew what he was

about. We also had guys like Jim Goodson, Willard Millikan, and several others. When you got into a hassle and needed a little assistance, you never heard those guys say, "I'm short on fuel." They were there; they would come if they possibly could. You get to know and appreciate those kind of people.

TAC ATTACK: What do you think is the most important thing to remember when you're engaged in combat?

GARRISON: There are all kinds of combat. Are you going to hit a target on the ground? If it is an important target (and it ought to be or they shouldn't be sending you against it), then go in to kill the target. Take advantage of all the equipment you've got if you're going to be shot at (and you will be today with surface-to-air missiles and that kind of stuff). Take all the training you can get. Keep your mind on what you're about. What are you there for—to kill that target. It doesn't do much good to go in and peck at it a little bit, lose some people, not get it and have to go back after it again the next day.

TAC ATTACK: Aircraft today are more complex than when you first started flying but all flying requires some sort of preparation. How did you prepare for missions?

INTERVIEW WITH AN ACE

GARRISON: Obviously you want to be as well briefed as possible on what you're supposed to be doing: where you're going in, how you're going to egress, how you're going to get out if somebody gets hit. Know as much about the whole situation as you possibly can. If it's a dive bomb mission, know where the flak or surface-to-air missiles are located if you can, how best to get in and out. If somebody gets hurt, how best to get him out, if possible. All of those things.

We briefed pretty thoroughly over in Southeast Asia, going up into the Hanoi area. Sometimes we made a long day of it. Well, we briefed thoroughly everywhere, of course some things didn't require much briefing. You already knew what it was all about. If you were going up on the Yalu River in Korea to hunt for MiGs, there wasn't much to it. You wanted to know what the weather was going to be or if there was any possibility of weather. We, of course, always tried to get high if we possibly could. They say altitude above you and runway behind you are the two most worthless things in the world. In those days you couldn't get to 45,000 feet by lighting the burners and zapping up there real quick, so we tried to use the weather to our advantage and plan ahead.

TAC ATTACK: How important is flight discipline?

GARRISON: Well, air discipline is very important. Discipline means many things to people. Discipline used so that you give no flexibility at all is bad in my opinion. I've known quite a few fighter squadron commanders to do that. But, discipline means many things. I didn't do that—just say "you have to stay back there and that's the only place you can go." Circumstances change and you have to be flexible to respond to that.

Normally if the wingman saw the enemy and I didn't (which was seldom) I said, "You tell me and I'll let you go and I'll be covering you." But I never worried much about it because I figured I was going to see the enemy before they did anyway—and I did. Discipline is very important. But, I don't like to use the term discipline to mean you've got to march in lock step all the time. Fighter pilots aren't very good for that anyway.

TAC ATTACK: What are your views on flying and safety? How do we achieve that?

GARRISON: I don't have an answer for it. I know that safety is an absolute must. If you want to have perfect safety, then you wouldn't fly the airplanes. They like to say that we're going to train as we'll fight. I don't really believe that but I think you should come as close to it as you can.

When you talk about breaking airplanes today that cost millions of dollars with no replacements for them, you have to think of these things. We had lots of accidents way back but airplanes didn't cost as much. Could we have done a better job in safety? The answer is yes. We certainly could have done a better job. I don't think we did as good a job as the Air Force does today. Maybe that's because of the time and era, I don't know. I think safety as a rule has generally improved over the years.

A lot of us, including me, didn't put as much emphasis on safety as we should have. I don't think you can put too much emphasis on safety as long as you don't let what you're doing get in the way of the training that needs to be done. In some cases, you'll probably have to do a little bit of that.

TAC ATTACK: So, as you've said before, the important point is to remember what you're about?

GARRISON: Sure, if you're going to be successful in what you're doing, you're going to have to keep your wits about you.

TAC tips

INTERESTING ITEMS,
MISHAPS WITH MORALS,
FOR THE TAC AIRCREWMAN

Instant reactions - just add analysis

What's the first thing you do in the simulator when the Master Caution light comes on? That's easy—look at the telelight panel, see which lights are shining at you, and do what it takes to make them go out, right? Not so fast. This system of problem solving usually works OK in the simulator, but it may breed bad habit patterns for airborne emergencies. It lacks a few basic life-preserving steps like *maintain aircraft control* (knock off whatever you're doing and fly the jet) and *analyze the situation* . . . Sometimes instant reaction is not warranted or welcomed.

What's the worst thing that could make a bunch of lights come on? How about a flameout? A pilot flying a two-engine fighter noticed the left generator, left oil pressure and left hydraulic system lights during his pull-up for a closed pattern. In the base turn, he reset control augmentation switches and troubleshot his hydraulic system, but never took a second to check the left engine's rpm or temperature gauges. Guess what lights come on when your left engine flames out . . .

When your Master Caution light brightens up your cockpit, take a glance at the tachs on your way to or from the telelight panel. You might discover an immediate need to employ single-engine procedures instead of coping with a perceived multiple emergency.

What's worse than wrinkled clothes

"And don't forget to pack your shoes and a belt." Remember those words from UPT when you were getting ready for your first overnight cross-country mission? Showing up at destination with wrinkled clothes was bad enough; having to wear flight boots with your civvies was ridiculous. But those days are over. Now we go cross-country with travel pods, and you can just about bring the whole closet. But it's still possible to show up missing a few articles.

One pilot asked the transient alert crew chief to fasten the door on his aircraft's travel pod while he did his preflight walk-around inspection of the rest of the aircraft. After the crew chief closed the door, he was called away to help move and connect the power unit to the aircraft. In a classic case of habit pattern interruption, both the pilot and the crew chief forgot to return to the travel pod and secure the door.

The aircraft took off normally, and no one noticed anything was wrong for about 15 minutes. Then the wingman noticed the travel pod door was open and a red streamer was flapping in the breeze. After a turn back to the base they had departed, the streamer was no longer around. Neither was the downlock for the main landing gear that the streamer was attached to.

Since we also carry the aircraft's 780 gear (which includes several heavy metal objects) in the travel pod, it's more than a matter of wrinkled or missing clothes.

Don't forget your shoes or your belt. And don't forget to check the travel pod door.

K Factors and combat aircraft parking

MSgt Denis Jones
TAC Weapons Safety

I'm sure everyone has seen the movie, "How To Stage a Disaster." You know, the Air Force training film where Bien Hoa AB, Vietnam, essentially blew up. This disaster was caused in part by parking explosives loaded aircraft too close to one another. Every person I have talked to recently thinks that this disaster couldn't happen again. Don't believe it—it could.

Let's start with a scenario to show how this could happen if explosive safety rules are ignored or at least set aside for a short period of time. A wing starts a Phase I Self-Initiated Operational Readiness Inspection, a three-day exercise where one AMU will load all mission capable aircraft with their primary munitions. The aircraft, F-4s, are parked as specified by AFM 86-2, Standard Facility Requirements, (Figure 1) which is roughly the wing span plus ten feet. This manual does not address explosives loaded aircraft parking. This is left to AFR 127-100.

AFR 127-100, Explosive Safety Standards, describes combat loaded aircraft as above ground magazines. That means they require K-11 separation between each other and K-18 separation from related facilities.

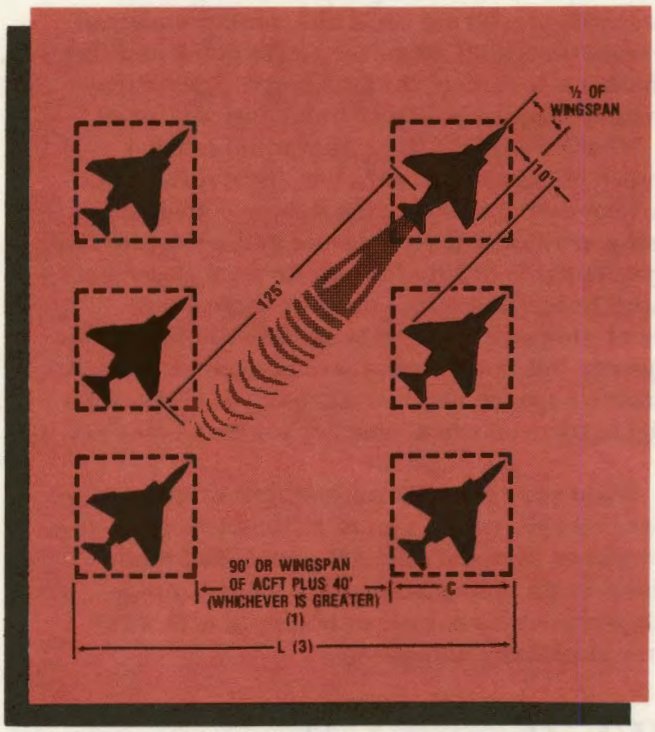


figure 1.

