

# THE COMBAT EDGE

MAY 1993





# THE COMBAT EDGE

Air Combat Command  
Safety Magazine

**Gen John M. Loh**  
Commander

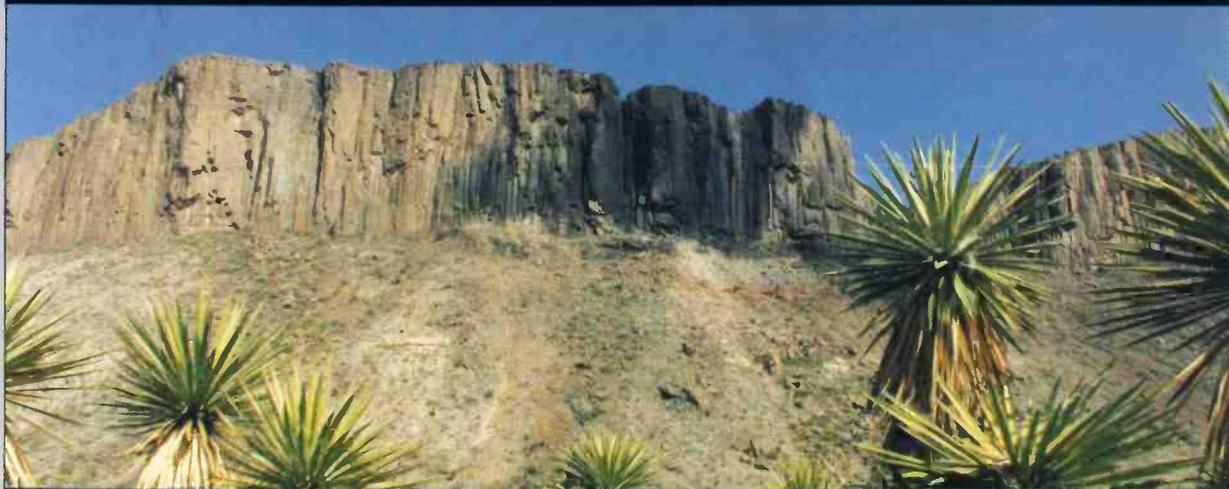
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A B-52G from the 42 BW, Loring AFB, Maine. Photo was taken by Major Brian "Buck" Rogers during DESERT STORM combat operations in Saudi Arabia.

# Accent on Safety

**I** imagine, if you will, the following headline in your local newspaper: **“LOCAL CHILD SEVERELY INJURED AT BASE OPEN HOUSE!”** Couldn't happen you say. Well, we certainly hope not! Yet, the potential for disaster exists and must be considered when setting up displays and demonstrations. Static displays and equipment demonstrations are intriguing to our visitors, especially children. Unfortunately, they can be extremely dangerous if not properly prepared and inspected. When we're dealing with the public, who are not familiar with the hazards of our operations and equipment, prudence dictates a conservative approach to safety. The best course of action is to make everything as absolutely safe as possible, even at the expense of realism. Community appreciation days and open houses are our way of saying thanks to our supporters. It's their day. Let's all take every precaution to ensure their safety.

May marks the beginning of the summer holiday season and the “101 Critical Days” (Memorial Day through Labor Day). Whether we call it the summer holiday season or “101 Critical Days” or whatever...the fact is that the number of people killed and injured during this time is nearly as great as the rest of the year.

In an effort to keep this summer from being one that is remembered because of a tragedy, every unit should have a thorough summer campaign emphasizing the **“WE CARE ABOUT YOU”** and **“DESIGNATED DRIVER”** programs. Your campaign should start prior to Memorial Day and continue through Labor Day. In past years, summer months have been accompanied by an increase in fatalities and personal injury mishaps. History indicates that 40 Air Force military personnel will die in off-duty mishaps during this period. During the summer, folks tend to place “safety” on the backburner allowing themselves to become vulnerable to mishaps. We must remember that mishaps don't just happen, they are caused. They often occur due to a lack of knowledge, chance taking or disregarding established safety practices and procedures. Mishap prevention must be a part of our everyday lives both on and off the job.

The success of the “101 Critical Days” campaign will depend largely on the support given by each commander, supervisor and worker. **YOU** should make every possible effort to ensure that your people are aware of the increased risks associated with the summer season. Emphasize to everyone the need to consider risks, make responsible decisions and be aware of the smart way to enjoy the delights of the summer season.

*Colonel Bodie R. Bodenheim  
Chief of Safety*





**I**n ACC we continue to develop a culture of safety that will be an integral part of the way we do business -- we try to consider safety in everything we do. However, we still experience mishaps resulting in tragic loss of personnel and destroyed equipment. The fundamental root cause of mishaps is failure within the system. Therefore, to prevent mishaps, we must improve the system. Continuous improvement, a cornerstone of quality, is essential to our mishap prevention efforts. A quest for continuous improvement requires the proper **attitude**, complete **involvement** and appropriate **direction**.

*Major Roger Forsyth  
90 MW/SE  
F.E. Warren AFB WY*

Attitudes are feelings, whether conscious or subconscious, that we have about someone or something. And, it's amazing how we can have these feelings about someone or something with which we have no direct experience.

I hate liver and onions. Why? While growing up all my friends told me how bad it tasted. To this day, I've never tried liver and onions. How have other people's attitudes about safety influenced ours and eventually become our own? "Injuries happen to other people," or "my boss wants this job done quickly," which sometimes equates to shortcuts or unused safety equipment. It doesn't have to be that way.

Extensive studies indicate that as a positive attitude toward safety increases, the number of accidents dramatically decreases. Two things then come to mind. How do you change attitudes and how do you measure attitudes?

To change our attitudes, we have to remove some of the barriers to change. First, preconditioned beliefs: liver and onions taste terrible. Secondly, old habits can be our worst enemy: I've always done it that way. Finally, the lack of personal empowerment.

The lack of personal empowerment causes us to feel unable to create change, take control of our lives or take action. It also causes us to give up accountability. "It's not my fault," "my boss didn't tell me," "training didn't train me" or "safety didn't brief me." It's logical to assume that if we empower individuals and supervisors to make changes and hold them accountable for their safety performance our safety record will improve.

One observation by Dan Peterson, an expert in the field of safety and management, is that most supervisors today know they are responsible for safety, and they know what they should be doing; yet, they don't do it. Why? Because they aren't held accountable. That is, they aren't

measured in relation to their safety performance. Our military evaluation system includes facts about our IG performance, maintenance down time, Emergency War Order testing, etc. Why not our accident and safety record? There is a natural tendency to stress or place importance on those things we know our career progress depends upon.

Measuring attitudes isn't as easy as taking a patient's temperature. However, a technique has been developed that can help us focus in on certain feelings that we have about a subject, safety for instance. This technique consists of a person answering 25 questions. These questions tap 25 different meanings which offer a comprehensive picture of a good deal of how we feel about a particular subject.

Providing these 25 answers involves different and discrete pieces of recall. Some of the meaning may involve subjects which have been on the mind of the person frequently and some may involve meanings which may have not been consciously considered for months or years. When they have been collected and combined, they can be dealt with as a whole and evaluated mathematically.

These questions consist of pairs of opposite words such as young/old, necessary/unnecessary, personal/impersonal. The individual must relate how he feels about safety on a scale. These pieces of recall can then form a picture and be diagrammed to indicate how a group such as junior enlisted members, senior officers or even an organization feels about safety.

**Extensive studies indicate that as a positive attitude toward safety increases, the number of accidents dramatically decreases.**

In a recently conducted test of this technique, there was a very close correlation between first-term enlisted airmen and officers in their attitude toward safety. However, there was a significant drop in attitude for officers once they reached the 4-12 year point. In addition, these mid-level officers felt that safety was impersonal, machine-like and slow, which may indicate their feeling of lack of involvement.

Thomas Donahue, secretary treasurer of the AFL-CIO, said, "The key element to rectifying on-the-job hazards is active participation of the people most affected by them." Sometimes easier said than done.

Safety programs in the military have traditionally been established by management (wing safety, squadron commander) setting certain rules which it feels are best for the unit. Our solution has two parts: the unit safety representative and AFOSH and mishap prevention meetings, where information is given out (including follow-on minutes) with the hope of preventing accidents.

