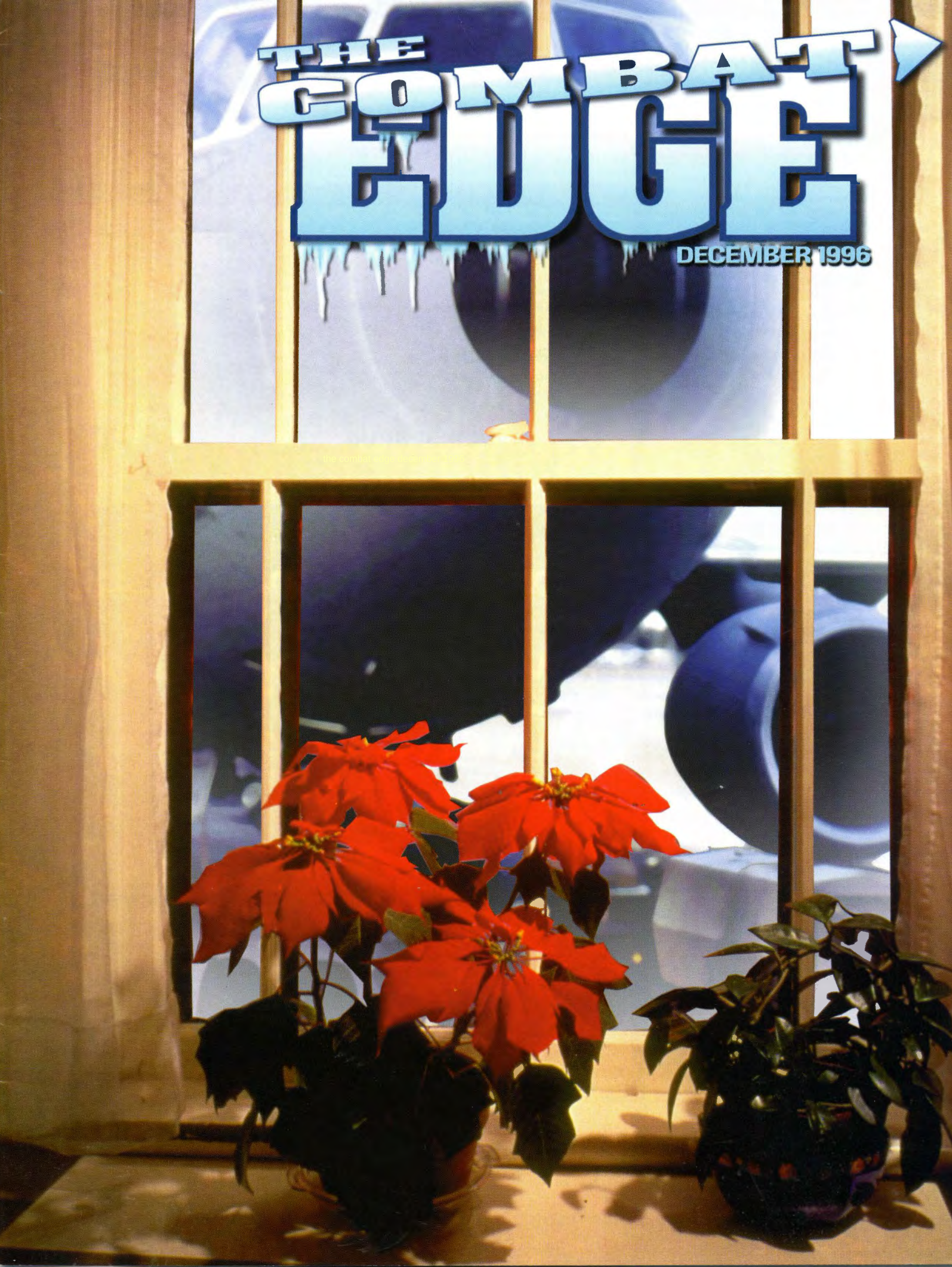
THE COMBAT EDGE
DECEMBER 1996

The Combat Edge

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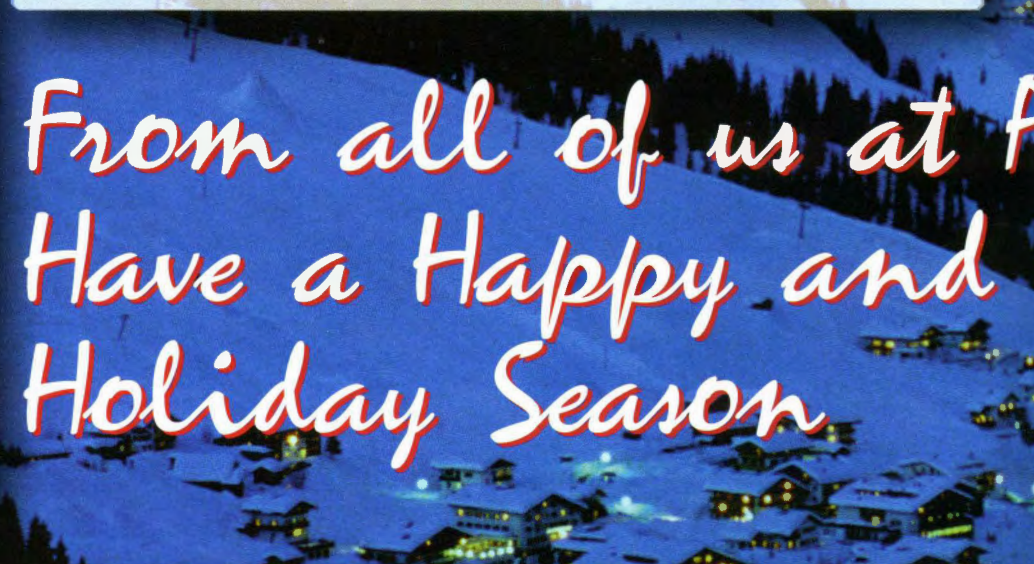

DEPARTMENTS

ACCent on Safety

Have you got your Christmas shopping done yet? Don't put it off for too long, you know how it gets on Christmas eve. There's all that pushing and shoving, the sweating — and that's just getting the driveway shoveled to get the car out! But you know what I mean, most of us have been there; 2 hours until the only store left open will be the 7-11; the only gift you've picked up is the one for Grandma, and you've got a list left to fill that's longer than Father Time's beard. The pressure's on and you've got to move. There are places to go, people to see; hey, there's power shoppin' to be done! You've got to decide whether you'll go to the Mall first or the BX. Then, you get lucky and the first place you go has a brown one, but you know she wants the blue one. Oh, what to do, what to do?

Well, if you can picture this, then you can grasp the concept of having to make choices under pressure. (On the job, we usually call this decision-making.) And we certainly have our pressures, too — pressures to make the schedule on time, to meet our production quota, to fly another sortie. Every decision has its risks and its benefits and every decision has the pressure of seemingly too little time to really think about it. Sometimes it seems the best you can do is just try to pick the least undesirable option and go with that. Or, you go with whatever the minimum is 'cause like the old adage says, "If the min wasn't good enough, it wouldn't be the min."

If this is the way your decision process works, it's high time to make a change. In our *culture of excellence*, the min just isn't good enough. Nor will you achieve a "world class performance" just by taking the "least bad" choice. We need to be willing to revolutionize our thinking and strive for the options that offer the most benefit. Sure that means there'll be some risks, but that's okay, because the payoff should make the risk worth taking. The astute will quickly gather that, if there is no payoff, then the risk is clearly not worth it (so whatever you do, don't get the red one, she hates red).

In this issue, we talk about decision-making and try to offer some brain food on the process involved. The key here is to remember that it is a process that's the same whether it's picking Christmas gifts or launching a space shuttle. In either case, using a well-founded risk management process should help you get the best answer. ■

Ya'll have a Merry Christmas and may all your decisions be "safe" ones!

Colonel Turk Marshall
Chief of Safety

ORM

A Three-Letter Acronym for World Class Performance!

Col Tom Poole
HQ ACC/SEO
Langley AFB VA

You may have heard the rumblings of a new Air Force initiative called ORM. It stands for Operational Risk Management, but is known in industry and the Army as simply Risk Management. The "operational" in ORM does not mean to suggest that it is something for the operations group or just for flying units. ORM is for everyone. It applies to all Air Force personnel and has tools that will help everyone perform better and safer. You can even use ORM when making decisions about a family vacation or outing on the family boat. And ORM can really help when you are part of a deployment such as a 44-man security police squadron who has just been tasked to deploy to (insert the name of some unheard of, out of the way, third world country with lots of risks and very little infrastructure).