Alright, alright, I know I just lost you when I started with the "K" factor stuff. K factors are constants which have been determined through testing or mathematical formulae to provide a certain amount of protection from blast (over-

pressure) which is produced by an explosion. The larger the K factor, the greater the amount of protection provided. Some resources require greater protection than others; for example, buildings with people assigned inside require greater protection (K40/50) than munitions storage igloos (K1.25). General K factors are already computed for you in AFR 127-100, table 5-1 (Figure 2) and all you need to know is what type of facilities you are measuring for separation. Since we are discussing combat aircraft all we need to know is that the distance between explosives loaded aircraft requires K-11 and from related facilities requires K-18.

OK, OK, these K factors still don't relate to distance. This is why the writers of AFR 127-100 provided table 5-2 (Figure 3), but you need to know what the Net xplosives Weight (NEW) is for the munitions on the aircraft. For this, you go to TO 11A-1-46 to look up the stock number and find the NEW for that item.

Now that I've explained what the K factor is and where to look up the NEW for a specific item, let's fit them together. Our wing with F-4s starts their three-day exercise and loads 6 MK-82s on all their FMC aircraft and we know that the aircraft will require K-11 separation. K-11 separation is figured by finding the total NEW of the explosives loaded on each aircraft. A single MK-82 has a NEW of 192 lbs of explosive so take 6 times 192 which will result in 1152 NEW of 1.1 explosives on each aircraft. Now go to table 5-2 (Figure 3). Find the line of weights where 1152 falls, follow it over to the K-11 column and read the number, which in this case will be 126 feet. That means that this wing's aircraft must be separated by 126 feet (measured between the explosives of one aircraft and the explosives of the next aircraft). This equates to a protection factor of K-11. Now, how close can we park the aircraft to related facilities like squadron operations? We know the required protection factor is K-18 from table 5-1 and that the NEW is 1152. Find the NEW under the weight line and follow it over to the column K-18 and the distance is 210 feet. Do you have it?

TABLE 5-1. Quantity - Distance Separation Criteria.

HAZARD CLASS/DIVISION —			CLASS DIVISION 1.1									
	COLUMN —		1	2	3	4	5	6	7	8	9	10
	FROM: → / TO: ↓ / EXPOSED SITE (ES) (EXPLOSIVES) / POTENTIAL EXPLOSION SITE (PES)		EARTH COVERED IGLOO 1				ABOVE GROUND MAGAZINE UNBARRICADED 2	ABOVE GROUND MAGAZINE BARRICADED 2 3	BARRICADED MODULE 38	OPERATING LOCATION UNBARRICADED 46	OPERATING LOCATION BARRICADED 3 46	COMBAT ACFT PARKING AREA
			SIDE	REAR	FRONT UNBARRICADED 39	FRONT BARRICADED 39						
1	EARTH COVERED IGLOO 1	SIDE	K1.25 14	K1.25 14	K2.75 14	K2.75 14	K4	K4	K1.25 14	K4	K4	K4
2		REAR	K1.25 14	K1.25 14	K2	K2	K4	K4	K1.25 14	K4	K4	K4
3		FRONT BARRICADED 39	K2.75 14	K2	K11 5	K6 5	K11	K6	K6	K11	K6	K11 7
4		FRONT UNBARRICADED 39	K2.75 14	K2	K6 5	K6 5	K6	K6	K6	K6	K6	K6
10	COMBAT ACFT PARKING AREA		K18	K18	K30	K30	K30	K30	K30	K30	K30	K11 22 7
33	RELATED FACILITY 36		K18 6	K18 6	K18 6	K18 6	K18 6	K18 6	K18 6	K18 6	K18 6	K18 6

figure 2.

AFM 86-2 separation for F-4s is 48 feet (from centerline to centerline). As you can see, that's a little bit short of K-11 separation (126 ft). Using K-11 separation, we should only load every fourth aircraft spot and leave the parking spots between empty.

Here are some other things which should be considered: Are more munitions located at less than K-11 distance from the aircraft? If so, you should add the NEW of those munitions into the

K FACTORS AND COMBAT AIRCRAFT PARKING

formula. Are there any non-related facilities in the area such as the fire department, wing headquarters or the control tower? If so, they must be located at greater distances.

Earlier I stated that K factors equate to protection from overpressure caused by an explosion. Overpressure, if great enough, can cause immediate propagation of explosions from one aircraft to the next. To protect explosives from propagation, they must be separated by K-11 distance. While K-11 protects from propagation, it provides little protection from explosive communication caused by fire or fragments. However, if our aircraft were parked at 126 feet and a mishap occurred, the overpressure which would be experienced by the closest aircraft to the explosion would be 7.8 psi. The overpressure would totally disable these aircraft, buckling the bulkheads and panels. The next aircraft would be 252 feet from the mishap and would experience 2.8 psi, requiring major depot repair. The remaining aircraft would suffer damage by fragments and could be repaired by local specialists. This is assuming that no explosive communication by fire or fragments occurred. By parking our aircraft at K-11 distance, we will lose two aircraft completely and another two aircraft until the depot level repairs are made. The remaining damaged aircraft could be repaired locally. While this is bad enough, if the same mishap happened while the aircraft were parked at 48 feet as specified by AFM 86-2, the closest aircraft would experience 120 psi overpressure and the explosion would propagate to a point where K-11 distances exist. Remember that the greater the explosives weight, the more distance will be required to meet the K-11 separation criteria. The probabilities are that the entire row of explosives-loaded aircraft parked at 40 feet would be destroyed.

To make this mishap more severe, during an exercise more personnel are on the parking ramp. All of these personnel would not have a chance to evacuate to the 2000 foot criteria. Personnel protection for a NEW of 1152 lbs requires K-18 distance (210 feet) and at this distance they would experience 3.5 psi overpressure. We could expect 10 percent ear damage at this distance. Even at 2000 feet, 2% of the personnel in the open could be killed by hazardous fragments.

The bottom line is that our resources require protection. The more protection required, the larger the K factor and the greater the separation. These are weapons of war designed to kill and destroy the enemy. If the weapons are mishandled or improperly positioned, you become the victim.

TABLE 5-2. Quantity - Distance Separation Distances.

NET EXPLOSIVE WEIGHT (POUNDS)			DISTANCE FROM POTENTIAL EXPLOSION SITE TO EXPOSED SITE (FOR GIVEN K-FACTOR) (FEET)														
OVER-	NOT OVER-	CUBE ROOT OF UPPER LIMIT	K1.1	K1.25	K2	K2.5	K2.75	K3	K4	K4.5	K5	K6	K7	K8	K9	K11	K18
			IM	IM	IM	IM	IM	POL	IM	IM	HAS	IM		HAS	IL	IM	IL
0	1	1.00	2	2	2	3	3	3	4	5	5	6	7	8	9	11	18
1	2	1.26	2	2	3	4	4	4	5	6	6	8	9	10	12	14	23
1,000	1,500	11.45	13	14	23	28	31	34	46	52	57	69	80	92	105	126	210
1,500	2,000	12.60	14	16	25	32	34	38	50	57	63	76	88	100	115	139	230
2,000	3,000	14.42	16	18	29	36	40	43	58	65	72	86	100	115	130	158	260
3,000	4,000	15.87	17	20	32	40	44	48	63	71	79	95	110	125	145	175	290

figure 3.

OUTSTANDING ACHIEVEMENT IN SAFETY AWARD

Vehicle Operations Branch, 363d Transportation Squadron

363d Tactical Fighter Wing Shaw AFB, SC

The 363d Tactical Fighter Wing's Vehicle Operations Branch has demonstrated its dedication to safety by providing Shaw AFB with an accident-free environment in vehicle operations for 180 consecutive days.

This branch is responsible for providing a 120 vehicle fleet 24 hours a day, 7 days a week in support of 9AF, USCENTAF, the 363 TFW and the 507 TAIRCW. Over 25,000 passengers and 7 million pounds of cargo were safely moved more than 400,000 miles to myriad locations—an unprecedented safety record for a vehicle operations branch of this size.

The success of the 363d's Vehicle Operations Branch is due to a conscious effort to thoroughly train new operators on all aspects of each vehicle. The branch has also strategically placed a tote board in the operations compound displaying the number of accident-free days accumulated. This visibility provides incentive for their drivers to practice good safety habits.