Accident rates still remain high. It's evident to me that what is needed today is an approach to safety that involves people, giving everyone a personal stake in a safe environment. Let's

move from a "big brother is watching you" to one involving the people who have a vested interest. Gordon Graham has a video-workshop called "Safety Plus" using interactive participation of approximately 25-30 people within a squadron to create a common vision, a common plan of action for a safe environment.

Finally, direction. We need to set specific goals for reducing accidents both on the job and off duty. If goals are specific, they'll influence worker motivation and direct behavior. Two rules for setting goals must be adhered to. First, they must be understood by all; and second, they must be attainable and realistic. An example might be reducing the military and civilian accident rate in the civil engineering squadron by 30 percent.

I believe today's Air Force is in its best position to take a fresh look at how it approaches safety. To remove barriers to change, effect a positive attitude and provide an environment in which we all have a vested interest in safety. The challenge is there for us to provide the catalyst for success: **Attitude + Involvement + Direction.** ■

### Sample Attitude Survey On Safety

Fresh	_____	_____	_____	_____	_____	_____	_____	Worn
Old	_____	_____	_____	_____	_____	_____	_____	Young
Fast	_____	_____	_____	_____	_____	_____	_____	Slow
Necessary	_____	_____	_____	_____	_____	_____	_____	Unnecessary
Machine Like	_____	_____	_____	_____	_____	_____	_____	Human
Still	_____	_____	_____	_____	_____	_____	_____	Active
Cheerful	_____	_____	_____	_____	_____	_____	_____	Gloomy
Vague	_____	_____	_____	_____	_____	_____	_____	Clear
Full	_____	_____	_____	_____	_____	_____	_____	Empty
Private	_____	_____	_____	_____	_____	_____	_____	Public
Busy	_____	_____	_____	_____	_____	_____	_____	Lazy
Changeable	_____	_____	_____	_____	_____	_____	_____	Stable
Smooth	_____	_____	_____	_____	_____	_____	_____	Rough
Unfriendly	_____	_____	_____	_____	_____	_____	_____	Friendly
Unwholesome	_____	_____	_____	_____	_____	_____	_____	Wholesome
Essential	_____	_____	_____	_____	_____	_____	_____	Unessential
Relaxed	_____	_____	_____	_____	_____	_____	_____	Tense
Personal	_____	_____	_____	_____	_____	_____	_____	Impersonal
Sad	_____	_____	_____	_____	_____	_____	_____	Happy
Uncomfortable	_____	_____	_____	_____	_____	_____	_____	Comfortable
Well	_____	_____	_____	_____	_____	_____	_____	Sick
Severe	_____	_____	_____	_____	_____	_____	_____	Lenient
Calm	_____	_____	_____	_____	_____	_____	_____	Excitable
Uncertain	_____	_____	_____	_____	_____	_____	_____	Certain
Pleasant	_____	_____	_____	_____	_____	_____	_____	Unpleasant
Rank/Grade	_____	Office Symbol	_____	Time In Service	_____			

Col John B. Gibbs  
HQ ACC/IGI  
Langley AFB VA

I was very honored to have my article, "Gibber's Dozen Bullets," reprinted this past summer in the last issue of *TAC ATTACK*. The focus of that article was on cockpit tasks and the philosophy that made flying single-seat fighters safer. As I reviewed the points on instrument flying, following the regulations/changing them, using common sense, treating people as if you trust them, listening to the hairs on the back of your neck, and so on, I found that after eight years, ten of the bullets still applied. Our continuous improvement in training had eliminated two of them. I wrote that article from the viewpoint of an instructor pilot. My viewpoint changed as I progressed through squadron commander, deputy commander for operations and operations group commander. However, I found many of these points still applied to jobs and areas outside of the cockpit; maintenance areas, leadership positions and to safe mission accomplishment. I based my mission accomplishment theme on the premises that people want to do good work and SAFETY is an attitude not a program. I developed three main points to bring this home at every opportunity. Since I'm a crusty old colonel on the staff now, let's call them blivets instead of bullets this time.

**BLIVET ONE -- THE INDIVIDUAL.** An organization builds its reputation on the work of its individuals. How well they do their jobs day to day sets the reputation of the wing. Many people believe IG inspections and awards set your reputation; and while they may aid, nothing destroys a reputation faster than a poor safety record. Poor safety records are traceable to poor leadership, training and individual performance. The individual must know his or her importance in accomplishing the daily mission and must be empowered to stop the train when the tracks are awry. For a pilot, it may mean coming back early from a mission when he starts feeling queasy. For a mechanic, it may mean putting the fix off until tomorrow when the right supervision is available or the right tool can be used. In quality words, I empowered people to make smart safety decisions based on their own judgment. I decentralized safety decisions.

**BLIVET TWO -- QUALIFICATION.** Today's Air Force trains right and our safety record reflects

that commitment. Before any one of us performs a complicated or dangerous task, we are trained and qualified by someone experienced in that task. Aircrews learn how to fly at low altitude at night, delivering precision guided munitions, a crew chief learns how to perform an engine run, a munitions handler learns how to load 2,000 pound bombs and a structural specialist learns how to weld. The list is long and all encompassing. My point here is, the individual (see BLIVET ONE) has the final responsibility to NOT do something that he or she is not qualified to do. If a flight lead tasks a wingman to perform a maneuver that he is not qualified to perform, the wingman has the responsibility to not only inform the flight lead but also not to perform the task. Contrary to some thought, this does not fly in the face of flight discipline. If a crew chief is told to service the aircraft tire with an improper piece of equipment, he should not do it. The individuals in the organization must know that they have the power to make smart safety decisions. Everyone in the chain must conform to and support this philosophy.

**BLIVET THREE -- CURRENCY.** This one is simple. The individual must take the responsibility to know if he or she is not only qualified to do the task, but also must know if they are current and ready. Did the pilot get a good night's sleep before a big mission or did the baby ruin it? How long has it been since the crew chief changed that particular component or ran engines? Do people go around the controls set in place to get the job done, thereby jeopardizing the mission or their lives? We have lots of rules on currencies, but nothing will replace common sense and judgment of the individual (see BLIVET ONE).

In conclusion, I used these three points, or blivets, to emphasize all of my programs (dedicated crew chief, supervisor of flying, quality assurance, senior squadron supervision, standardization and evaluation flight examiner, deployments and exercises). In other words, in everything we did. Many books on quality talk about the successful organizations sharing the vision. I believe that safety is a part of the unit vision. Give your unit the vision and empower them. ■

# Fighting The Flap

Lt John A. Long  
69 BS  
Loring AFB ME

*I*t was the second flight that crew R-61 had ever flown together and will likely be the one we remember most. A routine mission turned into a major structural failure emergency tends to be memorable. None of us foresaw the events that were about to occur.

Our mission was planned as a 2-ship B-52G formation to VR-1616 (Hardwood) for some BDU-50 drops on the range. We were scheduled to be the lead ship. Mission planning had gone well the day before and the crew [Capt Shane Scoggins, Aircraft Commander (AC); Lt William Rayner, Copilot (CP); Capt Lynlee Harned, Radar Navigator (RN); Capt Tom Hale, Instructor Navigator (IN); Lt Brian Rhodarmer, Navigator (N); and Lt John Long, Electronic Warfare Officer (EW)] arrived for the flight around 0800 on the morning of April 23, 1992. The morning's weather briefing revealed typical April weather for Loring AFB, Maine: cool and dreary. Weather was building to the south and the runway was wet.

When we showed up to preflight the aircraft, everything appeared normal. In fact, the IN even remarked to the EW that the aircraft (58-0255) was his "baby." Capt Hale had flown 0255 the first night of the Gulf War and it had taken good care of him then.

With the preflight completed, Capt Scoggins taxied the aircraft to Runway 01 for takeoff. Moose 24, our callsign for the day's mission, took the active runway and the pilot applied takeoff power. Just after takeoff and gear retrac-

tion, we heard a loud snap and the aircraft immediately rolled sharply to the left, less than a hundred feet above the ground. We countered with right spoiler deflection and rudder. Maintaining control of the plane took 1/2 to 3/4 yoke deflection and a considerable amount of force to hold it in. Lt Rayner checked the engine instruments and reported everything normal. We delayed flap retraction since the pilot was unsure what had happened and how changing the aircraft's configuration would affect the B-52's controllability. This was probably the most important decision we made all day!