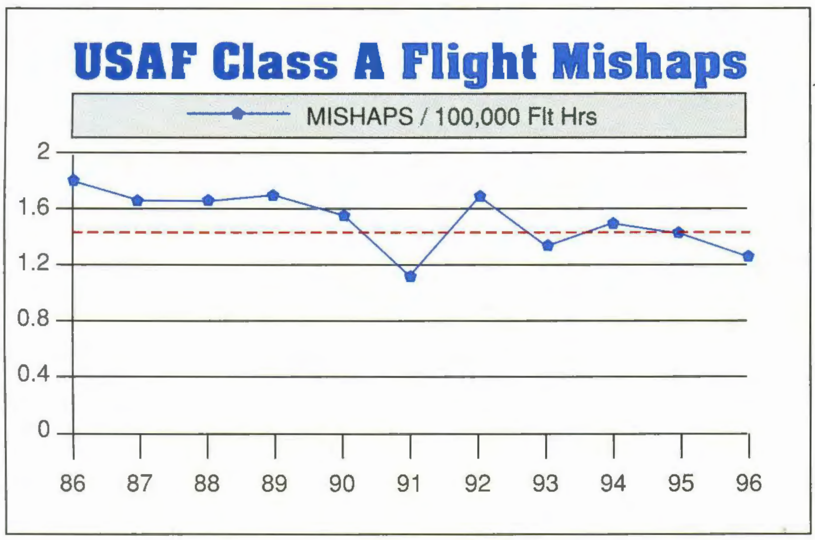

FIGURE 1

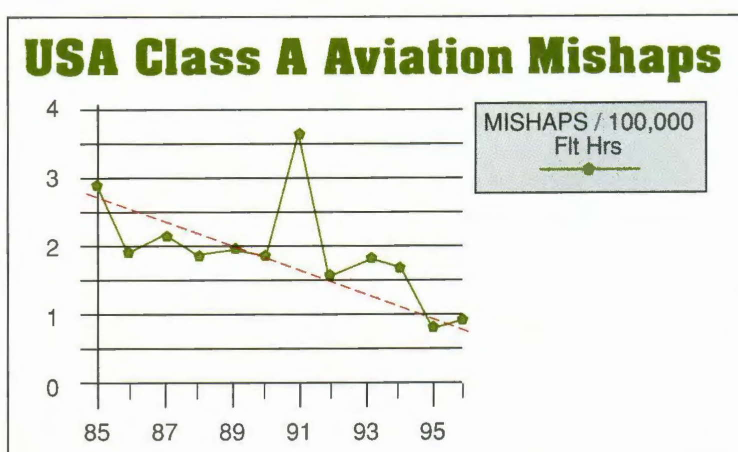

FIGURE 2

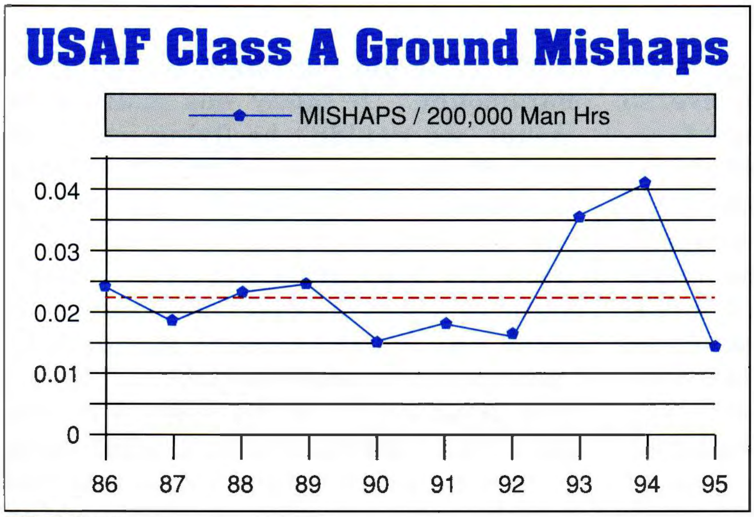

FIGURE 3

We in the safety business, and you as commanders, supervisors and Air Force professionals have worked diligently over the years to develop a safe working environment and safe ways to do our job. Together we have achieved much, but we still have accidents and wonder why we didn't see it coming. I would like to go over a few numbers to show you what ORM can do. Figure 1 is a chart of our aircraft accident rate in the Air Force. You will note that we have continued to improve, but the trend line has mostly been level; we are on a plateau. Compare our rate to the Army's rate in Figure 2. With some notable exceptions, one associated with Desert Storm, the Army's trend has been steeply inclined towards fewer accidents and they have in fact achieved a significantly lower rate than we have been able to achieve.

ORM isn't just for improving flying safety. Look at the trend the Air Force has experienced in ground accidents (Figure 3). Again, we have done well, but we have reached a plateau. Compare this rate to what the Army has experienced using risk management (Figure 4). Industry has been successfully using risk management and made many changes in how they operate which resulted in improved safety. But ORM isn't only about safety. Mission risk management is making decisions using ORM tools to get to and from the target while avoiding the risks of being shot down, or making the decision whether to enter a dogfight or avoid it. There isn't time in the air to conduct a lengthy analysis, but understanding risk management principles, and a little forethought and training, will allow quick decision making in the air to successfully manage your risk.

Much of our efforts in safety have produced rules designed to make us safer, but in the process have denied realistic training. They may make a training event safer, but put the warrior at risk in combat because of inadequate training or by developing negative habit patterns. We need rules that make sense and build appropriate habit patterns, not rules that were in reaction to an accident. ORM is proactive; it addresses the risks before an accident.

ORM is a systematic way of looking at the way we do business, before an accident. The rules of risk management are:

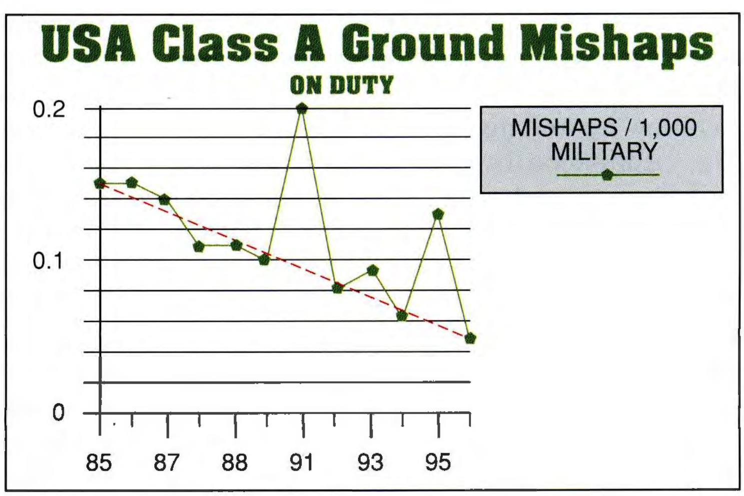

FIGURE 4

(1) accept no unnecessary risk, (2) make risk decisions at the appropriate level to establish clear accountability, and (3) accept risk when benefits outweigh the costs. With ORM, it is very important to balance risk taking with benefits gained. To do this, we first decide if the operation envisioned will produce a benefit. Then we identify the hazards associated with that operation and assess their likelihood of producing an accident. The combination of a hazard, with the likelihood and severity of that hazard producing an accident, results in a quantifiable risk. The next step of ORM is to brainstorm ways of reducing the risk of the operation. We call these control measures. When evaluating which control measures to implement, ORM rules tell us to make sure the control measures don't become so restrictive or expensive that they take away from the benefit the operation was designed to achieve. Doing this could tip the balance towards the risk side and may not make the risks we are accepting worth conducting the operation.

The last two steps of the ORM process are: implement the selected control measure, and supervise them to make sure they are having the intended effect. Sounds simple but making sure the control measures are implemented, communicated, and understood is critical to the process. If they aren't understood and effective, they won't have the desired effect. That is why the last step is there, to follow up and make sure they are working. Additionally, over time, conditions will change and may make it necessary to revise the control measures. This is why supervising the control measures is so important; we don't want a well intentioned control measure to go astray because of a change in environment or mission.

To sum up my discussion of ORM, I need to tell you it involves a change in outlook, or in effect, a paradigm shift. There, I've said it. Are you still with me? Good. The old paradigm is "Safety Is Paramount." If safety was really paramount, we wouldn't be flying jets. But we do fly jets, and that's because we think the benefit of achieving the status of being the best Air Force in the world is worth the risks involved in flying. What's more, by achieving that status we accomplish our constitutional mandate to "provide for the common defense." In this new paradigm, it is the users who conduct risk assessments and implement control measures, rather than a team put together after the fact to investigate an accident. That is not to say we should do away with accident investigations. On the contrary, they provide a good review of our environment and existing control measures and aircraft systems design and reliability. Our primary focus, however, should be on assessing risk and implementing control measures which will prevent accidents.