The men and women of the 363d Transportation Squadron's Vehicle Operations Branch continual strive for excellence, their professionalism and extraordinary safety record have earned them the TAC Outstanding Achievement in Safety Award.

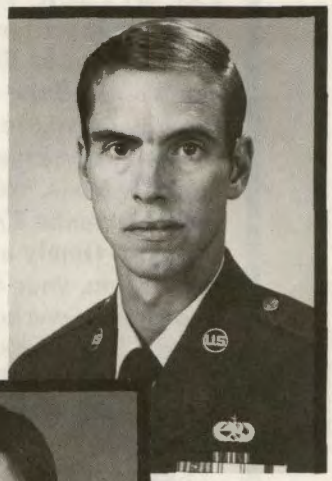
While performing normal duties during aircraft recovery, MSgt Tedford and SSgt Novak spotted, from separate locations, an RF-4 taxiing past their area with a serious fuel leak; of which the aircrew was unaware. Both sergeants immediately notified individuals with radios to declare an emergency while they proceeded to flag down the pilot who stopped the aircraft. Once the aircraft was stopped, they communicated the need for an immediate engine shutdown.

MSgt Tedford coordinated the emergency response while SSgt Novak identified the location of the fuel leak as the door 22 area. This area is located in front of the auxiliary air doors and a catastrophic engine bay fire could easily have been caused by leaking fuel being blown back into the engine bay by prevailing 25-knot winds.

Recognizing the severity of the problem, SSgt Novak felt that he could stop the leak even though fuel continued to stream out of the aircraft.

Unable to lower door 22 due to the high performance centerline tank, SSgt Novak lowered doors 28 L/R, reached inside and found a leaking drain valve. His technical expertise and intimate knowledge of the aircraft allowed him to close the valve by feel which stopped the leak.

The alertness of MSgt Tedford and SSgt Novak to aircraft operating outside their immediate work area and their positive actions to remedy a serious safety deficiency have earned them the TAC Outstanding Achievement in Safety Award.



SSgt Eric D. Novak

67 AGS, 67 TRW Bergstrom AFB, TX

MSgt David B. Tedford

WHERE IS YOUR AI

Take a second and look at our masthead on page 4 where our magazine's staff is listed every month. You'll notice that there are no staff writers assigned to us here at *TAC ATTACK*. That's because most of our writers are located out there in the field—those of you who read the magazine. We rely on you to help us put the magazine together on a monthly basis. We need your inputs to make *TAC ATTACK* relevant, timely and interesting for you, your daily needs and your co-workers throughout the TAC workplace; whether it's the flightline, the cockpit, the avionics shop or the office.

I know a lot of you have thought about writing an article for us, but just never seemed to get around to it. Let me encourage **you** to take the time **now** to put your thoughts and experiences down on paper so we can share them with everyone else in TAC. You'll be glad you did and we certainly will as well.

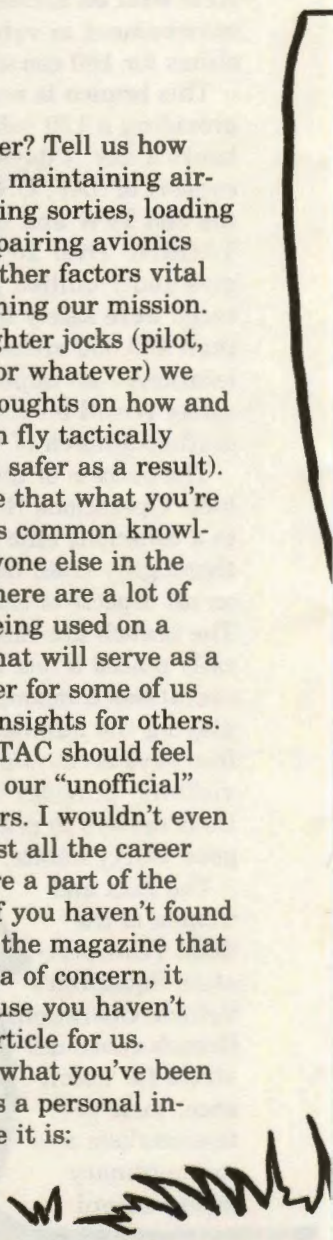
What kinds of articles are we looking for? You name it and we're looking for it. We can use your "There I Was" accounts of personal experiences where you or someone you know learned a valuable (and sometimes painful) lesson from which the rest of us can benefit. But, we're not just looking for the "bad news" type of experiences. Have you ever found yourself in a situation that was rapidly going downhill and you were able to prevent a potential mishap by breaking the chain of events? Tell us about it. Your personal experiences put real flesh and bone details around the principles of working and flying safely that we talk about each month.

For example, we need to hear from you maintenance types about how you operate in and around the flightline on a daily basis in all kinds of readiness conditions and weather. What standards of excellence do you operate by that prevent you from having some of the kinds of mishaps we write about in "Chock Talk"? How do you relate to all the other activities around the ramp that get the mission done in a safe and efficient manner? Tell us how you go about maintaining aircraft, launching sorties, loading ordnance, repairing avionics and all the other factors vital to accomplishing our mission.

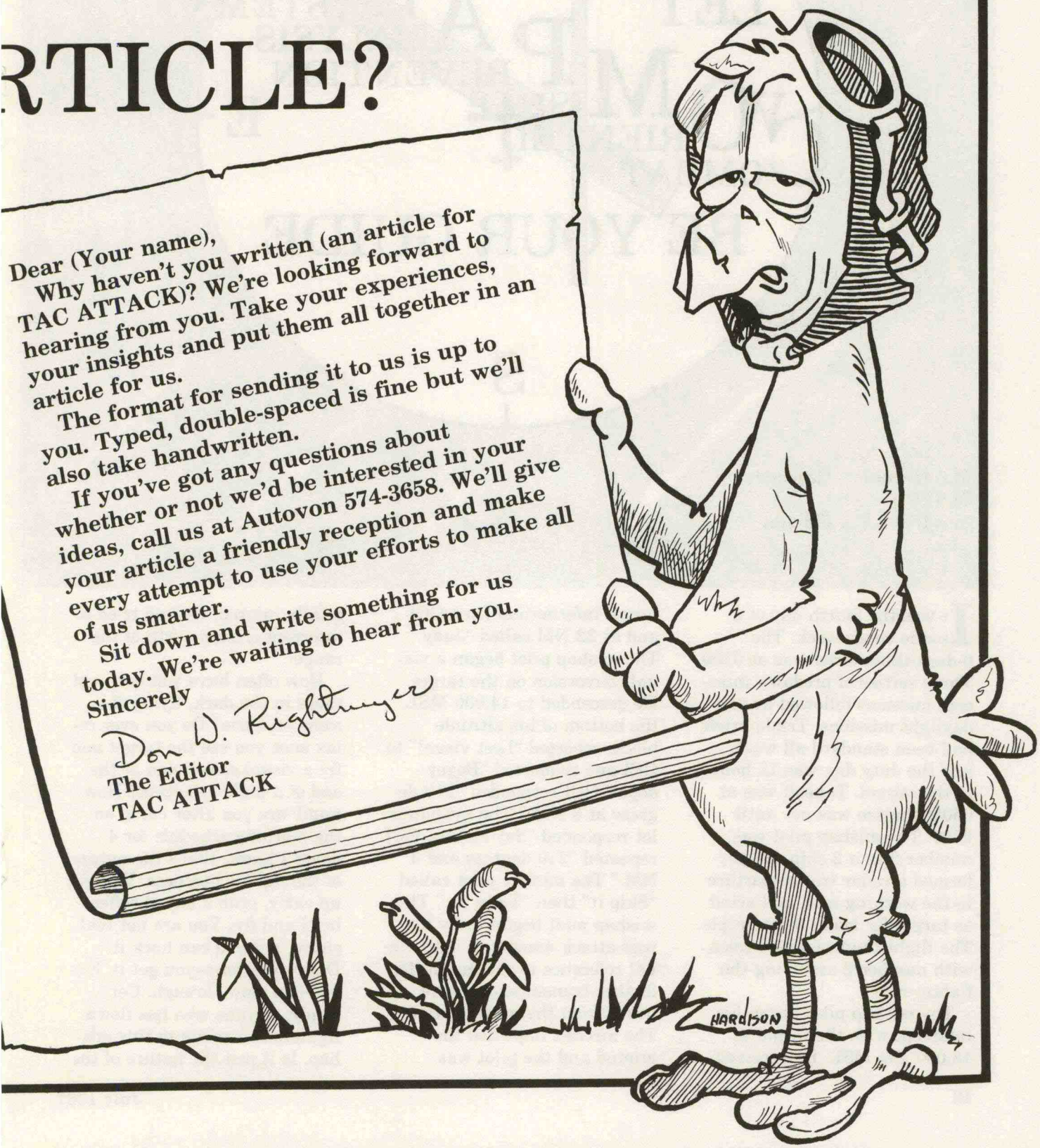
For you fighter jocks (pilot, WSO, EWO or whatever) we need your thoughts on how and where we can fly tactically smarter (and safer as a result). Don't assume that what you're doing right is common knowledge to everyone else in the command. There are a lot of good ideas being used on a daily basis that will serve as a good reminder for some of us and as new insights for others.