The aircraft commander then informed us that we had a control problem. He asked the copilot to clear the stream with departure control since the number 2 aircraft would be rapidly gaining on us. We were very slowly climbing out at approximately 180 knots. The IN immediately made his way to the upper deck and strapped into the unoccupied ejection seat at the former gunner's position. We were still in the weather and the cause of our control problem continued to elude us.

Continuing our shallow climb through the weather, the pilot team was furiously working to control the aircraft with forceful yoke deflec-

tion. The amount of force necessary to hold the aircraft level was tremendous, and they switched every 2 or 3 minutes to prevent fatigue. Lt Rayner's long legs allowed him to use his left leg to hold the yoke deflected, relieving some of the pressure on his arms.

We continued to slowly climb and completed the climb checklist. Lt Long began communicating with Loring's command post, requesting the on-call instructor pilot while he and the IN tore through the emergency procedures section of the B-52's tech manual. The navigator team had their hands full keeping us within Loring's airspace while avoiding populated areas in view of the ever increasing likelihood of a controlled bailout and clearing the weather buildups which were rapidly moving into our area.

For several minutes, we discussed the possibility of a controlled bailout. Everyone thought it would happen, but no one knew when and the crew compartment became very quiet as we all contemplated this prospect. Passing 15,000 feet, we finally broke out of the weather and the aircraft commander, looking out his window, saw the problem. The inboard half of the left outboard flap had torn from its tracks, rotated in the airstream, and was sticking into the air looking like a vertical fin or a rudder on the wing. The folded flap had severely damaged our wing.

We leveled off and after conferring with the on-call IP, Capt Scoggins made the decision to experiment with the airbrakes to try to relieve some of the stick pressure. Airbrakes 2 produced a very slight improvement, and airbrakes

4 did the trick and relieved nearly all the yoke pressure giving the pilot's arms a much needed rest. We engaged the autopilot and finally had an opportunity to fully examine the situation. We requested a chase ship; and Capt Orne, AC of the number 2 aircraft, requested to break off his mission to have a look at us. The Operations Group Commander waved him off at the last minute in lieu of a pair of F-15 Eagles from the Massachusetts Air National Guard who volunteered to come up and have a look. The Eagles





got close enough to our damaged wing to describe the damage to us and take some gun camera footage for review on the ground.

Meanwhile, the weather continued building forcing us to keep climbing to stay in the clear. With things pretty much in control now, we began to calm down, and our thoughts turned from imminent bailout to an emergency landing. Concern about the increasingly poor weather and the wet runway forced us to consider all possible alternate bases. We closely monitored our fuel for divert purposes, landing weight considerations, and controllability check restrictions. Since only the pilot had actually seen the damage, the EW unstrapped and went forward to confirm the damage. He then drew a small sketch and passed it among the rest of the crew so that we knew what we were dealing with.

Back in the command post, news had gotten around and the place was filling with the senior staff. Boeing was contacted and their experts were on the line the whole time providing advice and computer simulations. The gun camera film was developed and analyzed by IPs on the ground and maintenance personnel. We received the results -- it looked as if it could be

landed.

We burned down fuel until reaching our divert fuel for Griffiss AFB, New York. Now we had to make a decision: divert to Griffiss with better weather and a dry runway, or stay at Loring with poor weather but with the home field advantage. Capt Scoggins chose Loring.

We continued to burn down fuel until reaching 270,000 pounds gross weight at which time the pilots accomplished the controllability check. The results were favorable, and we requested ATC set us up on a long shallow final. We declared our emergency with ATC and the Hotel Conference was brought up. The Wing Commander gave us permission to land, and we tightened our

straps even further for the approach. Capt Scoggins flew an outstanding approach in the weather, breaking out at 500 feet. The aircraft behaved exactly as the Boeing engineers had predicted, wanting to roll left when it entered ground effect. The landing was uneventful, and the fire department and maintenance met us at the end of the runway.

We taxied the aircraft to a maintenance hangar where an entourage of maintenance folks and operations personnel met us. Lt Long radioed command post with the down time and a duration of "4.1 nerve-wrecking hours." Upon exiting the plane, the damage proved to be more extensive than we had thought in the air.

Constant preparation for an inflight emergency, such as staying in the books and practicing emergency patterns, allowed everyone on board to flawlessly perform their emergency procedures. Like everyone else, we never thought it would happen to us. There can be no substitute for preparation. Funny, when our crew preflights an aircraft now, there are at least 5 people checking the flap tracks. ■

# Aircrew Safety Award of Distinction



While on a National Command Authority-directed mission, a 310 ALS C-130 was intercepted and attacked over international airspace by Peruvian fighter aircraft. While under fire at 18,500 feet, the aircraft sustained a rapid decompression, numerous fuel leaks, and damage to the number 3 engine. Captain Eunice (aircraft commander) immediately initiated an emergency descent and turned towards a landing location. Despite two more strafing attacks, additional fuel leaks, a fire in the cargo compartment, loss of electrical and hydraulic systems, and wing overheating, Captain Eunice and his crew performed flawlessly, seeing to injured crewmembers, assessing aircraft damage and finding an emergency airfield where the crippled aircraft could be landed. While on approach to the emergency field, the crew encountered an unsafe gear indication. With two hostile Peruvian fighters on his wing, Captain Eunice went around to determine the nature of the problem. Even though there was

extensive damage in the main landing gear area, with three of the four main landing gear tires shot flat, the gear was confirmed extended and

the aircraft landed safely. The unmatched flying skills of Captain Eunice and crew saved 13 crewmembers and the aircraft.



*Maj Christopher J. Duncan, Capt Pete B. Eunice,  
Capt Daniel G. Sobel, Capt Robert K. Stith, MSgt Carl V. Wilson,  
MSgt Rory E. Calhoun, MSgt Joseph C. Beard,  
TSgt Andrew W. Toth, TSgt Darren R. Trexler,  
TSgt John H. Armintrout, TSgt Raymond A. Fisher,  
TSgt Peter J. Paquette, TSgt Charles G. Bolden,  
SSgt Ronald P. Hetzel, Jr.  
310 ALS, 24 WG  
Howard AFB PN*



# ***Crew Chief Excellence Award***

Staff Sergeant Murray recovered his aircraft and completed the turn-around inspection. During the inspection he noted the accessory drive gearbox (ADG) delta pin had popped. In accordance with technical orders (T.O.), he inspected the filter assembly, found no contamination, and returned his aircraft to service. Although not required during launch, Sergeant Murray checked the ADG oil sight gauge and noticed the level appeared abnormal and not circulating. The aircraft was shut down and the fault isolation T.O. consulted. Since this condition was not covered in the T.O., the aircraft was restarted. With an unsatisfied "sixth sense," Sergeant Murray requested the pilot abort the mission, and General Dynamics (GD) representatives were consulted. Unfamiliar with such a condition, and even unsure if an adverse condition existed, GD personnel recommended the filter and chip detectors be reinspected. At this time, large chips of metal were noted in both areas. It is believed by GD representatives that

the ADG breakdown had just started; had Sergeant Murray not gone beyond normal precautionary measures, the ADG would have inevitably failed in flight. Inflight failure would have caused loss of the engine and possibly the aircraft and pilot. Sergeant Murray displayed an exceptionally high level of judgment in ensuring mission-safe aircraft.



***SSgt Scott Murray  
311 FS, 58 FW  
Luke AFB AZ***

# ***Flightline Safety Award of Distinction***



Quality maintenance and genuine concern for aircrew safety are the reasons TSgt Clausen was selected for the Flightline Safety Award of Distinction. A flight team was formed to work on an F-15C aircraft with a history of uncommanded rolling during flight. Numerous attempts to duplicate and repair the problem had been unsuccessful. Sergeant Clausen immediately outlined a plan to inspect the integrity of the lateral, longitudinal and directional flight control systems. During troubleshooting of the entire flight control system, numerous discrepancies were found. After team members troubleshot electrical wires and bench checked all flight control computers, Sergeant Clausen performed operational checkouts of the pitch and roll channel assembly, aileron-rudder interconnect, rudder limiter and aircraft switching valves. The aircraft was now ready for flight. During the test flight, the pilot placed the aircraft into the same scenario that had caused the roll tendencies previ-

ously. The pilot reported that no matter which scenario the jet was placed in (including low airspeed/high AOA), the aircraft would not roll. Sergeant Clausen's quality workmanship eliminated the potential for a disastrous inflight mishap and demonstrates his dedication to safety and the delivery of quality weapon systems.