One of the neat things about ORM is that each of us can use it to make smart decisions in our personal lives. If you start thinking about benefit versus risk, you might conclude that the extra steps needed to find a pair of boots to wear while cutting the grass is better than the risk of having the lawn mower blade throw a piece of glass through your tennis shoe and into your foot, or make you think in a new way about the benefits and risks associated with drinking and driving versus finding a designated driver. The vast majority of our fatalities occur in off-duty activities. Here is a chance to greatly reduce that rate by getting the ORM principles deployed throughout Air Combat Command.

It will take time to get ORM fully integrated into the way we do business and deployed throughout the Air Force, but the benefits will be well worth our efforts. The Army has shown it can work and saved lives in the process. Our ACC program is still in its infancy, but with your help, ORM can and will make a difference. ■

STOP! YIELD! REDUCE SPEED!

TSgt Bob Meloche
5 CCGP/SE
Robins AFB GA

These are all signs we see everywhere in our daily travels. They are designed to warn people of potential dangers and allow them time to take necessary actions.

Contrary to popular belief, traffic signs are not *suggestions*. They do not direct people to take a certain course of action if it's "convenient." A STOP sign is a period, not a comma. You must come to a **full** stop before proceeding through the intersection and proceed only after all conflicting traffic has passed. This involves a complicated, intricate process. First, you must raise your foot off the gas pedal (the skinny one on the right) and press it against the brake pedal (the wide one in the middle). The whole process shouldn't take longer than a couple of seconds, but must be used on a consistent basis. Don't pump the brakes once, then hit the gas and proceed.

A **YIELD** sign means to slow down and be prepared to stop. Crossing traffic has the right-of-way. Here again, we're going to lift our foot off the gas pedal and be prepared to place it against the brake pedal. This puts us in a position to slow or stop as needed. It's not a case of "damn the torpedoes, full speed ahead."

Signs are placed to make the most efficient use of the road system and reduce or eliminate areas of possible conflict. Signs are there for everyone's protection.

Regardless of a person's experience, speed limits are not numbers arbitrarily assigned to a stretch of road. A posted speed limit is established using an "ideal" vehicle and driver, on an "ideal" road surface, under "ideal" conditions. It doesn't take much driving experience to realize that "ideal" conditions rarely exist.

Someone may have unfailing confidence in their own driving abilities, but do they consider the other driver (and we all know how bad the "other guy" is, don't we?)? Chances are the other driver is speeding, being inattentive, fighting with their children or who knows what else.

Constant and consistent adjustment to the driving task, adherence to directives (signs, etc.) and defensive driving techniques should always be the rule, not the exception. Stay alert and stay alive. ■

blowup!

BLOWUP

STS-51L LAUNCH VIEW --- The Space Shuttle Challenger lifted off from Pad 39B January 28, 1986 at 11:38 a.m. EST with a crew of seven astronauts and the Tracking and Data Relay Satellite (TDRS). An accident 73 seconds after liftoff claimed both crew and vehicle.

Space Shuttle Challenger Photos Courtesy of NASA

I hope you will find the following article both interesting and thought provoking. The author has done an excellent job of depicting the risks associated with highly sophisticated systems and the critical role that decision making plays. This story of the Space Shuttle Challenger tragedy that occurred over a decade ago is a vivid reminder to the importance of providing decision makers with a risk management tool that is both logical and practical. Operational Risk Management (ORM) is the Air Force's new initiative for systematically measuring the risks associated with any and all types of military operations. After reading this article and Col Poole's accompanying article on ORM, I think you will have a better appreciation of how ORM can benefit your unit in accomplishing its mission safely.

-Ed.

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Who can be blamed for disasters like the Challenger explosion, a decade ago? No one, according to the new risk theorists, and we'd better get used to it.

Malcolm Gladwell

In the technological age, there is a ritual to disaster. When planes crash or chemical plants explode, each piece of physical evidence -- of twisted metal or fractured concrete — becomes a kind of fetish object, painstakingly located, mapped, tagged, and analyzed, with findings submitted to boards of inquiry that then probe and interview and soberly draw conclusions. It is a ritual of reassurance, based on the principle that what we learn from one accident can help us prevent another, and a measure of its effectiveness is that Americans did not shut down the nuclear industry after Three Mile Island (T.M.I.) and do not abandon the skies after each new plane crash. But the rituals of disaster have rarely been played out so dramatically as they were in the case of the Challenger space shuttle which blew up over southern Florida on January 28th 10 years ago.

Fifty-five minutes after the explosion, when the last of the debris had fallen into the ocean, recovery ships were on the scene. They remained there for the next 3 months, as part of what turned into the largest maritime salvage operation in history, combing 150,000 square nautical miles for floating debris, while the ocean floor surrounding the crash site was inspected by submarines. In mid-April of 1986, the salvage team found several chunks of charred metal that confirmed what had previously been only suspected: the explosion was caused by a faulty seal in one of the shuttle's rocket boosters, which had allowed a stream of flame to escape and ignite an external fuel tank.

Armed with this confirmation, a special Presidential investigative commission concluded the following June that the deficient seal reflected shoddy engineering and lax management at NASA and its prime contractor, Morton Thiokol. Properly chastised, NASA returned to the drawing board, to emerge 32 months later with a new shuttle — Discovery — redesigned according to the lessons learned from the disaster. During that first post-Challenger flight, as America watched breathlessly, the crew of the Discovery held a short commemorative service. "Dear friends," the mission commander, Captain Frederick H. Hauck, said addressing the seven dead Challenger astronauts, "your loss has meant that we could confidently begin anew." The ritual was complete. NASA was back.

But what if the assumptions that underlie our disaster rituals aren't true? What if these public post mortems don't help us avoid future accidents? Over the past few years, a group of scholars has begun making the unsettling argument that the rituals that follow things like plane crashes or the T.M.I. crisis are as much exercises in self-deception as they are genuine opportunities for reassurance. For these revisionists, high-technology accidents may not have clear causes at all. They may be inherent in the complexity of the technological systems we have created.

This month (this article was published in Jan), on the tenth anniversary of the Challenger disaster, such revisionism has been extended to the space shuttle with the publication, by the Boston College sociologist Diane Vaughan, of "The Challenger Launch Decision" (Chicago), which is the first truly definitive analysis of the events leading up to January 28, 1986. The conventional view is that the Challenger accident was an anomaly, that it happened because people at NASA had not done their job. But the study's conclusion is the opposite: it says that the accident happened because people at NASA had done exactly what they were supposed to do. "No fundamental decision was made at NASA to do evil," Vaughan writes. "Rather, a series of seemingly harmless decisions were made that incrementally moved the space agency toward a catastrophic outcome."

No doubt Vaughan's analysis will be hotly disputed in the coming months, but even if she is only partly right, the implications of this kind of argument are enormous. We have surrounded ourselves in the modern age with things like power plants and nuclear weapons systems and airports that handle

Three Mile Island
Photo Courtesy of United States Nuclear Regulatory Commission

hundreds of planes an hour, on the understanding that the risks they represent are, at the very least, manageable. But if the potential for catastrophe is actually found in the normal functioning of complex systems, this assumption is false. Risks are not easily manageable, accidents are not easily preventable, and the rituals of disaster have no meaning. The first time around, the story of the Challenger was tragic. In its retelling, a decade later, it is merely banal.

Perhaps the best way to understand the argument over the Challenger explosion is to start with an accident that preceded it — the near-disaster at the T.M.I. nuclear power plant in March of 1979. The conclusion of the President's commission that investigated the T.M.I. accident was that it was the result of human error, particularly on the part of the plant's operators. But the truth of what happened there, the revisionists maintain, is a good deal more complicated than that; and their arguments are worth examining in detail.

The trouble at T.M.I. started with a blockage in what is called the plant's polisher — a kind of giant water filter. Polisher problems were not unusual at T.M.I., or particularly serious. But in this case the blockage caused moisture to leak into the plant's air system, inadvertently tripping two valves and shutting down the flow of cold water into the plant's steam generator.

As it happens, T.M.I. had a backup cooling system for precisely this situation. But on that particular day, for reasons that no one really knows, the valves for the backup system weren't open. They had been closed, and an indicator in the control room showing they were closed was blocked by a repair tag hanging from a switch above it. That left the reactor dependent on another backup system, a special sort of relief valve. But, as luck would have it, the relief valve wasn't working properly that day, either. It stuck open when it was supposed to close; and to make matters even worse, a gauge in the control room which should have told the operators that the relief valve wasn't working was itself not working. By the time T.M.I.'s engineers realized what was happening, the reactor had come dangerously close to a meltdown.

Here, in other words, was a major accident caused by five discrete events. There is no way the engineers in the control room could have known about any of them. No glaring errors or spectacularly bad decisions were made that exacerbated those events. And all the malfunctions — the blocked polisher, the shut valves, the obscured indicator, the faulty relief valve, and the broke gauge — were in themselves so trivial that individually they would have created no more than a nuisance. What caused the accident was the way minor events unexpectedly interacted to create a major problem.