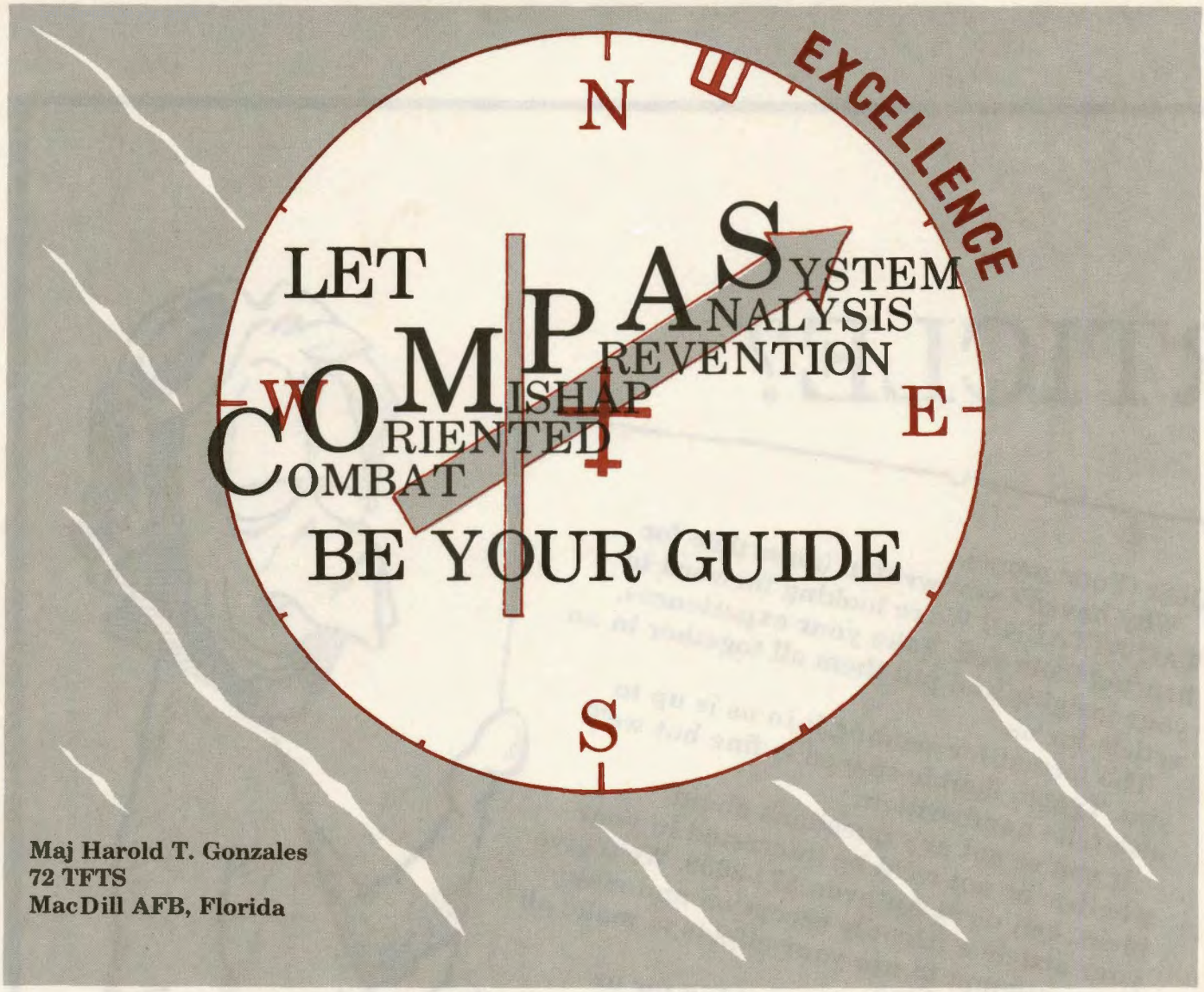
No one in TAC should feel left out from our "unofficial" staff of writers. I wouldn't even attempt to list all the career fields that are a part of the TAC team. If you haven't found an article in the magazine that hits your area of concern, it may be because you haven't written an article for us.

Finally, if what you've been waiting for is a personal invitation, here it is:



RTICLE?


Dear (Your name),
Why haven't you written (an article for TAC ATTACK)? We're looking forward to hearing from you. Take your experiences, your insights and put them all together in an article for us.
The format for sending it to us is up to you. Typed, double-spaced is fine but we'll also take handwritten.
If you've got any questions about whether or not we'd be interested in your ideas, call us at Autovon 574-3658. We'll give your article a friendly reception and make every attempt to use your efforts to make all of us smarter.
Sit down and write something for us today. We're waiting to hear from you.
Sincerely
Don W. Rightmyer
The Editor
TAC ATTACK
HARDISON



Maj Harold T. Gonzales
72 TFTS
MacDill AFB, Florida

It was the fourth day of a sortie surge week. The 0-dark-thirty brief was at 0300. Three sorties of predawn intercept missions followed by two daylight missions. Triple briefs had been standard all week and the duty day was 12 hours to the second. Takeoff was at 0500; sunrise was not until 0709. The mishap pilot was number 2 in a 2-ship. He performed a radar trail departure to the working area and acted as target for lead's 3 intercepts. The flight then switched roles with number 2 assuming the fighter role.

The mishap pilot began his intercept with the target at 18,000 feet MSL. He received target information from GCI and at 22 NM called "Judy." The mishap pilot began a visual conversion on the target. He descended to 14,000 MSL, the bottom of his altitude block, reported "Lost visual" to GCI and requested "Bogey dope." GCI responded "210 degrees at 3 NM." The mishap pilot responded "Say again." GCI repeated "210 degrees and 3 NM." The mishap pilot called "Skip it" then "Tally ho." The mishap pilot began to fly his post-attack maneuver with visual reference to the target. No further transmissions were heard from the mishap pilot. The aircraft impacted the ground and the pilot was fatally injured. He had tried to intercept a train north of the range.

How often have you been out there in the dark, flying this same scenario? Do you ever relax once you see the target and fly a visual conversion at the end of a night intercept? How numb are you after being on the morning schedule for 4 days? I know, that's the nature of the fighter business. You get up early, grab a cup of coffee, brief and fly. You are not real sharp, but you can hack it. Disorientation—you get it, but you can plow through. Certainly, anyone who has flown fighters can relate to this mishap. Is it just the nature of the

business? Do we just think of this as the cost of doing business or can we prevent this type of mishap? Using the TAC COMPAS system, let's look at this mishap in greater detail. Let's see how many indications there were that this pilot should not have been flying this sortie at this time.

First, you are probably asking, "What is the TAC COMPAS system?" COMPAS stands for Combat Oriented Mishap Prevention Analysis System. Simply put, COMPAS uses a logic tree (you know, like those charts in the Dash One that try to make pilots handle emergencies like a computer) to provide a framework for taking a step-by-step look at a problem. These analytical trees are tools in understanding a mishap sequence, not just as an independent event, but as a failure of a total system. When this type of approach is used, normally many more contributing factors that led to the mishap are discovered. The implication is that such in-depth investigation should lead to better recommendations to keep these mishaps from recurring.

On the positive side, COMPAS's best application is to identify problems with a system before they result in mishaps. Two of the areas COMPAS evaluates are change (what you or your people are doing different from normal and what the impact is) and system performance review (what the UEI does, without the pain of a re-visit in 90 days). Bottom line, COMPAS is a road map that allows an organization to take a meaningful look at itself and its operations before a mishap investigation does it for them.

Using COMPAS, let's take apart the scenario described above. The key to remember is that many people and supervisors had identified one or two of the indications of trouble, but the mishap still happened. TAC COMPAS allows us to put these independent observations into a framework from which a decision could have been made.

The pilot was an experienced fighter pilot with over 1000 fighter hours. He had an excellent record as an instructor pilot in a 2-seat fighter; however, he had just transitioned into a new single-seat fighter. At the time of the mishap, he had less than 20 hours at his new base and was still in Mission Qualification Training.