***TSgt Darrel L. Clausen  
33 MS, 33 FW  
Eglin AFB FL***



# ***Unit Safety Award of Distinction***

Hurricane Andrew was on his way! A total of 103 personnel and 62 tactical vehicles from the 726th Air Control Squadron traveled 55,520 total miles to their initial safe haven deployment location at MacDill AFB without a single safety incident. A few days after arriving at MacDill, the unit made daily runs to Homestead to salvage government property. The convoys traveled approximately 100,000 miles and recovered hundreds of tons of salvaged equipment and supplies. Due to the limited capability of Homestead AFB, most daily convoys were round trips with time only to off-load supplies and then upload salvaged equipment prior to returning to MacDill. During recovery operations, the 726 ACS did not have a single safety incident despite the hazardous conditions. When tasked to move all 726 ACS combat assets from MacDill to Shaw, over 100 unit personnel participated in three large convoys, moving 846 tons of equipment. Only one minor non-reportable incident occurred during

a total of 155,520 difficult and stressful vehicle miles. Despite the inherent dangers associated with the largest natural disaster to hit the United States this century, the men and women of the 726 ACS displayed admirable dedication to their mission of relief and demonstrated outstanding safety awareness throughout extremely challenging operations, including evacuation, humanitarian assistance, emergency rescue, disaster relief, recovery, and equipment convoy.



***726th Air Control Squadron  
363 FW  
Shaw AFB SC***

# ***Ground Safety Award of the Quarter***



TSgt Harold Honeyman strives to keep abreast of the latest safety topics and presents them to squadron personnel when and where the impact will be the greatest. Using keen foresight and just plain common sense, he began stressing holiday and winter safety clear back in October. He deluged the 4 MSS with safety from all sides using oral, written, and visual techniques. The result was predictable — zero incidents. During the quarter, he briefed on a myriad of subjects, affecting each unit member in several different ways. Some of them are: Hazards of Night Driving; Weekend Safety Briefings; Use of Electric/Kerosene Heaters; Tips for Drowsy Drivers; Safe Toys for Christmas; Car Fitness; and Tips for Party Givers; just to name a few. His program is not just all eyewash and talks. He received an official annual safety program assessment from the 4th Wing Ground Safety Office. The results of this in-depth review of his entire unit program revealed not one single discrepancy and was repoted as

one of the best on base — a model to be emulated. Sergeant Honeyman deserves credit and recognition for the job he has done.



***TSgt Harold E. Honeyman  
4 MSS, 4 WG  
Seymour Johnson AFB NC***

# The Promise of Confidentiality

*Lt Col Dan Eagle  
366 WG/SE  
Mountain Home AFB ID*

**H**ome Box Office recently featured a movie called "Afterburn," allegedly based on events following an Air Force F-16 mishap. In this film, the widow of the pilot killed in the mishap is portrayed as being deliberately frustrated by the Air Force safety investigation board in her efforts to find the real cause of the mishap. Besides resenting the label of "bad guy," I think it's important for us, as Air Force members, to understand why aircraft safety investigation board reports are treated as limited-use privileged reports and not releasable outside of safety channels.

First, some basics. The bottom-line purpose of Air Force safety is to prevent mishaps and protect our people and equipment. When mishaps do occur, they are investigated by safety boards to determine the cause so that similar mishaps don't occur in the future. Safety boards aren't out to "hang" anyone; they are attempting to honestly uncover all the facts. Testimony given to the board is treated as confidential and cannot be used in legal actions against individuals or organizations. This promise of confidentiality helps ensure that testimony given to the board is completely honest. For example, if a pilot makes an error which causes loss or damage to an aircraft, he is free to admit it without fear of prosecution. Similarly, if a contractor builds, designs or maintains a faulty part which leads to an aircraft mishap, that contractor is also free to admit the error without fear of that information being used in lawsuits from surviving relatives. Naturally, this often leads to resentment on the part of relatives who'd like to use safety reports as a basis for litigation, or simply to ascertain the exact circumstances of a mishap. While we may feel sympathy for those who have lost a loved one,

the integrity of our safety investigative process demands that we restrict use of safety investigation board reports to the safety community as specified in AFR 127-4.

Air Force safety regulations specify that all Air Force and civilian personnel are prohibited from using, permitting use of, gaining or allowing access to limited-use privileged safety reports for any other than official safety reasons. Such reports, or portions thereof, may not be released unless prescribed by regulation. Violations involving unauthorized release are punishable under the Uniform Code of Military Justice and may be grounds for disciplinary actions according to civilian personnel regulations.

While the above restrictions against release of reports seem straightforward enough, we all need to be vigilant against inadvertent release of privileged information. Speculation or "bar talk" about mishaps, their causes or mishap board findings could very well lead to unauthorized disclosure of information. Remember, when in doubt, keep your mouth closed! For the same reason, those of us who work in Air Force safety or have access to safety reports need to treat those reports as classified information. Unit safety officers are trained to properly sanitize safety reports to protect the integrity of the process, while still getting the word out to their units.

Yes, the Air Force's policy of nonrelease of privileged safety investigation board information may seem cruel or inhuman to some and presents Hollywood the opportunity to make a quick buck. However, in the long run, the confidentiality of mishap board findings, causes and recommendations helps guarantee that the mishap we investigate today doesn't happen to someone else tomorrow. ■

Colonel Bridge  
AF/JA1  
Reprinted from  
TIG BRIEF, Nov-Dec 1992

Due to events in Operation DESERT STORM, issues concerning the investigation of aircraft accidents and other mishaps, and the release of information relating to such investigations, have taken on new importance.

Air Force guidance on mishap investigation derives from DODI 6055.7, **Mishap Investigation, Reporting, and Recordkeeping**. The guidance has varied purposes, but accident prevention is clearly one of its primary goals. It contemplates three types of investigations: the Limited-Use Safety Mishap Investigation, the General-Use Safety Mishap Investigation, and the Legal Mishap Investigation. Each is discussed below.

In a Limited-Use Safety Mishap Investigation, evidentiary statements are taken under promises of confidentiality and contained in "limited-use reports." These reports are internal DOD reports created for the sole purpose of preventing future mishaps. Under these circumstances, any information acquired through a promise of confidentiality can be protected from release when a Freedom of Information Act (FOIA) request is made. These "limited-use reports" are required for all in-flight accidents, considered privileged, not used for any adverse actions or claims proceedings, and not released in their entirety to the public or any Federal Agency outside the DOD. For the Air Force, AFR 127-4, **Investigating and Reporting U.S. Air Force Mishaps**, implements that portion of DODI which deals with Limited-Use Safety Mishap Investigations. AFR 127-4 is the guiding regulation for the conduct of safety investigations. This regulation excludes mishaps caused by combat from investigation as a safety mishap.

Under DODI 6055.7, General-Use Safety Mishap Investigations may be conducted for all mishaps not covered by limited-use investigations. They too are primarily used for prevention of future mishaps. DOD components may impose special restrictions to encourage voluntary cooperation of essential witnesses and may advise such witnesses that the reports will not be used to impose discipline by DOD, but the component may not state that the report will be treated as exempt from mandatory disclosure under the FOIA.

Legal Mishap Investigations are conducted under procedures set forth by the components' Judge Advocates General, legal counsel, or other authority. They

are conducted to provide information for possible use in litigation, disciplinary actions, claims, and all purposes other than mishap prevention. They are carried out separately from the limited-use and general use investigations and may be conducted in the absence of those types of investigations. There is no privilege accorded any testimony and the report is releasable under FOIA. AFR 110-14, **Investigations of Aircraft, Missile, and Nuclear and Space Accidents**, contains Air Force guidance for conducting Legal Mishap (collateral) Investigations.

In DESERT STORM, there was no formal guidance for mishap investigations other than DODI 6055.7. The separate services investigated combat-related mishaps. In air-to-ground fratricide mishaps, the lead investigating service was invariably the one which sustained the casualties.