This kind of disaster is what the Yale University sociologist Charles Perrow has famously called a "normal accident." By "normal" Perrow does not mean that it is frequent; he means that it is the kind of accident one can expect in the normal functioning of a technologically complex operation. Modern systems, Perrow argues, are made up of thousands of parts, all of which interrelate in ways that are impossible to anticipate. Given that complexity, he says, it is almost inevitable that some combinations of minor failures will eventually amount to something catastrophic. In a classic 1984 treatise on accidents, Perrow takes examples of well-known plane crashes, oil spills, chemical plant explosions, and nuclear weapons mishaps and shows how many of them are best understood as "normal." If you saw last year's hit "Apollo 13," in fact, you have seen a perfect illustration of one of the most famous of all normal accidents: the Apollo flight went awry because of the interaction of failures of the spacecraft's oxygen and hydrogen tanks, and an indicator light that diverted the astronauts' attention from the real problem.

Had this been a "real" accident — if the mission had run into trouble because of one massive or venal error — the story would have made for a much inferior movie. In real accidents, people rant and rave and hunt down the culprit. They do, in short, what people in Hollywood thrillers always do. But what made Apollo 13 unusual was that the dominant emotion was not anger but bafflement — bafflement that so much could go wrong for so little apparent reason. There was no one to blame, no dark secret to unearth, no recourse but to re-create an entire system in place of one that had inexplicably failed. In the end, the normal accident was the more terrifying one.

Was the Challenger explosion a "normal accident?" In a narrow sense, the answer is no. Unlike what happened at T.M.I., its explosion was caused by a single, catastrophic malfunction: the so-called O-rings that were supposed to prevent hot gases from leaking out of the rocket boosters didn't do their job. But Vaughan argues the O-ring problem was really just a symptom. The cause of the accident was the culture of NASA, she says, and that culture led to a series of decisions about the Challenger which very much followed the contours of a normal accident.

Was the Challenger explosion a "normal accident?" In a narrow sense, the answer is no.

The heart of the question is how NASA chose to evaluate the problems it had been having with the rocket boosters' O-rings. These are the thin rubber bands that run around the lips of each of the rockets' four segments, and each O-ring was meant to work like the rubber seal on the top of a bottle of preserves, making the fit between each part of the rocket snug and airtight. But from as far back as 1981, on one shuttle flight after another, the O-rings had shown increasing problems. In a number of instances, the rubber seal had been dangerously eroded — a condition suggesting that hot gases had almost escaped. What's more, O-rings were strongly suspected to be less effective in cold weather, when the rubber would harden and not give as tight a seal. On the morning of January 28, 1986, the shuttle launchpad was encased in ice, and the temperature at liftoff was just above freezing. Anticipating these low temperatures, engineers at Morton Thiokol, the manufacturer of the shuttle's rockets, had recommended that the launch be delayed. Morton Thiokol brass and NASA, however, overruled the recommendation, and that decision led both the President's commission and numerous critics since to accuse NASA of egregious — if not criminal — misjudgment.

Vaughan doesn't dispute that the decision was fatally flawed. But, after reviewing thousands of pages of transcripts and internal NASA documents , she can't find any evidence of people acting negligently, or nakedly sacrificing safety in the name of politics or expediency. The mistakes that NASA made, she says, were made in the normal course of operation. For example, in retrospect it may seem obvious that cold weather impaired O-ring performance. But it wasn't obvious at the time. A previous shuttle flight that had suffered worse O-ring damage had been launched in 75-degree heat. And on a series of previous occasions when NASA had proposed — but eventually scrubbed for other reasons — shuttle launches in weather as cold as 41 degrees, Morton Thiokol had not said a word about the potential threat posed by the cold, so its pre-Challenger objection had seemed to NASA not reasonable but arbitrary. Vaughn confirms that there was a dispute between managers and engineers on the eve of the launch but points out that in the shuttle program disputes of this sort were commonplace. And, while the President's commission was astonished by NASA's repeated use of the phrases "acceptable risk" and "acceptable erosion" in internal discussion of the rocket-booster joints, Vaughn shows that flying with acceptable risks was a standard part of NASA culture. The lists of "acceptable risks" on the space shuttle, in fact, filled 6 volumes. "Although [O-ring] erosion itself had not been predicted, its occurrence conformed to engineering expectations about large-scale technical systems," she writes. "At NASA, problems were the norm. The word 'anomaly' was part of everyday talk.... The whole shuttle system operated on the assumption that deviation could be controlled but not eliminated."

What NASA had created was a closed culture that, in her words, "normalized deviance" so that to the outside world decisions that were obviously questionable were seen by NASA's management as prudent and reasonable. It is her depiction of this internal world that makes her book so disquieting; when she lays out the sequence of decisions which led to the launch — each decision as trivial as the string of failures that led to T.M.I. — it is difficult to find any precise point where things went wrong or where things might be improved next time. "It can truly be said that the Challenger launch decision was a rule-based decision," she concludes. "But the cultural understandings, rules, procedures and norms that always had worked in the past did not work this time. It was not amorally calculating managers violating rules that were responsible for the tragedy. It was conformity."

There is another way to look at this problem, and that is from the standpoint of how human beings handle risk. One of the assumptions behind the modern disaster ritual is that when a risk can be identified and eliminated a system can be made safer. The new booster joints on the shuttle, for example, are so much better than the old ones that the overall chances of a Challenger-style accident's ever happening again must be lower — right? This is such a straightforward idea that questioning it seems almost impossible. But that is just what another group of scholars has done, under what is called the theory of "risk homeostasis."

It should be said that within the academic community there are huge debates over how widely the theory of risk homeostasis can and should be applied. But the basic idea, which has been laid out brilliantly by the Canadian psychologist Gerald Wilde in his book "Target Risk," is quite simple: under certain circumstances, changes that appear to make a system or an organization safer, in fact, don't. Why? Because human beings have a seemingly fundamental tendency to compensate for lower risks in one area by taking greater risks in another.

Consider, for example, the results of a famous experiment conducted several years ago in Germany. Part of a fleet of taxicabs in Munich was equipped with antilock brake systems (A.B.S.), the recent technological innovation that vastly improves braking, particularly on slippery surfaces. The rest of the fleet was left alone, and the two groups — which were otherwise perfectly matched — were placed under careful and secret observation for 3 years.

You would expect the better brakes to make for safe driving. But that is exactly the opposite of what happened. Giving some drivers A.B.S. made no difference at all in their accident rate; in fact, it turned them into markedly inferior drivers. They drove faster. They made sharper turns. They showed poorer lane discipline. They braked harder. They were more likely to tailgate. They didn't merge as well, and they were involved in more near-misses. In other words, the A.B.S. systems were not used to reduce accidents; instead, the drivers used the additional element of safety to enable them to drive faster and more recklessly without increasing their risk of getting into an accident. As economists would say, they "consumed" the risk reduction, they didn't save it.

Risk homeostasis doesn't happen all the

time. Often — as in the case of seat belts, say — compensatory behavior only partly offsets the risk-reduction of a safety measure. But it happens often enough that it must be given serious consideration. Why are more pedestrians killed crossing the street at marked crosswalks than at unmarked crosswalks? Because they compensate for the "safe" environment of a marked crossing by being less vigilant about oncoming traffic. Why did the introduction of childproof lids on medicine bottles lead, according to one study, to a substantial increase in fatal child poisonings? Because adults became less careful in keeping pill bottles out of the reach of children.

Risk homeostasis also works in the opposite direction. In the late 1960's, Sweden changed over from driving on the left-hand side of the road to driving on the right, a switch that one would think would create an epidemic of accidents. But, in fact, the opposite was true. People compensated for their unfamiliarity with the new traffic patterns by driving more carefully. During the next 12 months, traffic fatalities dropped 17 percent — before returning slowly to their previous levels. As Wilde only half-facetiously argues, countries truly interested in making their streets and highways safer should think about switching over from one side of the road to the other on a regular basis.

It doesn't take much imagination to see how risk homeostasis applies to NASA and the space shuttle. In one frequently quoted phrase, Richard Feynman, the Nobel Prize-winning physicist who served on the Challenger commission, said that at NASA decision-making was "a kind of Russian roulette." When the O-rings began to have problems and nothing happened, the agency began to believe that "the risk is no longer so high for the next flights," Feynman said, and that "we can lower our standards a little bit because we got away with it last time." But fixing the O-rings doesn't mean that this kind of risk-taking stops. There are 6 whole volumes of shuttle components that are deemed by NASA to be as risky as O-rings. It is entirely possible that better O-rings just give NASA the confidence to play Russian roulette with something else.