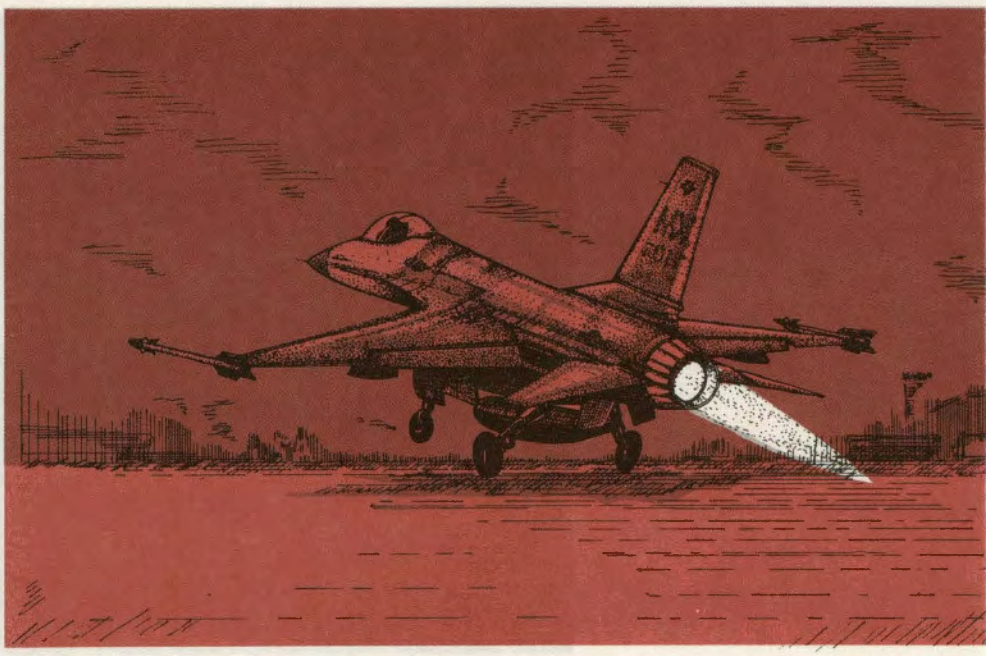
The new aircraft, apart from being a single-seat fighter, had several innovations. The HUD was a new tool for the mishap pilot and the large bubble canopy and instrument locations were different. The aircraft didn't have the "feel" nor the aural warning of the old one.

The mission briefing was adequate, but rushed because of the requirement to brief 3 missions. It was the fourth day of the surge, so much of the "motherhood" items were standard. Nothing much was said about night procedures or possible disorientation.

The range was totally dark. There was no moon and very few ground lights. Though there were a few scattered clouds, it was night VMC. The area however, was a "great black hole."

The aircraft had no low-altitude warning system or radar altimeter. The location of the radar/electro-optical (REO) display caused reflection problems on the canopy. Though the HUD gave copious amounts of information, it was not easy to remain spatially oriented with reference only to the HUD.

The wing had been involved in the normal routine of 3-go days. The normal duty day, when they weren't flying a surge schedule, was 12 hours.



LET COMPAS BE YOUR GUIDE

Maintenance was attempting to support a 22 UTE and the normal flying day was a 14/12/10.

The wing surge was designed to support all four squadrons' participation. Because of insufficient daylight, the decision was made for morning players to fly 1 night and 2 day gos. Afternoon flyers flew 1 day and 1 night sortie. This exercise was to prepare the wing for an ORI expected in the near future.

To fill the surge schedule, the squadron needed every pilot available, including MQT. Squadron supervision had to cover a 20-hour period from first briefing to last landing. In addition, with winter approaching, the squadrons were trying to bank sorties. There was a "Can do anything" mentality prevailing.

The mishap pilot was also subjected to several stresses in his personal life. He had reported into his new squadron 36 days before the mishap. He had flown 15 times in those 36 days, 9 of which had been during the last 3 days. He was eager to finish MQT and become a flight lead again. He had moved into base housing 8 days prior to the mishap. Though still trying to get settled, the pilot asked to fly in the surge in order to get the flying time. During his off-duty time, the pilot was mission planning at home and trying to unpack since his wife was unable to lift heavy objects due to an advanced pregnancy. The mishap pilot averaged 4.8 hours sleep per night during the surge. Because of the briefing time, he was attempting to sleep during his normal awake time and fly during his normal sleep cycle. The result was chronic and cumulative fatigue. His plate was full, but his ego would not allow him to call "Knock it off."

All these factors added up to a Class A mishap, a destroyed aircraft and the loss of a highly skilled pilot.

We in the TAF have gotten smarter. The 3-go day has been reduced to a normal 2-go day. ORI surge rates have been reduced from 100 sorties per day and 24-hour tasking to a more realistic 74 sorties per day and 18-hour tasking. Flight commanders have become more in-

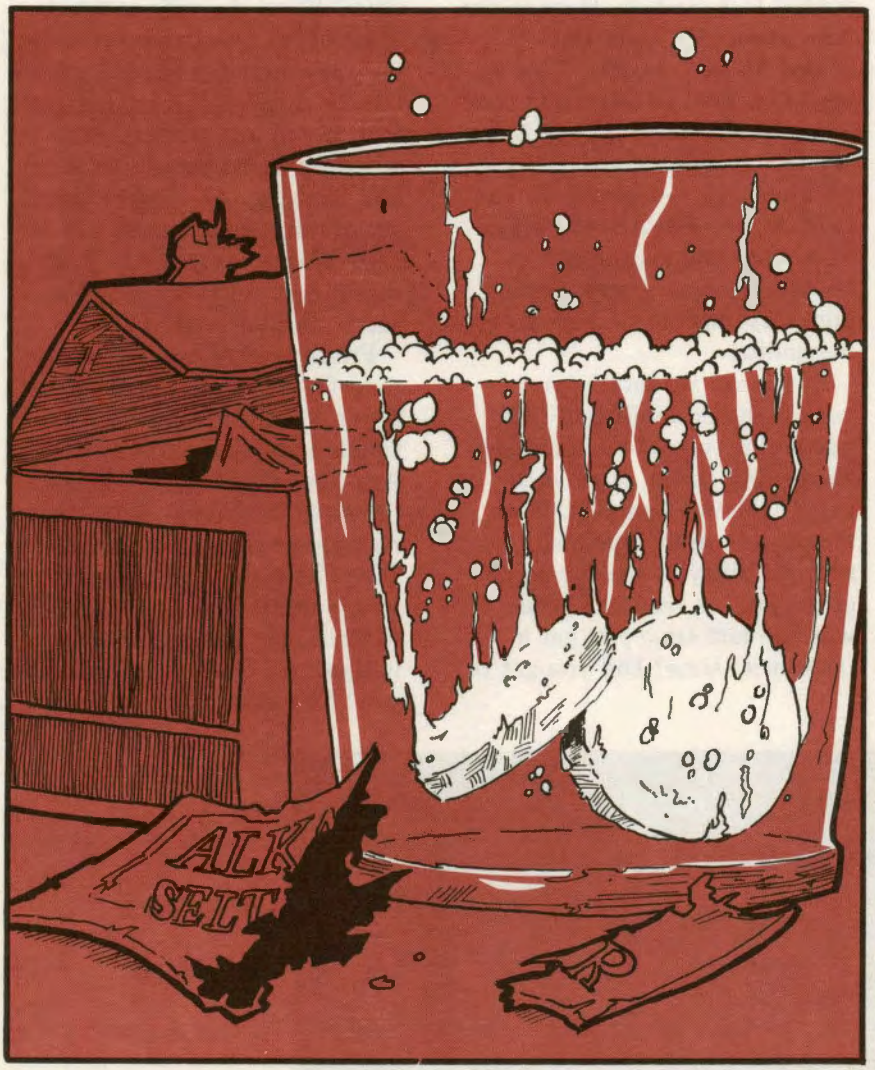
volved with their people and are now deeply involved in programming. Briefing guides stress night procedures, and there has been an increased emphasis on spatial misorientation and disorientation. Avionics innovations such as CARA and line-in-the-sky are providing the pilot with altitude warning. Perhaps any one of these innovations would have prevented this mishap.

Unfortunately, all of these changes were not the result of mishap investigation board recommendations from this one incident. Without the TAC COMPAS system to guide investigations, it has taken the recommendations of over 30 mishap boards to bring the TAF to the present configuration, which might have prevented this mishap. Here is the true potential of the TAC COMPAS system. But, let's be realistic. TAC COMPAS is not going to stop all mishaps, but perhaps it will reduce the price we must pay to learn from our mistakes. COMPAS will allow us to gain the maximum knowledge from every mishap and prevent many others from happening.