AFR 127-4 does not apply to instances of fratricide in combat. This fact was misunderstood in DESERT STORM, and several Air Force members operated under the mistaken belief that fratricide incidents were being investigated as safety mishaps. Safety officers should not be used in fratricide investigations in order to minimize the possibility that a fratricide investigation may be confused with a safety investigation conducted under AFR 127-4.

While AFR 127-4 applies to aircraft accidents but does not cover fratricide incidents, the underlying philosophy behind investigating aircraft accidents and incidents of fratricide is the same: witnesses should be able to provide candid statements of what happened without fear of retribution. The overriding concern should be prevention of recurrence.

AF/XO, SAF/GC and AF/JA are collaborating on a regulation designed to protect individuals involved in incidents of "friendly fire" while providing combat commanders immediate, accurate and candid information regarding the cause of the incident. Tentatively identified as AFR 124-22 and entitled **Investigating and Reporting Combat Incidents Involving Harm by U.S. or Allied Forces to Friendly Forces**, this regulation will be coordinated among the other services and is expected to help defuse potentially inflammatory situations of the type experienced after DESERT STORM. ■



# ***Weapons Safety Award of the Quarter***

The mission of the 44th Missile Wing changed dramatically when President Bush took the Minuteman IIs permanently off alert. From that point on, the men and women of the 44th have been hard at work deactivating the Minuteman II weapon system. One individual who has stood out during this operation is Master Sergeant Ocobock. Sergeant Ocobock has supervised the safe removal of 75 Minuteman IIs from their underground launch facilities, 75 roll transfers of the missiles from the Transporter Erector to a shipping and storage container for aircraft shipment, and 73 aircraft loads, a feat unequaled by any other missile maintainer. Sergeant Ocobock's skills and leadership were put to the ultimate test. His Missile Handling Team members were preparing for a missile transfer at the roll transfer facility located near the flightline and active runway. A team member reported smoke coming from the air vents. Sergeant Ocobock arrived on the scene and took

immediate charge of the situation. His clear, concise reporting of conditions was critical for the safe evacuation of personnel and equipment from the danger area. His leadership ensured the safety of base personnel and resources was maintained.



***MSgt Matthew L. Ocobock  
44 OMMS, 44 MW  
Ellsworth AFB SD***

# PILOT SAFETY AWARD OF DISTINCTION

*Lt Col Michael P. Coyle, 136 FS, 107 FG, Niagara Falls NY*

All had gone well for the first hour and a half of his flight, but as he advanced power to accelerate for the final target run, his F-16 started vibrating severely. He immediately initiated a climb, turned towards the Carolina coast 90 miles away, and attempted to find a throttle setting that would minimize the vibrations. The aircraft was now vibrating to the point where engine instruments were unreadable. With one hand on the ejection handle, Lt Col Coyle continued to the "high key" position 7,000' over the airfield to fly a SFO landing pattern. He then ensured his EPU was operating properly and retarded his throttle for the final descent to the runway, during

which time the vibration amplitude grew even larger. Maneuvering around isolated weather, he guided his aircraft down to an otherwise normal landing. Upon roll-out, Lt Col Coyle shut down his EPU and waited for the fire trucks to approach. Once again, the rumbling increased and now he could hear the sound of grinding metal. At this point, he shut down the engine and performed an emergency ground egress. Post flight inspection revealed several metal fragments throughout the engine section indicating imminent engine failure. Lt Col Coyle's quick reaction and sound judgment under demanding circumstances saved a valuable combat aircraft.



# ICBM CREW SAFETY AWARD OF DISTINCTION

*1Lt Andrew D. O'Neel, 2Lt Larry A. Myers,  
741 MS, 91 MW, Minot AFB ND*

"It was early in the morning and temperatures in the flight area were exceeding 30 degrees below zero (55 below with wind chill). While on alert at Golf Launch Control Center, we were notified that an Electro-Mechanical Team's (EMT) vehicle had slid off the road and was stuck in a snow drift. In addition, the EMT was in possession of a Launch Facility Load Cartridge (LFLC), a critical ICBM code component that required special controls. To prevent injury to personnel and a possible compromise of the code component, we took immediate action and accomplished the Missile Combat Crew Contingency Checklist. We immediately dispatched the Golf Flight

Alarm Response Team to retrieve the stranded team from the sub-zero temperatures. When the EMT arrived at our remote alert facility, we ensured proper control of the critical LFLC was maintained. Within hours, we had the EMT back on the road to reposture two of our flight's ICBMs to full alert status." The immediate response of Lieutenants O'Neel and Myers prevented possible severe injury to the maintenance team and ensured that a critical code component was not compromised. Their heads-up alert duty skills and superb leadership attest to their exceptional proficiency as missile combat crew members.



## CREW CHIEF EXCELLENCE AWARD

*Airman Jeffrey May, 311 FS, 58 FW, Luke AFB AZ*



“There I was, tasked to launch an F-16 aircraft when I noticed a slight moistening around the seams of the engine bay panels. Although I had only four months of flight line experience, I knew a serious problem might exist and immediately contacted a 7-level technician to investigate. When the technician opened an engine bay panel to look inside the bay, the vacuum seal created by the running engine was broken, allowing previously trapped fuel to freely drain from the bay panels. It was obvious a serious leak existed

and the aircraft was immediately shut down to prevent the possibility of fire. Further investigation revealed the fuel strainer line seal was leaking, which had filled the bay with several inches of JP-4. Had I not paid close attention beyond the routine tasks of launch, the aircraft would have inevitably caught fire, resulting in the possible loss of a multi-million dollar aircraft, and even worse, a pilot.” Airman May’s attention to detail and insight in ensuring true aircraft airworthiness, earn him the ACC Crew Chief Excellence Award.

## WEAPONS SAFETY AWARD OF DISTINCTION

*TSgt Perry M. Bailey, 388 MS, 388 FW, Hill AFB UT*



TSgt Bailey ordered grease to lubricate the F-16 aircraft M61A1 gun system. He ordered NSN 9150-00-985-7247, MIL-G-23827, better known as “peanut butter,” for its consistency and color. He received the correct NSN and MIL spec; however, the grease was purple in color, manufactured by an unfamiliar trade name: SULFLO, Inc., and was not accompanied by a material safety data sheet. Not assuming this was a suitable substitute, he made inquiries to the 388 FW Combat Oriented Supply Organization, and OO-ALC supply and weapons personnel. Unable to satisfy his questions, he directed his inquiry to the M61A1 manufacturer, General Elec-

tric, in Burlington, Vermont. Crosstalks between Sgt Bailey, HQ ACC, WR-ALC, General Electric, and US Navy lubrication procurement representatives determined SULFLO was not on the US Navy’s quality products listing for the specified lubricant. Subsequently, WR-ALC and HQ ACC messages were generated warning field units not to use MIL-G-23827 manufactured by SULFLO. Sgt Bailey’s intuition, initiative, and steadfast efforts resulted in an unauthorized and questionably safe lubricant from being used on 388 FW aircraft and other aircraft that use the M61A1 gun.

# GROUND SAFETY INDIVIDUAL AWARD OF DISTINCTION

*SSgt Gene L. Cressey, Jr., 44 MLSS, 44 MW, Ellsworth AFB SD*

Sergeant Cressey has implemented numerous programs that enhance awareness of safety issues as well as creating a safe working environment for the 44th Missile Wing. He produced and published an annual safety package, "Tailgate Sessions," for the 101 critical days of summer. He arranged for demonstration of the "Convincer," a strap-yourself-in crash simulator that highlights the benefits of seatbelts. Preparing and distributing safety handouts, notes, and mishap "lessons learned" to each flight leader, flight sergeant, and first line supervisors for briefing squadron person-

nel is second nature to Sergeant Cressey. Development of an emergency communication training program; an egress evacuation plan for personnel to use in the event of an accident; written guidelines on proper two-person lifting techniques and coordinating with the unit vehicle section to ensure all had sufficient emergency equipment, cold weather survival packs, and tire chains for winter driving attest to Sergeant Cressey's ceaseless efforts and tireless commitment to safety. Sergeant Cressey's hard work, dedication, and success make him deserving of this award.