This is a depressing conclusion, but it shouldn't come as a surprise. The truth is that our stated commitment to safety, our faithful enactment of the rituals of disaster, has always masked a certain hypocrisy. We don't really want the safest of all possible worlds. The national 55 mph speed limit probably saved more lives than any other single government intervention of the past 25 years. But the fact that Congress lifted it last month with a minimum of argument proves that we would rather consume the recent safety advances of things like seat belts and air bags than save them. The same is true of the dramatic improvements that have been made in recent years in the design of aircraft and flight-navigation systems. Presumably, these innovations could be used to bring down the airline accident rate as low as possible. But that is not what consumers want. They want air travel to be cheaper, more reliable, or more convenient; and so those safety advances have been at least partly consumed by flying and landing planes in worse weather and heavier traffic conditions.

What accidents like the Challenger should teach us is that we have constructed a world in which the potential for high-tech catastrophe is embedded in the fabric of day-to-day life.

What accidents like the Challenger should teach us is that we have constructed a world in which the potential for high-tech catastrophe is embedded in the fabric of day-to-day life. At some point in the future — for the most mundane of reasons, and with the very best of intentions — a NASA spacecraft will again go down in flames. We should at least admit this to ourselves now. And if we cannot — if the possibility is too much to bear — then our only option is to start thinking about getting rid of things like space shuttles altogether. ■

TEAM SALUTES

The HQ ACC **TEAM SALUTE** recognizes a person, group of people or unit for notable displays of quality performance in the area of mishap prevention. **TEAM SALUTE** recipients are selected by the ACC Safety Awards Board from the monthly nominees for ACC safety awards. Periodically, **TEAM SALUTE** recipients will be featured in *The Combat Edge* magazine. Our congratulations to these recipients of the **TEAM SALUTE**.

A1C Moses M. Osborne
31 CCS, 3 CCG
Tinker AFB OK

There I was on Saturday, the 27th of April, returning home from volunteering at the Ronald McDonald House, when driving down 15th street I witnessed an accident. A white Camaro cut off a green Escort. The Escort swerved to avoid the Camaro, lost control of the car and spun into oncoming traffic. The Escort was hit head on. After pulling my car safely to the side of the road, I went to see if anyone required assistance. The lady in the car closest to me was rattled, but fine. The lady in the next car required first aid and was pointing to the back of her car saying, "My baby, my baby!" I removed the year-old infant from the back seat and returned her to her mother. Then I proceeded to apply a handkerchief to the wound on the lady's forehead. Traffic had stopped due to the confusion of the accident. I helped traffic to move while waiting for the ambulance and authorities to arrive.

TSgt Raymond W. Hansen,
SSgt John Ricchio
928 OG, 928 AW
O'Hare IAP ARS IL

On 2 Feb 96, TSgt Hansen and SSgt Ricchio were preflighting a C-130 with the aircrew on board. A ground power heater right next to the aircraft caught fire. Sgt Hansen and Sgt Ricchio immediately moved the burning heater unit safely away from the aircraft and called the fire department. Because of the danger to the aircraft, its crew and the heater unit itself, they decided to fight the fire themselves with the fire extinguisher at the aircraft parking spot. When the fire department arrived, they found the fire in the ground power heater was extinguished. The quick thinking and selfless actions of Sgt Hansen and Sgt Ricchio resulted in a repairable ground power heater, prevention of aircraft loss and the safety of the aircrew on board.

SSgt Terry E. Geiman,
A1C Nicolas A. George,
SrA Billy W. Wilson
4 FS, 388 FW
Hill AFB UT

While performing an up-load of live GBU-10's on the hot pad, SSgt Geiman and crew noticed a small amount of smoke coming from the engine compartment of a MJ-1 Bomb Lift Truck. After locking the munition into the bomb rack, A1C George removed the "jammer" from the vicinity of the aircraft and parked it at the rear of the hot pad. SrA Wilson then lifted the cover to the engine compartment only to discover a small electrical fire emanating from an electrical box on the back of the engine. Without hesitation, Sgt Geiman alerted his Weapons Expediter and the proper emergency personnel were notified. The crew obtained a halon fire extinguisher and sprayed the electrical box. The fire was extinguished within seconds and a major mishap was averted. Due to the quick reaction of Sgt Geiman and his crew, the damage to the bomb lift truck was assessed at below 50 dollars, and an incident involving live munitions was prevented.

TSgt Michael Medernach,
SSgt Michael W. Koenes
49 OG, 49 FW
Holloman AFB NM

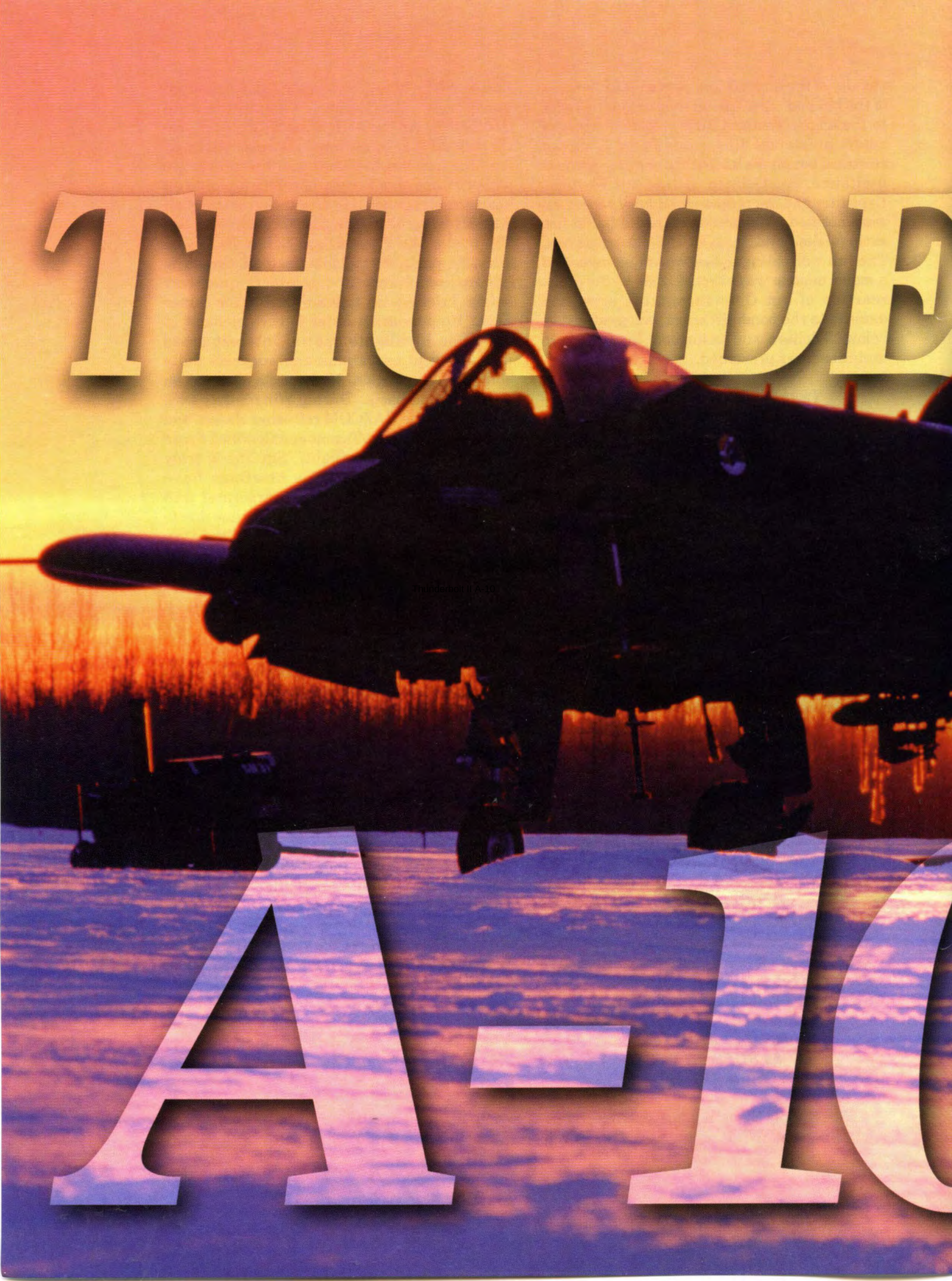
On 29 Mar 96, while TDY to Kuwait, TSgt Medernach and SSgt Koenes were assigned launch duties of helicopter 91-26358, an HH-60G used in support of Operation SOUTHERN WATCH. During run-up, the crew experienced an auxiliary power unit (APU) high oil temperature indication. The crew attempted to shut down the APU using normal checklist procedures, but was unsuccessful. The crew finally resorted to turning off all aircraft power to secure the APU. As the APU was shutting down, the crew chiefs noticed a fire visible in the APU exhaust. Sgt Medernach and Sgt Koenes quickly retrieved and charged a 50 gallon fire extinguisher to douse the flames. After the fire was extinguished, they assisted in evacuating the aircrew from the area. After the aircrew was safely clear, they began the dangerous task of climbing on top of the aircraft and inspecting the APU to ensure the fire was extinguished. After visually inspecting that the fire was out and fuel to the APU was shut off, they conducted a complete inspection and made the aircraft safe for further inspection and repair. Sgts Medernach and Koenes' calm and cool handling of a potentially explosive situation safeguarded a valuable combat asset.