But, have we totally prevented the possibility of this particular type of mishap from happening again, even with this COMPAS analysis? How about each pilot's individual responsibility to see the signs of impending trouble? When was the last time you got a 0300 brief time? Did you get to bed at 1800 and wake up at 0200? Were the wife and kids quiet? If so, your risk factor is very low and you should volunteer to fly all the morning gos. But, if you are normal, your warning lights should be on and flashing. As a supervisor, understand your people are at risk. Watch them close. You might just cut them out of a sortie, but save their life.

Finally, when you are planning for deployments or local flying at strange and exotic times, remember this article. Ask your flight doc what the limits of the human body are. Ask your safety office to use TAC COMPAS and tell you where the threat lies. You wouldn't fly a combat sortie without an Intell brief, would you? The same logic applies.

SELF-MEDICATION:



Brigadier General Robert A. Buethe
TAC Command Surgeon

It was a bright, beautiful day in early March with the rising sun providing the first warmth to herald the promise of the coming spring. It was a day to look forward to; to feel good about. As the chief flight surgeon made the short walk from the parking lot to his office, he thought about the events of the day to come.

The morning was to be routine—morning stand-up in the command section, routine flight physicals with no one scheduled who required waiver paperwork, and, finally, the shop survey with the environmental health technicians.

The afternoon would be somewhat less than routine. He remembered the mishap board briefing scheduled for 1400. That accident had not only resulted in the wing losing a seasoned fighter pilot and his jet, but the flight surgeon had also lost a close personal friend. He couldn't shake the feeling in the pit of his stomach that signaled the frustration and anger he felt at each mishap briefing.

He had provided the required information to the board. He had also assisted the board's flight surgeon with the unique medical support she had requested, yet he'd kept his distance as not to interfere in the investigation involving a good friend. The findings on the cause of the mishap just had to be an inopportune key system failure. Slim had been a good

THERE'RE NO "PLUSES" TO IT

pilot, an IP, a squadron operations officer. He'd led a moderate life style, had a great family with few problems and was in perfect health. Good jets flown by good pilots just didn't impact the ground on CAS missions without some sort of significant system failure.

Later in the day, the mishap briefing proceeded through the established protocol. There were no identifiable aircraft system or mechanical failures. Through a reconstruction of the flight profile, the board had determined that the mishap aircraft had performed a non-standard reversal of flight course at low altitude and, although there was sufficient altitude to perform the maneuver, a perfectly functioning aircraft had simply been flown into the ground. There was no attempt to eject.

The flight surgeon again felt a sick feeling in the pit of his stomach. What had gone wrong? Something must have happened to or distracted his friend to cause him to lose his spatial orientation. The autopsy findings noted by the board and the medicine cabinet in the pilot's home provided a possible answer.

There were no medical conditions found at autopsy such as heart disease, stroke or other vascular problems which could have caused a sudden and complete incapacitation. In fact, the autopsy confirmed the flight surgeon's clinical impression that the pilot was in excellent physical health—with one exception. A routine drug screen, performed on all accident victims, revealed therapeutic levels of a strong decongestant, a strong antihistamine and aspirin in the pilot's blood and tissues.

There were no prescriptions ordered in the pilot's medical record for antihistamines, decongestants, or, for that matter, medication of any type. He hadn't even been seen in the flight surgeon's office since his last physical, some eight months prior to the mishap. The source of the medication was puzzling.

Slim's wife had reported to the mishap board flight surgeon that her husband had complained of a minor "sinus-type" headache and had taken a couple of Alka-Seltzer tablets about three hours prior to his final flight. In the squadron, Slim had appeared to be his usual jovial self to his squadron mates when he reported for the mission brief.

The wing commander interrupted the briefer and, turning to his Chief Flight Surgeon, commented, "Surely, Doc, a couple of Alka-Seltzers couldn't explain this finding." Unfortunately, they did.

After the autopsy laboratory values were reported to the board flight surgeon, she returned to the pilot's home and asked to see the box from which Slim had taken his Alka-Seltzer. Her suspicions were confirmed. In the medicine cabinet there was only one Alka-Seltzer box and it was a box of Alka-Seltzer Plus.

Finding: The mishap pilot had self-medicated with a powerful antihistamine and decongestant which in addition to aspirin were at therapeutic levels in his blood stream and tissues at the time of the accident. (Causal)

Causal? Taking an extremely common over-the-counter, non-prescription medication isn't safe? The chief flight surgeon knew the answer and the reason for the feeling in the pit of his stomach. It was found in his (and almost every other physician's) office in a bright red book entitled *Physician's Desk Reference for Nonprescription Drugs*. Under the caution section of the listing for Alka-Seltzer Plus were the words: "Product may cause drowsiness: use caution if operating heavy machinery or driving a vehicle." Surely piloting a modern high performance jet qualifies as "driving a vehicle" in spades! Once again self-medication had contributed to the loss of a life and an aircraft.

The mishap briefing over, the chief flight surgeon left wing headquarters. As he walked back to his office, he again noticed the pleasant March weather. It was indeed a beautiful day! The bright sun felt warm on his face. "I've got to do it again," he thought. "Once again I've got to brief our crew

SELF-MEDICATION

force on the dangers of self-medication. Why don't they hear me?" He knew that until he'd delivered his message, the tightness in the pit of his stomach would be constant.

I'm sure each of you has heard at least one presentation on the subject of self-medication and the dangers of flying aircraft of any type "under the influence", etc. I'm sure you've also noticed that this magazine as well as all the other MAJCOM safety magazines have published at least one article on the subject within the past year to 18 months.

Why all the interest? Quite simply because self-medication in aircrews continues to be a problem. One could argue that in Slim's case, he probably thought he was only taking aspirin in the form of Alka-Seltzer. Yet, he had ingested two drugs which a few years ago would have required a prescription. It wasn't the Alka-Seltzer that ruined Slim's day, it was the "Plus."

Over the past 10 to 15 years there has been a gradual but definite relaxation in the requirement for prescriptions for certain classes of drugs. They generally fall into the categories of decongestants, antihistamines, diet aids and analgesics for pain. You can find them quite easily in the Base Exchange in brightly colored packages labeled "Plus", "Extra-Strength", "New", "Long Acting" or "Improved." You can also be assured that their pharmacologic effect on you as an aviator is just as dangerous as it was when they required a prescription.

Medications marketed and compounded for use by children also pose a significant danger to the aviator. Some crew members, under the impression that they can take a dose of pediatric medication with impunity, use this category of medications for the mild symptoms of colds or similar disorders. Wrong! They contain the same drugs with the same pharmacologic effect as adult preparations, with the same side effects and use warnings.

What medications can a flyer take without the approval of his friendly flight surgeon? How about simple aspirin, Tylenol, medicated shampoo and athlete's food preparations? Yet even these drugs can cause side effects which won't mix well with aviation. Many of us have often discussed what type of restrictions for use would have been placed on aspirin by the Federal Drug Administration if it were invented today. I suspect it might well have required a prescription.

The point of this whole piece is quite simple: drugs and the aviator don't mix. Just because a product is sold over the counter without a prescription doesn't make it safe. Self-medication of any type is dumb. In Slim's case, it was dumb as dirt!

TAC CREW CHIEF SAFETY AWARD

Sgt Eric Ziegler is dedicated to flight line ground safety as well as the safety of his section and the transient aircraft they service. His section handles over 600 aircraft each month, including a variety of aircraft from all branches of DOD as well as numerous civilian aircraft. The vast experience and knowledge which Sgt Ziegler has acquired on a variety of aircraft have contributed immensely to his training of fellow transient maintenance personnel and their outstanding safety record.

Sgt Ziegler begins his safety training program by giving each newly assigned crew chief a complete briefing covering all danger areas of the flight line and the common hazards on most aircraft. This initial training is further augmented as dissimilar aircraft show up at the base. Sgt Ziegler takes all available on-duty crew chiefs and, through one-on-one training, points out the danger areas and maintenance requirements of each available aircraft. This training continues until each person is familiar with the different types of aircraft that land at Luke. The success of this program is illustrated by the record of accident-free service to thousands of transient aircraft. The transient alert section has also received numerous "excellent" and "zero defects" ratings from the squadron, wing and air division.