# FLIGHTLINE SAFETY AWARD OF DISTINCTION

*A1C Ricardo Banda, 388 MS, 388 FW, Hill AFB UT*

"I was walking through an aircraft hangar when I noticed three individuals starting to remove the gun drum on an F-16 aircraft. Realizing the seat and canopy were already removed and that removal of the gun drum would result in the aircraft center of gravity moving farther to the rear of the aircraft, I stopped the crew and immediately notified my supervisor. After researching the technical order, it was found that removal of the gun drum would have entered the aircraft in an unsafe, aft heavy condition. This could have

allowed the aircraft to rotate aft and fall on its engine or seriously injure maintenance personnel." Airman Banda's actions demonstrate his attention to detail and commitment to safety. These actions make him truly deserving of the ACC Flightline Safety Award of Distinction.





# UNIT SAFETY AWARD OF DISTINCTION

4th Fighter Squadron, 388 FW, Hill AFB UT

The 4th Fighter Squadron's "Fightin' Fuujins" has taken a "Safety First" approach in everything they've done and everything they do. Reduction of FY 93's military disabling injury rate by 50% over the first half of FY 92; zero on-duty reportable mishaps and zero explosive/missile reportable mishaps since the beginning of FY 93, attest to the emphasis the squadron places on safety. In addition, the 4 FS received zero discrepancies during a no-notice spot-inspection by the wing. Commander, supervisor and safety personnel involvement are apparent throughout the squadron and evidenced by a constantly improving safety environment. Pro-

vided input and assistance in the development of a wheel speed sensor tester for use within the wing, which will help prevent F-16 anti-skid failures by checking for bad sensors acquired from supply. Conducted an in-depth evaluation from a safety/practicality standpoint, on a proposed F-16 Crew Boarding Ladder that was designed for mobility purposes. The 4 FS generated a safety briefing for use within the squadron/wing prior to the 388 FW Ski Fling. The 4th Fighter Squadron's many accomplishments in the field of safety have earned them the ACC Unit Safety Award of Distinction.

## SEEING DOUBLE?

As you have probably noticed, we had a lot of awards to publish in this issue. Due to the special edition last month covering the ACC Missile Combat Competition for 1993, we had to hold over four monthly awards. Also included are the winners of our last quarterly awards board. These awards have all been printed in our standard one-page format. The winners of the April awards board were forced to share the remaining available pages. No hard feelings, I hope.

I truly believe that each award write-up is a valuable lesson to share with everyone, and I usually avoid any substantial editing. This time, in order to make things fit, I had to cut out a lot of the details. I trust the critical safety message remains for all to read and heed. Next month things should be back to normal and I promise to go easy on the hacks. Just in case any of you are interested, my staff tells me that an award write-up of approximately 325 words is perfect for publication.

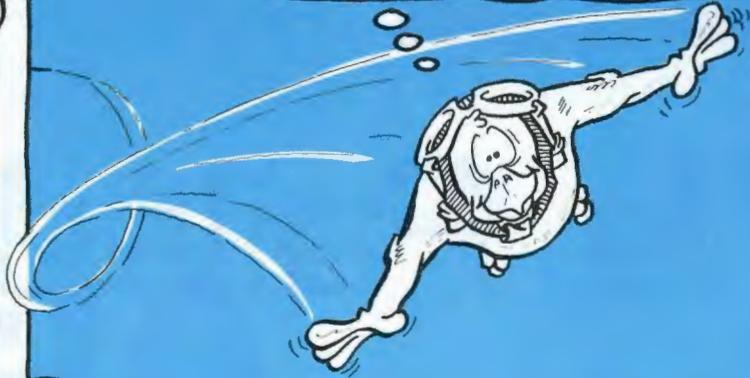
My hearty congratulations to all of our award winners. Full page or not, you're what it's all about. Keep up the great job!

Ed.

SUMMER'S ABOUT HERE AND THAT MAKES FER SOME FINE FLYING TIME.



NOTHING BEATS TH' HIGH ONE GETS AND TH' FREEDOM FELT WHEN STREAKING ABOVE EARTH AN' CLOUD...



THE RUSH OF A WARMING WIND AND TH' VIEW OF A LAND BELOW TURNING GREENER BY TH'DAY.



HARDISON

WHAT'S THAT YONDER?



OW!  
NO!  
SMACK!  
BUMP!  
OUCH!!  
SCRAP!  
SPLAT!  
KNOCK!!

BY TH'WAY, FLEAGLE, I HEAR TELL THAT MIGRATION IS GONNA BE KINDA HEAVY THIS YEAR.



THAT'S MEAN, TINY.



Lt Col James D. Teigen  
HQ ACC/SEF  
Langley AFB VA

# We Failed... AGAIN

***I*** was sitting in the back room flipping slides when it hit me like a ton of bricks, we failed...again. We failed to get a fundamental lesson out to the field. We just lost an aircraft and nearly a fellow aviator simply because the system we live in didn't pass on lessons learned.

The recent mishap was set up along the following lines. The bleed air ducts were separated during a maintenance action. The requirement to take apart a bleed air line is infrequent, but necessary to perform actions on the wire bundles, hydraulic lines and fuel lines. Well, when it came time to put it all back together again, it didn't get done. While that is unacceptable, the real killer is the lesson that wasn't learned.

Bleed air lines are just that. Lines filled with bleed air. Sounds so simple, yet they are killers. The first step you need to understand is that bleed air lines are normally high pressure. Bleed air either comes from an Auxiliary Power Unit (APU) which is really the exhaust of a very small engine or from the last stages of the compressor section of your jet engine. Both of these sources are high pressure (some higher than others) and very hot!

Temperatures often reach 600 to 1000 degrees Celsius depending on the aircraft and system.

It shouldn't take a rocket scientist to figure out what could happen if a jet of air at high pressure and high temperature was let loose in the confines of an aircraft. Whatever is downstream is going to either get cooked, cut, severed or ignited.

The bleed air leak is a true killer. I learned about it 19 years ago when I first entered B-52's. Back then, the models flying used bleed air to power the hydraulics and the alternators (read generators). There were massive tubes running all over the aircraft taking bleed air from the engines and routing it back into the body of the B-52 to run hydraulics and electrics. I was always amazed at the tubing visible on the walkaround and the number of couplings. The bleed air tubes on the B-52 ran along the side of fuel tanks, around hydraulic lines, fuel lines and electrical lines. One leak anywhere in the system, and we were "hurtin for certin." The lesson we were all taught was that a bleed air leak could

easily kill your aircraft and you.

We were also taught some telltale warning signs to watch for. If any of these should show up in flight or on the ground, you had a bleed air leak and you needed to isolate the bleed air by shutting off bleed air valves. Those signs were: warning lights/signals from dissimilar systems; rapid, compounding warning lights/signals from dissimilar systems; warnings from one side of the aircraft; a drop in the reading on the bleed air pressure gauge; or fire indications. These instructions were etched in concrete, or so we thought, until this last mishap. Where did we go wrong?

First, the aircraft, as any aircraft, is only so big. The design of where to route lines is ultimately limited to the confines of the aircraft. Secondly, bleed air lines are insulated to prevent the extreme temperatures from igniting flammable fluids which might leak and collect, like fuel, oil, hydraulic fluid and avionic cooling fluid. Third, and probably most importantly, bleed air is a benign term - maybe we should have labeled it "very hot, high pressure air." Maybe that would have alerted folks to the dangers. Maybe doing a better job of institutionalizing a lesson learned would have been best.

Over the years we've lost aircraft to leaking flammable fluids onto hot Environmental Control System (ECS) parts that were never insulated. We've lost aircraft to bleed air leaks that ruptured and ignited fuel tanks and lines. Now we've lost another aircraft because we didn't have a strong working knowledge of the dangers of a bleed air system. As a community of engineers, operators, maintainers and system safety folks, we've all failed...again.