MSgt Charles Toy
55 SUPS, 55 WG
Offutt AFB NE

The 55th Supply Squadron has an outstanding safety program. While acting as the Squadron Safety NCO, MSgt Toy organized a squadron booth on Hazardous Communication (HAZCOM) for the 55th Wing Safety Day. He increased personnel awareness through training and the distribution of literature. He showed films on a variety of safety topics to all assigned personnel. He directed a review of all AFOSH training guides and AF Form 55s. Sgt Toy is also the Fuels Flight Safety NCO. As such, he performs random seatbelt checks to ensure compliance and conducts quarterly safety briefings on topics affecting the career field. He provides a letter to each element in which he highlights special interest areas pertaining to operations and suggests daily safety briefing topics. He inspects all areas on a semiannual basis. During Wing Safety Day, he oversaw the HAZCOM refresher classes and briefings on Lockout/Tagout and Confined Space programs within the flight. Sgt Toy is truly committed to safety. His briefings have provided valuable data to personnel and reduced major mishaps or lost duty time due to injury.

SSgt David Pantojas
347 OG, 347 WG
Moody AFB GA

SSgt Pantojas was attending his scheduled M-16 training class. During his classroom training, after he was issued an M-16, the instructor proceeded to hand out five training rounds for practice loading and simulated firing of the M-16. The class was instructed to load the rounds into the magazines and continue through the firing and unloading sequence. After simulating the discharge of the first three rounds, they were told to reload the magazine with the remaining rounds. When Sgt Pantojas picked up the unused rounds that were on the desk, he noticed that one was different from the others. This round had a primer and was not crimped like the rest of the rounds. It was then he realized that it was a live round. He called this to the attention of the instructor and the rest of the class was instructed to check for live rounds. As a result of this incident, the Combat Arms Training and Maintenance (CATM) branch instituted two changes to their classroom procedures to avoid a similar future problem. The "heads up" conduct of Sgt Pantojas prevented the possible loss of life or injury to himself and to his classmates.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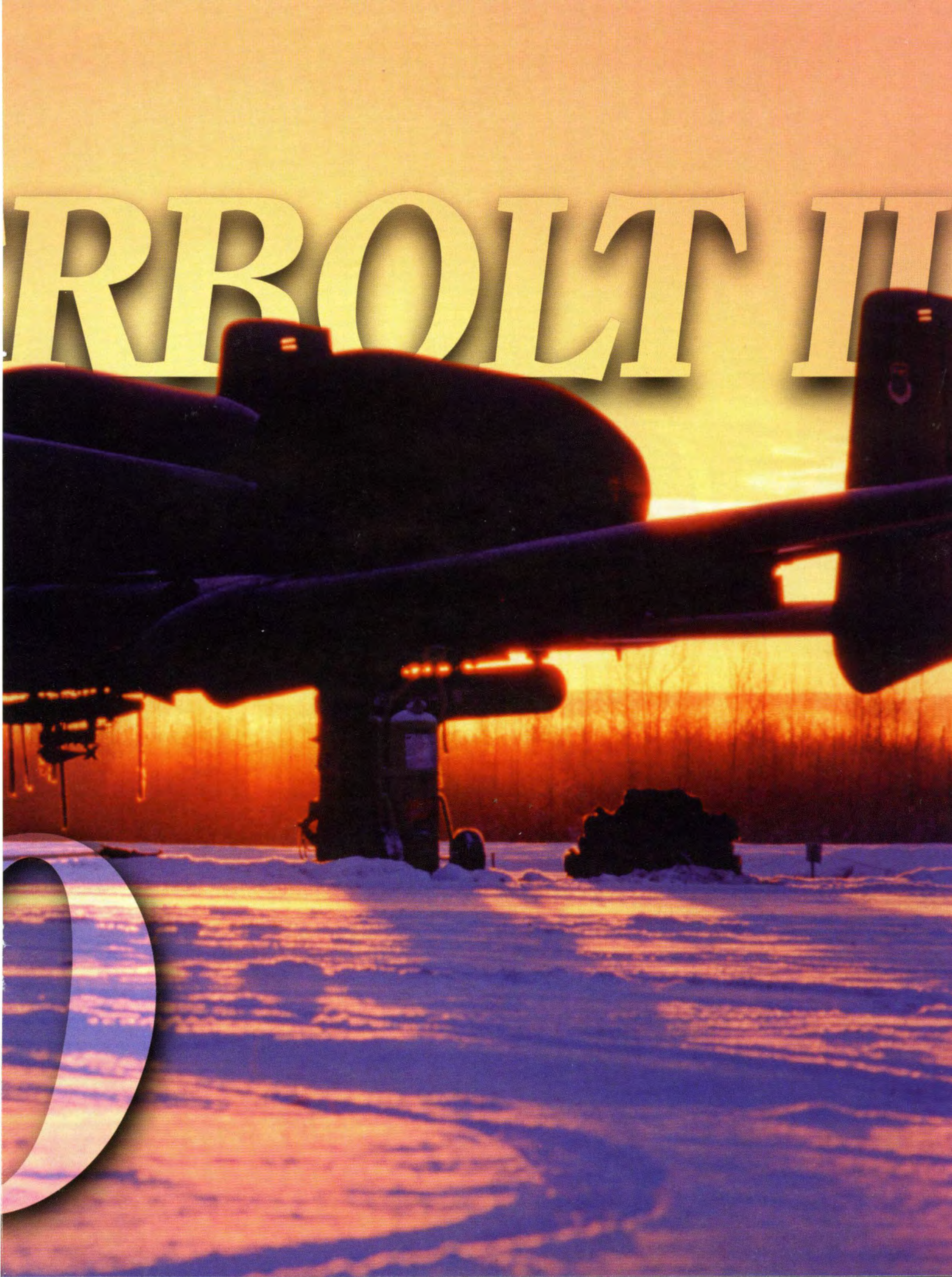

RRBOLT II

TOUGH DECISIONS

Col Alan Groben
ANG AFRES Test Center
Tucson AZ

"Tough Decisions" is a subject common to organizations of all types, both military and civilian. People at all levels of responsibility wrestle with decisions labeling some portion tough. Most often tough means, "This is so tough we aren't going to make a decision," which is in reality a decision for no action. The purpose of this writing is to examine the spectrum of actions and thoughts surrounding the business of tough decisions. Several years ago we outlined the idea that we in the Air National Guard could have zero aircraft mishaps, and the first thing that had to go was the idea and conversation that zero couldn't be done. I suggest a similar approach is needed surrounding these alleged tough decisions, meaning, the first thing that must go is the idea they're tough. What about the possibility these decisions are not tough? They are actually easy. What is tough is not making them and the baggage that accrues as a result of a failed decision process.

We can begin by examining some basic issues designed to give us a solid operating foundation. Integrity is the bedrock of decision making, and we each make our decisions based on our own concept of integrity. Each of us has a different sense of this often used and abused concept that gives us infinite possibilities for engaging in any given decision situation. Very few of us would admit to being anything other than a person of integrity, but let's look at some examples of NOT integrity that is regularly done, tolerated, and even condoned. Exceeding the speed limit, rolling through a stop light, no stop on red for a right turn, less than accurate income tax returns, passing in a no pass zone, parking in a handicap place, taking office supplies from your work for personal use, and conducting personal business on company time are just a few that come to mind. So where do we draw the line? How can we decide what's right if it's OK to do those things listed above? If a person of integrity can do these things, what else can he/she do? Are these things actually breaches in integrity or latitude available to each of us? If we are free to decide if we will follow these laws or not, which other laws can we decide to break?