A specific example of Sgt Ziegler's thoroughness and safety consciousness occurred recently during a quick-turn thruflight inspection on a transient F-15. During the inspection, Sgt Ziegler noticed apparent damage to the first row of compressor blades on one engine. On closer examination, he found that the damage extended to several rows of the compressor and an engine change was performed. Sgt Ziegler's actions prevented further damage to the engine and possible loss of the aircraft.

Sgt Ziegler's dedication to excellence and continual safety awareness have earned him the TAC Crew Chief Safety Award.

Sgt Eric D. Ziegler
Transient Alert Section
405 EMS, 405 TTW
Luke AFB, AZ

THE DIRECTOR OF AEROSPACE SAFETY SPECIAL ACHIEVEMENT AWARD

The Director of Aerospace Safety Special Achievement Award is presented each year to persons and or organizations for outstanding safety contributions or achievements. The 388th Tactical Fighter Wing, Hill AFB, Utah, has been selected as recipient of the award for 1986.

SOFing

SOFing

(OR HOW TO AVOID GRAY HAIRS AT 30)

Major John Bookhardt
TAC Flight Safety

It's 0530 in the morning. Still dark and bitter cold outside. A light snow is dusting the ramp. The gusting wind causes occasional swirls of snow to partially obscure nearby objects. You're in the squadron for an early morning sortie when the duty supervisor grabs you and tells you that the scheduled SOF is sick. You must be in the tower in 10 minutes.

Nine minutes and 45 seconds later, you're gasping for breath, but in place in the tower. The first three-ship is already in position on the runway. Your first thought is coffee and a little relaxation now that you're in place. The roar of the burners passes as each jet in turn lifts off and disappears in the snowy sky. You turn to your coffee, prop your feet up on the desk and settle back.

"Mayday. Mayday." The call on guard is tense, loud and causes immediate and turbulent action as the tower personnel and you leap for the microphones. You grab the flying schedule—the first three lines say: "TBD—exercise." You hear an emergency locator beacon. Who's in the jets? Where are they? What's happened? You're torn between two thoughts: "What do I do now?" and "Why me?"

Does this scenario sound familiar? If it does, you might want to seriously consider selling insurance or shoes rather than being in the fighter business. What went wrong here? How could this have been avoided? The answer to these questions is simply this: the SOF may not be able to directly prevent a crash or mishap, but he *can* be thoroughly prepared, knowledgeable and ready for actions and decisions.

Preparation

In the above scenario, you had minimum time to get to the tower before the first *scheduled* launch. If you had looked at the schedule on the way up, the "TBD—exercise" should have stood out like a sore thumb. A quick call to the command post should have provided the needed information. If the aircraft were ready for takeoff, a decision to hold them for several minutes would have been appropriate while you got the needed info. The key here is flexibility, anticipation of events and the courage to make a tough call; all of which fall under the general term of preparation. Normally, if everything goes perfectly, you arrive at a reasonable time before the first sortie of the day and accomplish the needed items:

(1) Study the schedule:
- **a. Players?**
- **b. Experience?**
- **c. Weather Category?**
- **d. Ranges/exercises?**
- **e. Bomb load (live)?**

(2) Check the field facilities/condition at Base Ops:
- **a. Airfield Construction?**
- **b. ILS out?**
- **c. TACAN maintenance?**
- **d. Inbound heavy weight aircraft?**
- **e. PAR?**

(3) Weather:
- **a. Local—ask to see the satellite pictures.**
- **b. Ranges/MOAs?**
- **c. Any cross-country sorties? Departure base/en route weather?**
- **d. Alternate? (backup, just in case?)**

(4) Ramp check:
- **a. SOF vehicle—gas, radio check?**
- **b. Taxi and runway approach lights/VASIs?**
- **c. Snow—Are the snow removal crews working on it?**
- **d. FOD?**
- **e. Construction?**

The biggest problem after these necessary checks are accomplished is the fact that things very seldom go perfectly. Because of this you *must* be mentally prepared for the million and one things that *might* go wrong. By anticipating problems, you're in the right state or frame of mind to handle any problem. In short, have a plan.

Knowledge

The SOF, by definition, should be the most knowledgeable individual available and one of the most experienced. But since we all have to start somewhere, experience in the jet comes first, and experience as a SOF follows at a somewhat slower rate. In any case, you've got to know the books cold. Many people will rely on your judgment and capability so your decisions *must* be based on cold, hard facts. Study the books beforehand and keep up with all the changes. Many wings have a read file available in the tower to include wing guidance, temporary procedures and recent changes—read it!

Decision Ability

How does one develop this? Some guys seem to come by it naturally, others have to learn it. The key point here is that your wing supervisors (DO/squadron commander) selected **you** based on your capabilities. Take confidence in that fact. Remember that the first two factors we discussed, preparation and knowledge, make decision ability much easier. Remember also that you're in charge—think logically and then act. Double check as soon as you have the time—use the SOF emergency action checklist.

Brief your tower personnel on what you expect of them. Know and understand their duties and responsibilities. A good working relationship with the ATC folks *can* be the basis for a smooth running organization. As AFR 60-2, TAC Sup 1 says, "A cooperative, teamwork approach is a must." Work *through* the tower personnel for radio calls and directives in all cases except where time critical emergencies dictate the immediate use of the radio by the SOF. For all normal activity, the watch supervisor in the tower is the person to talk to.

SOFing

Keeping "THE MAN" Informed

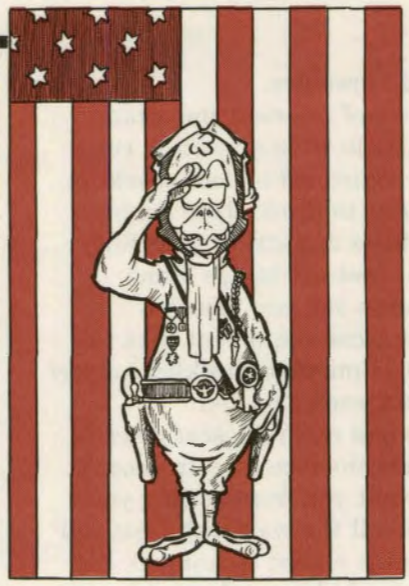
As a SOF, you are in the direct wing chain of command. But you have a prime duty and that is to keep the DO (or his designated representative) informed. As the TAC Sup emphasizes, the first step (and last step) of each checklist begins with "Notify DCO." That's because you, as the SOF, work directly for him and are an extension of his eyes and ears. The relationship is clear. The DO at *all* times retains responsibility for all unit flying operations. The SOF assists the DO in exercising that responsibility and is delegated the authority to make decisions as necessary but particularly where time is critical.

Deployment/Exercises

Very often during deployments and exercises away from the home drome, a non-SOF certified aircrew member will serve as a flight manual or checklist reader and advisor to the designated SOF (who may not be familiar with your aircraft or operation). It is easy sometimes to approach this duty in a less than totally serious manner. Since we in TAC spend about 20% of our time in a deployed status, this means that this additional duty can comprise as much as one-fifth of the total SOF duty performed. If you find yourself volunteered for this duty, approach it with the same respect and professionalism that you use while flying the jet. Stay near the phone or in a designated location—and be ready.

Unusual Situations

Every once in a while, you're going to be faced with an unusual situation; i.e., one that is not covered in the checklist or for which there exists no previously established guidance. Earlier in this article I mentioned that flexibility is a necessary component of SOFing. It includes problems caused by exercises, schedule changes, inexperienced aircrew members and coping with rapidly changing nasty weather, low ceilings/thunderstorms or cold winters with lots of snow and ice on the ramp and runways. In these cases, get out of bed earlier in the mornings and get to work early enough to get the ramp/runways cleared and/or decide on alternates or, if necessary, weather holds. Unfortunately, it also includes the worst possible case: an aircraft crash. Nothing you can do will fully prepare you for this, but the things I've already mentioned can certainly help. As a SOF who has faced this situation while on duty, I can only say that keeping a cool head and a *firm* control on the events as they unfold *and* keeping the wing supervisors and/or the command post informed is paramount. Pray it doesn't happen, but if it does, you can mean the difference between a smooth efficient operation or a total disaster. It's up to you. Check 6—but plan ahead.



FLEAGLE SALUTES

A1C Steven K. Deney, 56 CRS, 56 TTW, MacDill AFB, Fla., was performing a routine teardown of the F-16 main landing gear retractor when he discovered the spring retainer nut cracked in several places. The significance of this find is that the nut was not listed as an area to be inspected in the technical data inspection guide. A1C Deney promptly informed his supervisor and submitted a materiel deficiency report and a technical data change to add this item to the inspection guide. A1C Deney's keen observation prevented a serious landing gear system malfunction, and his actions will help eliminate the problem in the future.