There were extenuating circumstances in this scenario as there were in others. The maintenance guides were written by a technical writer who may never have seen the bay or the parts he was writing about. Thus, instructions were put into place that were almost impossible to accomplish. These should have been caught and

corrected. The workers who performed the job may not have had complete knowledge about the implications of their work. If a mistake was made or a step missed, then what else could happen? That should have been caught. Designing lines of various systems to run in very close proximity, without shielding, insulation or having multiple joints should not occur. That should have been caught. Having an aircraft fly its first sortie out of a phase inspection without a highly qualified crew/pilot at the controls is wrong. That should have been caught. The knowledge of bleed air leaks and how to control them in every aircraft type should be resident in each aircraft tech order. That should have been caught. In all these cases, just a little effort could have, would have, stopped the mishap chain of events.

The old saying in safety about every fellow aviator that goes in, we all lose, because we all had the opportunity to correct the way he flew, thought, acted or handled the situation is so true. It's true about the aviators, and it's true about the aircraft we fly.

Over the years we had a chance to correct each and every one of those items that should have been caught. There are procedures to correct maintenance procedures; **use them**. There are procedures to correct and obtain knowledge of why and how we do our jobs; **use them**. There are Mil Standards which are proven over and over again and are smarter than rogue engineers; **use them**. Utilizing the most qualified aircrew/pilot to check out the phase aircraft, or heavy maintenance aircraft is prudent; **use them**. Knowing what to look for in bleed air situations should be institutionalized in each and every aircrew tech order; **use them**. And finally, if at some point in time there is ever an "almost" mishap, the AFR 127-4 mishap reporting system is there to help get the message out to as many folks as possible; **use them**. The bottom line is that we all had a chance to fix this mishap chain of events and we didn't. We failed to follow previous lessons learned...again. ■

# SYSTEM SAFETY...

## Designing Safety into Ballistic Missile Systems

**A**fter looking at the title of this article you may be asking yourself, "What is system safety and how does it apply to me?" If you are from the operational world, this is a very valid question. Had I been asked these questions a few years ago while commanding a missile crew at Minot AFB, I would have responded with a shoulder shrug and gone on about my business. Little did I know that I was virtually surrounded by equipment racks and machinery whose designs were influenced by system safety.

As weapon system operators and maintainers, you are all aware of the safety procedures that must be complied with while performing your daily duties; but did you ever stop to think about how these procedures were developed? Safety procedures may be incorporated into TOs anytime after the discovery of a potential hazard. However, many of the safety-related tasks being performed today were developed prior to the initial deployment of your weapon system. These procedures were developed as a result of the application of system safety to the design of the weapon system.

What is meant by system safety? AFR 127-2 defines it as the application of engineering and management principles, criteria and techniques to optimize safety within the constraints

Safety procedures may be incorporated into TOs anytime after the discovery of a potential hazard. However, many of the safety-related tasks being performed today were developed prior to the initial deployment of your weapon system.

of operational effectiveness, time and cost throughout all phases of the system (weapon system) lifecycle. This definition sounds pretty nebulous, and it is. Simply stated, the goal of system safety is to identify hazards in system designs and eliminate/reduce the risk associated with operation and maintenance of the system.

System safety originated at the Ballistic Missile Organization (BMO), then the Ballistic Missile Division, nearly 30 years ago when operational testing and site activation of the United States' first ballistic missile systems were being accomplished. The initial launch success rate was extremely low. Most of these mishaps were traced directly to deficiencies in design, operational planning and ill-conceived management decisions.

A lack of operational planning led to the destruction of a Titan silo when the counterweights used to balance the movement of the silo elevators were designed only to raise a fueled missile to the surface for firing. There were no provisions for lowering the fueled missile into the silo to remove the fuel if it was not fired. The first operation with a fueled missile nearly succeeded. The drive mechanism supported the missile for all but the last 5 feet, then gravity took over and the missile dropped. The resulting explosion altered the 40-foot diameter silo

into a 100-foot diameter hole.

In another mishap a single point failure in a hydraulic system caused a 120-ton door to fall, killing 5 people.

Before all was said and done, 2 Titan missile silos and 3 Atlas silos were destroyed, and at least 5 people were killed. The indirect cause of all of the mishaps can be traced to the "fly-fix-fly" approach used in developing early missile systems. This approach, which had been used extensively in the development of aircraft, proved to be inadequate for designing missile systems. We needed a way to concentrate efforts on accident prevention during the design phase instead of identifying hazards after the fact. Hence, the system safety concept was born.

The BMO commander issued a directive that eventually evolved into the system safety concept, and was ultimately reflected in MIL-STD-1574, **System Safety Program for Space and Missile Systems**. MIL-STD-1574 has now been augmented by a broader guide, MIL-STD-882, **System Safety Program Requirements**. As the system safety concept took root in the space and missile world, the Air Force recognized the need for system safety throughout Air Force acquisition programs and required system safety programs through promulgation of AFR 800-16, **USAF System Safety Programs**.

Under the system safety concept, each program office appoints an individual who is responsible for system safety management. DOD Instruction 5000.36 requires each MAJCOM to establish an effective system safety program for all programs, projects and modifications to existing programs. In large programs the system

A lack of operational planning led to the destruction of a Titan silo when the counterweights used to balance the movement of the silo elevators were designed only to raise a fueled missile to the surface for firing.

safety effort is a formidable task, but safety managers should not be alone in this endeavor. System safety is a working part of the system engineering activity; and, as such, it is the responsibility of all engineers to consider safety when designing or modifying a system.

The system safety manager provides the oversight necessary to discover the less obvious hazards present in the system design and recommends methods of correcting the hazard. MIL-STD-882B establishes an order of precedence for satisfying system safety requirements. The first step is to design for minimum risk. If identified hazards cannot be eliminated or reduced through design selection, then safety devices must be incorporated. When neither of these techniques can effectively eliminate or reduce the risk, warning devices must be provided to detect the unsafe condition and provide an adequate warning signal to alert personnel of the hazard. Finally, if all else fails, safety procedures are to be incorporated into TOs, and individuals operating or maintaining the system are to be trained on these procedures.

It is virtually impossible to field a hazard-free weapon system, but it is possible to identify all hazards present in a system and reduce the probability of a mishap occurring. Hazards that go unnoticed could lead to cost, schedule and performance penalties, not to mention adverse public perception. For these reasons it is important that system safety receive appropriate management attention as part of the system acquisition process.

Now that you have an understanding of what system safety is, let's apply that knowledge and discover

what it means to you. Air Combat Command (ACC) is BMO's customer; and, as such, BMO must be responsive to the needs of ACC. We owe it to you to provide weapon systems that are supportable, maintainable and capable of meeting operational requirements. At the same time it is paramount that the weapon system is as hazard-free to the user as possible.

The most effective way to meet ACC's needs is to gain an early understanding of the system requirements. The earlier the better! The only means of doing this is through coordination with ACC's plans and intelligence community. Coordination is required both early and often to ensure that BMO is current with the technical requirements as the system design evolves.

A thorough understanding of the requirements allows the safety manager to perform early hazard analysis with more accurate results. Such analysis often involves using lessons learned

from similar programs in addition to indepth technical analysis. Hazards identified early in the acquisition life cycle are much easier and cheaper to mitigate than those that go unnoticed until the weapon system is deployed. For this reason it is imperative that the system safety manager gains an early understanding of your requirements prior to conducting any hazard analysis.

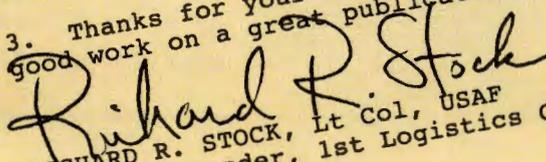
The teamwork exhibited by ACC and BMO has resulted in a number of highly successful weapon system programs, Minuteman and Peacekeeper to name a couple. These systems have set the standard for reliability, maintainability and operational flexibility while experiencing relatively few mishaps. With your support and expertise, this trend will continue as new weapon systems or modifications to existing systems are implemented. We look forward to working with you in the future. ■

## THANKS FOR SETTING US STRAIGHT!

FROM: 1 LG/CC  
SUBJ: Correction to Article in Mar 93 Issue of "The Combat Edge"

TO: HQ ACC/SEP (Editor)

1. Your Air Rescue Service article, "That Others May Live" in the March 1993 issue of "The Combat Edge" was well done and presents an informative and interesting history of the ARS and why they are being realigned under ACC. However, we came across a misprint in the "Rescue Realignment" chart on page 31. You show the 741st Consolidated Aircraft Maintenance Squadron as joining the 1st Operations Group (1 OG). Correction: The 741 CAMS will be aligned with the 1st Logistics Group (1 LG) at Langley.
2. For our units at Patrick AFB who are working diligently on the arduous administrative details of realignment, we hope this will not confuse them or others in the ARS. Perhaps a correction in the next issue of "The Combat Edge" is in order.
3. Thanks for your attention to this matter. Keep up the good work on a great publication.