Another view that might be useful as a parallel is the concept of black and white versus gray where there is no middle ground, just pure right and wrong. Our umpires in sports of virtually all types are dressed in black and white. The decisions they make are certain. They go one way or another, safe versus out, strike versus ball, complete versus incomplete, penalty for a given

REMEDIATION	STATUS QUO
Possibilities	
- Performance communicated clearly - Individual chooses to improve or remove himself - Individual is removed from flying status - Moves to non-flying duties - Becomes a contributor - Becomes bitter - Leaves the unit	- Crashes an aircraft - pilot error - kills self - Crashes an aircraft with multiple deaths - Creates an incident triggering outside investigation - Continues flying while the unit holds its breath
Cost	
- Some difficult conversation - Hurt feelings - Some uncomfortable times	- You might be a volunteer for a casualty notification detail - Your unit has a safety investigation board on base (no fun here) - You could lose an asset valued at more than 15 million dollars (and you knew) - Your people are scheduling/working around this individual (what's the wear and tear on them?)
Benefit	
- Possibility of mishap is lessened or eliminated - Work arounds are eliminated (along with the wear and tear) - Effective communication with the individual will permeate the unit in the form of integrity and trust - Individual returns to productive status or is no longer present in the unit	- No hurt feelings - You do not have to have tough conversations - You get to be a "nice guy"

Figure 1.

offense (integrity breach), or possession of ball to a side. There is no space for maybe (except for instant replay situations where we pause for more facts), and the decisions stand in spite of emotional appeals. The umpire makes the call, black or white, and it stands. Do we introduce indecision, procrastination, maybe, or the color gray into this sports umpire business? (Not that I have ever seen it.) As we have illustrated above, we have introduced "maybe and gray" in our model, which leaves the door wide open for personal interpretation even when there are stated laws leading to integrity breach. If we can choose under those circumstances, imagine the possibilities for those situations where there are no laws.

Let's go a step farther in our analyses using the example of a pilot who is not competent in his/her duties creating a safety hazard. The criterion here is clearly not competent as indicated by peers and supervisors in complete spoken agreement. No gray here, just plain incompetent and unsafe. This is the situation I have most often seen in conjunction with the business of "tough decisions." How did this person get to this juncture, and more importantly, why is he/she allowed to remain? What are the possibilities for the future both plus and minus, and what are the costs and benefits associated with remediating the individual's performance compared with continuing the status quo? Figure 1 displays these answers in a format intended to create clarity and provide a working model for individual use.

What message are you sending to the people of your organization? My experience shows these situations exist in a glass house and not in a vacuum. They are completely visible to the people at large. There is no hiding, and your people are watching and listening for the message, positive or negative, black and white versus gray and integrity or not. Please notice there is no apparent antonym for integrity; it's either yes or no. The people at large do not have to be told; they will get whatever message is sent in accordance with the action taken. The essence of culture is that action is correlate to commitment and commitment is correlate to action. People are smart and they will read this correlation for themselves whether consciously or not. And when we choose the status quo, the performing people become discouraged because they are the ones doing the work-around and special handling. Their inputs, ideas, and energies are devalued as they watch in vain for positive change. They become discouraged when what's right does not happen. And they become resigned and depart or worse, they become resigned and stay.

When the outline for this was on the white board in my office, an unknown contributor wrote, "This is easy, what do you do with the marginal performer?" If this is so easy, why do we fail so often? Look around you, up, down and laterally for a personal experience of this principle. The marginal performer is only marginal on a gray foundation I normally describe as a standard of mediocrity. It allows for virtually any interpretation of the standard as well as an equally broad definition of the performance. If the performance is not communicated, each individual can have his own interpretation unencumbered by reality. On a standard of excellence, there is no marginal; only excellent or not. If the answer is "or not," the process is the same: Communicate the standard and measure the performance. If the standard for the organization is excellence, anything less is unsatisfactory, not marginal. ■

Monthly Awards

PILOT SAFETY AWARD OF DISTINCTION

Capt Christian H. Rose
121 FS, 113 WG
Andrews AFB MD

On 27 Jun 96, Capt Rose was returning to Andrews AFB in his Block 30 F-16C. He had just completed a surface attack training mission as number four of a four-ship flight conducted at Air Force Dare County Range NC (R5314). Capt Rose was approximately 15 NM southwest of Elizabeth City Coast Guard Air Station/Muni Airport (KECG). His aircraft was climbing through 15,000 feet heading north. The flight leader directed a "fluid four" formation, and Capt Rose pushed the throttle forward. As Capt Rose moved the throttle he heard and felt three distinctive bangs and the engine began to operate with extreme vibration. He immediately informed the flight of this occurrence. The flight leader directed him to KECG and directed number three to provide chase support. Capt Rose's aircraft engine instruments verified his engine had stalled as the RPM degenerated below idle and the Forward Turbine Inlet Temperature (FTIT) increased toward 1,000 degrees centigrade. He pulled the throttle to idle and then shut down the engine as the overtemp condition continued. Immediately, the RPM and FTIT decreased as Capt Rose relayed his situation to the flight. The flight leader and number two made several radio calls to Air Traffic Control to inform them of this situation. Number three verified there was no visible external damage of Capt Rose's aircraft. A 4-5,000 foot cloud deck obscured his visual contact with KECG. Number one and two followed as number three chased Capt Rose. Number one and three were able to provide verbal assistance informing Capt Rose of his positioning from KECG. Capt Rose adeptly maneuvered his "engine-out" F-16C around clouds to set himself up on a base for a modified flameout approach to Runway 10 at KECG. He jettisoned the external wing fuel tanks and performed an alternate gear extension. The jettisoned tanks hit the ground and fortunately caused negligible damage. He then proceeded to land his aircraft on a 7,214 foot runway which had no overruns or cable. He used the emergency back up jet fuel starter accumulator pressure to provide hydraulic braking to stop the airplane with 1,500 feet of runway remaining.

CREW CHIEF EXCELLENCE AWARD

SSgt Paul D. Spillane
69 FS, 347 WG
Moody AFB GA

Following a normal night sortie in aircraft 89-2058, an F-16C, the pilot accomplished a thorough post flight inspection noting no abnormalities. During the crew chief's post flight inspection, however, he alertly discovered bird feathers in the intake and bones in the engine exhaust section and reported it to the production supervisor. SSgt Spillane, one of the 69 FS borescope qualified crew chiefs, was subsequently tasked to perform an engine borescope inspection to determine if it had sustained any damage. The Fault Isolation Technical Order called for the inspection of the engine fan, compressor and high pressure turbine sections. After completing the technical order-required Fault Isolation inspections, Sgt Spillane's experience and superior judgment dictated he inspect one additional area: the combustion section. Barely 5 minutes into the combuster inspection, he discovered multiple cracks on and near the outer liner dilution holes. Sgt Spillane immediately reported his discovery to his superiors, and the cracks were found to be out of limits. Left unidentified, the cracks would have caused excessive stress, fatigue and eventual burnthrough of the liner section. Sgt Spillane's decision to go a step further *certainly* avoided subsequent damage to a critical aircraft component, may have saved an F-16C aircraft, but most importantly may have saved a human life.

AIRCREW SAFETY AWARD OF DISTINCTION

Maj Ted E. Sprague, Capt Kun-Kuei Lee
435 FS, 49 FW
Holloman AFB NM

Maj Sprague and Capt Lee were lead of an AT-38B two-ship low-level sortie out of Holloman AFB NM. On the final portion of the low-level at 500 feet AGL, Capt Lee noticed a large bird directly in front of the aircraft and immediately pulled 5 G's in an attempt to avoid impact. Both pilots heard a loud thump and felt the bird hit the left side of the aircraft. Maj Sprague took control of the aircraft, continued the climb and pointed toward Holloman, the nearest airfield. The bird was ingested by the left engine which immediately seized. Maj Sprague declared an Inflight Emergency and confirmed with the Supervisor of Flying that he would be closing the active runway. Maj Sprague and Capt Lee completed appropriate checklist items while the wingman rejoined and did a battle damage check. The wingman noticed the speed brakes stuck open slightly. Approximately 25 NM north of the runway, the pilots configured with alternate gear extension and placed the flaps at 60 percent. With gear, flaps, speed brakes slightly extended and at a high outside air temperature, the aircraft would not maintain level flight in mil power. Maj Sprague used afterburner to maintain altitude, increased airspeed, and raised the flaps until on final. He then turned the crossfeed switch on to access all available fuel. Maj Sprague performed a flawless rear-cockpit single-engine landing and stopped straight ahead on the runway. Both pilots egressed without incident. The quick reactions and superb aviation skills of Maj Sprague and Capt Lee in a critical situation were instrumental in safely recovering the aircraft and crew.