While standing on his aircraft, performing crew chief duties, **A1C Sandy L. Williams,** 336 AMU, 4 AGS, 4 TFW, Seymour Johnson AFB, NC, noticed the drag chute deploy and fall from an F-4 aircraft on takeoff. He immediately contacted the expediter who contacted the maintenance operations center who notified the control tower. The tower informed the aircrew to prepare for a no-chute landing. That's exactly how the system is designed to work—but it takes motivated people like Airman Williams whose quick action enabled the aircrew to take the proper precautions on landing and prevent possible damage to the aircraft.

Sgt John Wolfe, 435 AMU, 479 TTW, Holloman AFB, NM, prepared his aircraft for a functional check flight (FCF) after work was done to correct a flight control problem. After engine start, Sgt Wolfe informed the pilot that the number one engine didn't sound right. The pilot's cockpit instruments indicated normal. Engine shop personnel were called to investigate and determined that the aircraft had a malfunctioning engine gear box. The flight was aborted. Had Sgt Wolfe not detected the malfunction, the FCF pilot would likely have found himself in an emergency situation after takeoff. This is where experience and being responsible pays big dividends.

A1C Anthony Piano, 72 TFTS, 56 TTW, MacDill AFB, Fla., was serving as the runway operations monitor when he saw an F-16 approach the downwind perch position without lowering the landing gear. He continued to monitor the F-16 during the final turn and, as the aircraft rolled out on final approximately 300 feet above the ground in a gear-up configuration, A1C Piano fired a flare. The flare alerted the pilot to his landing configuration and the pilot safely executed a go-around. A1C Piano's alertness and timely actions prevented a gear-up mishap.

Captain Gregory S. Sparks, 62 TRTS, 67 TRW, Bergstrom AFB, TX, is an outstanding additional duty flight safety officer (ADFSO) whose efforts have directly contributed to his squadron's mishap-free record. He conducts monthly flight safety meetings in a manner which draws both students and instructors into the discussion. The inbriefing which he created for newly arrived students exposes them to the commander's flying safety philosophy as well as safety administrative procedures.

Capt Sparks designed and implemented a computer program for conducting and recording spot inspections. The inspection areas and items are combined by topic on each sheet and serve as excellent tools for performing trend analysis. The program also tracks follow-up items and was adopted as a model for wing-wide implementation.

Capt Sparks' enthusiasm as the ADFSO has shown positive results. His thoroughness in managing the squadron flying safety program has paved the way for a mishap-free record.

EMERGENCY SITUATION TRAINING

Major Vandy Vandenberg
TAC Flight Safety

SITUATION: It's Day 2 of Red Flag 88-X and your F-4E is in the third two-ship of a massive gorilla heading west from Student Gap. While approaching a turn point at 300′, the pitter says, "Check Master Caution Light." You start a climb and check the telelight panel. "Oxygen Low" is staring at you. The WSO then calmly informs you that smoke is coming up around his seat.

Yo! . . . what's your plan?

OPTION 1: Pull the oxygen gauge circuit breaker in the rear cockpit, since the thing has obviously shorted out.

OPTION 2: Eject. After all, since there's no oxygen, you can't breath.

OPTION 3: Continue to climb away from the ground, call "Knock-it-off", and inform your leader/wingman that you have a possible bleed air duct failure/fuselage fire.

DISCUSSION: Option 3 is the correct choice, though option 2 may follow shortly thereafter. The most important thing to do is step 1 of the checklist: "Attain and maintain safe ejection altitude."

Since January 1986, there have been three documented cases of inflight fire in the door 16/22 fuselage area. That's not a good place to have a fire (as if any place is), since under door 16 is the LOX system, aft emergency canopy jettison bottle, and massive wire bundles, while door 22 shelters the heart of the fuel system, utility hydraulic reservoir, bleed air ducts and the pneumatic compressor. No matter how or where a fire starts, if it spreads to the LOX, hydraulic or fuel systems, you're sitting in a jet that probably isn't going to make it and you need to plan accordingly. Other considerations are loss of utility hydraulics, spurious flight control inputs and other unpredictable malfunctions as the fire spreads.

Now that you're alerted to the problem, you can continue to run the checklist. What's a safe altitude? Your choice, but I'm going to use 5000′ as a minimum. Going 100% and Emergency probably isn't going to do much for you in this situation, since the LOX system is probably out of there. Also, the new WARNING in the Dash One says that the bailout bottle can't supply enough pressure for normal breathing unless the CRU-60/P supply hose is disconnected, allowing fumes into the mask. Talk about a rock and a hard place! No wonder the Dash One recommends early ejection with a confirmed door 16/22 area fire.

One of the most important things to do is to quickly run the controlled bailout checklist. Things to think about: tighten all belts and straps (hopefully your seat kit straps aren't loose so you can "check 6"), stow loose equipment (like the $49.95 massive checklist holder/tape recorder on your leg) and run your seat down to where the face curtain doesn't prevent you from getting your head all the way back (seat full down is a good technique). Let the world know what you're going to do, crew coordinate and perform a dual-sequenced ejection when the situation dictates.

The WSO must be ready to use the "Canopy Fails to Separate" procedures in case his canopy jettison bottle has been breached. This will involve some fancy handwork, but assuming the regular pneumatics system is operating, you probably won't have to go past the second step: "Normal canopy control handle—open."

There are a couple of things in the works to help us with a door 16/22 fire. The first is a fire detection (and possibly suppression) system to warn us of the problem; OO-ALC is currently evaluating this proposal. The second is the addition of a redundant aft canopy emergency jettison bottle, to be placed in the rear cockpit. At this point, it looks like late 1988 before this modification starts. We hope to expedite starts of both modifications, but meanwhile, crews have to be able to analyze a fire in the door 16/22 area and carry out the appropriate emergency procedures.

TAC TALLY

CLASS A MISHAPS
AIRCREW FATALITIES
TOTAL EJECTIONS
SUCCESSFUL EJECTIONS

TAC		
MAY	Thru May	
	1987	1986
0	5	13
0	6	6
0	4	1
0	4	

ANG		
MAY	Thru May	
	1987	1986
0	3	3
0	3	0
0	2	4
0	2	4

AFR		
MAY	Thru May	
	1987	1986
2	3	0
3	4	0
1	1	0
0	0	0

TAC'S TOP 5 thru MAY 1987

1st AF	
class A mishap-free months	
81	318 FIS
27	325 TTW
16	57 FIS
16	5 FIS
7	48 FIS

9th AF	
class A mishap-free months	
51	33 TFW
24	507 TAIRCW
21	1 TFW
15	31 TFW
10	354 TFW

12th AF	
class A mishap-free months	
73	USAFSO
49	366 TFW
33	355 TTW
31	27 TFW
27	58 TTW

ANG	
class A mishap-free months	
214	182 TASG
198	110 TASG
173	138 TFG
155	177 FIG
150	114 TFG

AFR	
class A mishap-free months	
81	482 TFW
71	924 TFG
59	906 TFG
33	507 TFG
20	917 TFG

DRU's	
class A mishap-free months	
194	USAFTAWC
128	28 AD
7	USAFTFWC

CLASS A MISHAP COMPARISON RATE

(CUM. RATE BASED ON ACCIDENTS PER 100,000 HOURS FLYING TIME)

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TAC	1987	3.5	2.7	2.2	2.0	1.6							
	1986	4.8	6.8	5.4	4.4	4.1	3.7	3.6	3.2	3.4	3.9	3.9	3.8
ANG	1987	0.0	0.0	4.4	3.2	2.6							
	1986	4.3	2.4	3.1	2.3	2.7	3.0	2.5	2.2	2.4	2.6	3.2	3.0
AFR	1987	23.1	12.7	8.1	6.0	14.2							
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	4.6	4.2	3.9

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FLEAGLE
MAN, THIS HAS BEEN A LONG HAUL.
BUNK AN' BODY FER THIS FLYER IS SOON GONNA MEET.
MEANWHILE
OK, GANG, LET'S FINISH THIS LAST PATCH OF PECKIN' AN' WORMIN' AND HEAD FOR TH' TREES. THE HOUR IS LATE.
BURP!
TH' HOME PATCH NEVER LOOKED SO GOOD.
©STAN HARDISON 1987
WHAT TH' ?
HARDISON
BUMP!
BANG!
SMASH
ROB, CAN YOU IMAGINE GETTIN' HIT BY A DOZEN BUG AN' WORM STUFFED CROWS ?
NOT A PRETTY SIGHT, GRIFF.