  
RICHARD R. STOCK, Lt Col, USAF  
Deputy Commander, 1st Logistics Group

# Accolades

QUESTIONS OR COMMENTS CONCERNING DATA ON THIS PAGE SHOULD BE ADDRESSED TO HQ ACC/SEA, DSN: 574-3814

	TOTAL			ACC			ANG			AFR		
	FEB	THRU FEB		FEB	THRU FEB		FEB	THRU FEB		FEB	THRU FEB	
		FY93	FY92		FY93	FY92		FY93	FY92		FY93	FY92
CLASS A MISHAPS	3	9	13	1	4	5	2	4	7	0	1	1
AIRCREW FATALITIES	0	5	8	0	4	1	0	1	5	0	0	2
* IN THE ENVELOPE EJECTIONS	4/0	8/0	7/1	1/0	3/0	4/0	3/0	4/0	3/1	0	1/0	2/0
* OUT OF ENVELOPE EJECTIONS	0	0	0	0	0	0	0	0	0	0	0	0

\* (SUCCESSFUL/UNSUCCESSFUL)

## CLASS A MISHAP COMPARISON RATE

(CUMULATIVE RATE BASED ON ACCIDENTS PER 100,000 HOURS FLYING)

	FY 92	3.4	1.9	2.0	2.5	2.0	2.0	2.0	2.3	2.5	2.4	2.6	2.5
<b>ACC</b>	FY 93	2.0	3.1	2.1	1.6	1.7							
<b>1 AF</b>	FY 92	0	0	0	0	0	0	0	0	0	0	0	0
	FY 93	0	0	0	0	0							
<b>2 AF</b>	FY 92	0	0	0	0	0	0	0	*	29.1	16.4	11.2	7.8
	FY 93	0	0	0	0	0							
<b>8 AF</b>	FY 92	0	0	0	0	0	8.9	7.6	6.6	7.9	5.8	4.4	5.2
	FY 93	0	11.6	4.5	3.9	3.5							
<b>9 AF</b>	FY 92	4.4	2.4	3.4	2.6	2.1	1.7	2.2	2.6	2.4	2.7	2.4	2.0
	FY 93	5.2	5.5	4.1	2.9	3.5							
<b>12 AF</b>	FY 92	0	0	0	1.5	1.3	1.0	.9	.8	1.4	1.3	1.8	2.1
	FY 93	0	0	0	0	0							
<b>ANG</b>	FY 92	0	6.7	6.3	8.8	7.1	6.6	5.6	5.5	4.9	4.9	4.9	4.9
	FY 93	0	2.2	2.9	2.1	3.5							
<b>AFR</b>	FY 92	0	10.9	7.7	5.7	4.7	3.9	6.7	8.7	7.8	7.0	8.4	7.7
	FY 93	0	0	6.8	5.1	4.2							
<b>TOTAL</b>	FY 92	2.3	3.7	3.5	4.3	3.5	3.3	3.3	3.6	3.5	3.4	3.6	3.4
	FY 93	1.3	2.6	2.6	2.0	2.4							
MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

\* (HOURS NOT AVAILABLE)

# LESSONS

**T**hey say a picture is worth a thousand words. It would have taken a thousand pictures to describe the task we were about to undertake. After departing civilization on a 40-minute helicopter ride over desolate terrain, we arrived overhead the mishap site. The view as we hovered really didn't convey to us the magnitude of the terrain. However, it only took a few seconds standing at the bottom of that ridgeline to realize just how big it really was. Ridgeline, cliff, call it what you want, to me it was a mountain or in layman's terms, a huge rock! For 11 days, over 100 people searched that mountainside for a clue. Rocks that looked small turned into boulders as you got closer. The big ones tended to be your friend, because you could walk on them and they would stay in place. The small ones were constantly sliding out from under you causing rock slides on the poor guy below you. If you weren't twisting your ankle on a rock, the thorns and cactus were constantly tugging at you, letting you know that you were intruding into their domain as well. What seemed like an easy climb, was instead a test of one's physical fitness. It only took 2 hours to climb to the base of the impact area; and once you got there, the trip back down was just as tough. Not many complained about the cold weather though, because it kept the rattlesnakes in their dens.

It was hard to imagine how a 329,000 pound B-1B could be virtually torn apart, piece by piece; 600 knots and a solid mountain translated into roughly 2000 G's, give or take a G. It was

like taking a sledge hammer to a plastic airplane model, over and over and over. Actually, it looked more like the aircraft had been run through a meat grinder. Our seasoned maintenance troops found identification of the parts to be extremely difficult, and sometimes even impossible. It was a humbling sight. Our job, to find a clue that would help us determine the chain of events that eventually led to an aircraft impacting that mountainside. What had gone wrong? Did the machine malfunction? Did the crew err at a critical time? Did the elements provide an unknown hazard that the crew was not ready for?

It really never hits home until you actually see the results when things don't go right. The causes of this mishap are not something we haven't seen before. The lessons we should have learned from past mishaps seem to continually repeat themselves in one form or another. But do we ever learn from the mistakes of others?

Growing up as children, we learn about the dangers of fire when we first touch a flame and experience pain. Some of us learned about electricity in our early years when we stuck a paper clip in an electrical wall socket only to discover that they don't belong there. In the flying business, we tend to learn what our limits are when we press a little too far (sometimes intentionally, sometimes not) and scare ourselves, or worse yet, when we let someone else go too far. "Boy, I don't think I'll do that again!" I think we've all been there. In other words, we tend to learn from our own mistakes.

# WE LEARNED

The tech orders all have limitations, warnings, cautions, etc. Many of them are born from mishaps. They're there for a purpose, to keep us out of trouble. Regulations, procedures, operating instructions, rules of engagement, call them what you want, all exist to make sure we operate within these limitations.

Unfortunately, though, there will always be those who fail to heed the mistakes of others; who despite their inexperience, will try something they aren't ready for; or who will simply disregard proven procedures and end up logging a takeoff, and too often, no landing. Safety investigation boards are formed because of those few who venture too far. They are formed to determine the cause of a mishap. But more importantly, to come up with recommendations to keep them from happening again; to teach others what can go wrong when things aren't done correctly. Tech orders tend to feed and grow from mishaps. The main thing though, is what lessons do we learn from these mishaps? What can we take away and keep in the back of our minds to keep us from being another mishap; from being another statistic that lends even more credence to a warning or a caution.

In the past, there have been crews who have managed to bang airplanes together and still survive to learn a lesson...the hard way! Others, have been less fortunate. We all learn by our experiences and from our mistakes, as hard as they may be at times. But when it happens to others, we tend to show our ignorance by saying it couldn't happen to us. We tend to use a lot of hindsight and a lot of "Monday morning quar-

ter-backing" when it comes to someone else's mistakes! As a result, there will always be those who fail to heed the mistakes of others and find themselves repeating them.

In the Dec 92 issue of *The Combat Edge*, the article "Weaving A Common Thread" talked about past mishaps and the "common thread" that seems to be running its course, albeit a dangerous one. By now, most of you have probably read the final report on this mishap or heard about it. If you look at the particulars, you can add this mishap to that list with a "common thread." How many of you will learn from the mistakes that were made? How long will it be before these same mistakes are made again? Think about it! How many mishaps can you remember that have occurred within your weapon system? What was the chain of events leading to the mishap? Where could the chain have been broken and the mishap averted? If you look real close, you'll find that the majority were preventable. With few exceptions, the part that failed was man himself. My statistics are real. In the past year, I've participated in 4 Class A mishap investigations -- of these, 3 were preventable. It's up to you. Like the mechanic on the television commercial says, "You can pay me now, or you can pay me later!" You can learn from the mistakes of others now, or you can repeat them later! FLY SAFE!!

To the 100-plus men and women who braved the cold and the treacherous terrain for 11 days in search of a clue to the cause, I salute you!