FLIGHT LINE SAFETY AWARD OF DISTINCTION

MSgt Michael S. Preston, SSgt Craig A. Podwel
SSgt Pasquale V. Taricani, Jr.
SSgt Bradley T. Powers, SSgt Paul T. Johns
4 OSS, 4 FW
Seymour Johnson AFB NC

After a particularly difficult 4 FW recovery of Chief 41, a flight of 2/F-15s were executing practice approaches in the tower pattern. Chief 42 was on the go from a low approach when SSgt Taricani noticed a flame coming from the tail of the aircraft followed by an explosion. SSgt Podwel and MSgt Preston were scanning the runway when they witnessed a second flame and explosion. Sgt Podwel conferred with the Supervisor of Flying and determined Chief 42 had experienced a possible compressor stall. SSgt Johns quickly activated the primary crash phone with virtually no information to expedite crash recovery response. Sgt Preston coordinated with Chief 41 to have him join up with Chief 42 for a lookover of the aircraft while simultaneously setting up the flight for a straight-in approach. Chief 41 confirmed the fire and observed smoke still trailing from the aircraft. Chief II, the on-scene commander of the emergency response team, and all emergency vehicles were in position before Chief 42 landed. SSgt Powers continued to pass vital aircraft information to Chief II as the situation quickly developed and coordinated to have a fire response vehicle escort the emergency down the runway after landing. Immediately after Chief 42 landed, Sgt Preston released control of the runway to Sgt Powers who granted the fire department immediate access to the distressed aircraft. Upon coming to a complete stop on the runway, the aircrew of Chief 42 egressed the aircraft as smoke continued to rise off the aircraft just behind the cockpit. The fire crew immediately took over and later isolated and distinguished the source of smoke.

GROUND SAFETY INDIVIDUAL AWARD OF DISTINCTION

TSgt Tracy E. Turner
436 TS, 7 WG
Dyess AFB TX

TSgt Tracy Turner is responsible for ground safety curriculum development and training Ground Safety Managers and NCOs from wings throughout the command. Other major commands, the Air National Guard and Air Force Reserve send safety professionals to Sgt Turner's courses at their expense, as well. His better than 9 years experience in the ground safety arena brings vast knowledge to newly-assigned ground safety personnel. Those attending Sgt Turner's courses have lauded him for continually improving the content of the ground safety course and bringing hands-on ground safety experience to the course. Furthermore, he assists in development of ACC's Flight and Weapons Safety Program Management courses by bringing the "Industrial" perspective to these other safety specialties. Sgt Turner also continues to assist the attendees long after they have graduated and gone back to their home units. Moreover, Sgt Turner has totally revamped the ground safety program management guide and courseware since his arrival. He has continually improved the course handouts and strives to ensure the latest information is presented to the students. Because of his demonstrated excellence and expertise, Sgt Turner was hand-picked to review the Air Force Instruction governing USAF policies for investigating and reporting mishaps. His inputs have made a significant contribution in shaping the Air Force Safety Program.

UNIT SAFETY AWARD OF DISTINCTION

Explosive Ordnance Disposal Team
366 CES, 366 WG
Mt Home AFB ID

The EOD team's response to incidents have challenged their capabilities to the maximum. They met the challenge and excelled. Some examples of their outstanding work are as follows: (1) Responded to an F-15 and secured a hung MJU-10 flare that failed to function properly. The team removed and transported the flare to a safe area and applied procedures to render the flare safe. EOD eliminated a significant hazard to flightline personnel and valuable Air Force resources and allowed the wing's flying mission to continue with minimal impact. (2) Responded to a suspect improvised explosive device at our shoppette. Even though the call was at 1730 on a Friday evening, the standby team's response was immediate. The suspect device was explosively rendered safe while exposing no personnel to possible hazards. The facility was returned to operation with minimal loss of revenue and no degradation of safety to employees and military personnel. (3) On a Saturday evening, the standby team recovered a live, high explosive 20mm cannon round from our security police gate guards. The sensitive explosive round was properly secured and transported for future disposal. Recovery of this round from the local civilian community ensured their safety and prevented any potential catastrophe. (4) The EOD team deployed with the initial response force to an F-15 aircraft crash. Immediately upon arrival the team located and identified all explosive hazards at the impact site. At first light the following day, the EOD team conducted a reconnaissance and located the seat. The explosive hazards to the seat were identified and removed. The team's ability to quickly identify and locate all explosive hazards ensured the safety of all follow-on forces and the safety accident board. The team's actions on these responses ensured the safety of military and civilian personnel along with valuable Air Force resources.

THE COMMON-SENSE SOLUTION

Maj Don Rightmyer, USAF (Ret)
Danville KY

Major Rightmyer is a former editor of the TAC ATTACK magazine, and we welcome his timely submission of an article on risk associated decision making.
-Ed.

There are reams of guidelines, operating procedures, aircrew standards, technical manuals, and so forth to guide us in trying to prevent mishaps, no matter where you work. Despite that, there continues to be times when people get hurt, airplanes and ground equipment get bent, and valuable resources are wasted. Sometimes that is because the "common-sense solution" was not brought into play at a critical point where the subsequent mishap could have been prevented.

All of that sounds like a lot of abstract verbiage when I could have just said, "Mishaps can sometimes be prevented by using your head when all of the existing official guidance and rules fail." As I first drafted this article, the tragic collision between a school bus and a train had occurred only a week earlier in a Chicago suburb. Now several months after that mishap, I don't remember all the details of what occurred to cause that mishap and loss of life, but one common sense violation was certainly contributory despite anything else that happened — the bus driver left the back end of the vehicle sitting on an active railroad track. I don't know about you, but that's one of the many things I was absolutely taught not to do with a vehicle of any kind. I always look both ways and ensure that there is adequate space in front of me before crossing a railroad track, just to be sure. And if you think no one ever gets struck by a train, the current statistic is that someone gets hit by a train every 90 minutes.

My story centers around a late winter mobility exercise at one of the ACC bases out West, where the weather can be particularly nasty in the February/March timeframe. I was a crewmember working at the wing and was slated as one of the extra aircrews to go on a simulated C-141 to points unknown and help flesh out the crew/aircraft ratio once combat operations began at the deployment location. As a captain, I was the senior person in the cargo area so I was designated as troop commander for our trip.

Mobility processing for our planeload of crew chiefs, medical personnel, and services folks began around 1300. We were to finish up around 1500 and begin our simulated flight to the assigned destination. Of course, after processing had been completed, we were "real world" released back to our homes and were going to have to "real world" come back to the Mobility Processing Center on base at about 0300 the next morning to complete the arrival portion of the simulated mobilization and flight overseas. Therein lay the problem — requiring an application of the common sense solution. The weather outside was hovering around 15-20 degrees Fahrenheit; we had received several inches of snow and freezing rain during the preceding 3 or 4 days; and driving on base was extremely slick and hazardous, even in broad daylight. The scheduled time for our return to base for the "arrival" was 0300 — the dead of night when it was pitch black and forecast to be at its coldest. Folks, with my front-wheel drive Audi diesel, I seldom hesitated to get out and drive in the most wintry driving conditions, but even I wasn't looking forward to tackling this situation in my trusty auto.

As the troop commander, I went to the person in charge of the mobility operation and suggested that it would be prudent if we merely simulated the early morning return to the base for over 100 of our folks in light of the prevailing road conditions and the expected low temperatures and additional precipitation that we were expecting that night. This person informed me without so much as blinking an eye that the regs required all of us to report back at 0300 in order to finish the mobility process.

"Thank you very much," I said, as I smoothly went to that person's boss and relayed the same observation that it appeared inherently unsafe for us to go through with the current plan. I'm pleased to tell you that the requirement for us to have 100+ Air Force folks drive back to the base in that bad weather was finally overruled. Sadly, this question had to go all the way to the wing commander before someone displayed whatever it took to make this decision. At least it was made and I was thankful for that.

Where was the regulation or technical guidance or standard operating procedure that should have been brought out to keep this accident-prone event from occurring? There probably wasn't any because we all know you can't possibly write down a rule or standard by which to evaluate every possible operating condition that might be encountered. But we all get paid a good salary and have been given significant responsibility to look at every situation we encounter and determine if the last resort to preventing a mishap was application of the "common sense solution." How many avoidable mishaps have we sadly seen occur over the years which absolutely could have been prevented if someone had said, "Whoa! Stop! That doesn't pass the common sense test." ■

SMSgt Gary Reniker
442 FW/SE
Whiteman AFB MO

CARBON MONOXIDE The Silent Killer

Carbon monoxide detectors, new on the market the last 2 years, are proving popular this winter season. Raised awareness of the dangers of this gas was in part due to the death in September 1994 of former tennis star Vitas Geruliaitis after a broken propane heater leaked carbon monoxide.

Carbon monoxide is a colorless, ordorless, tasteless gas blamed for the accidental deaths of 250 people a year in the United States and the illness of 10,000 others. Carbon monoxide is a byproduct of combustion and is present whenever fuel is burned. A faulty furnace might cause problems, for instance, or a car left running in a garage. Water heaters, space heaters, ovens or ranges, clothes dryers, fireplaces and wood-burning stoves are potential sources of carbon monoxide buildup.

In low levels, carbon monoxide can cause flu-like symptoms, including headache, nausea, dizziness and fatigue. High concentrations are deadly.

It has been only in the last few years that technology has made detectors affordable for residential use. There are two basic types: the kind that plugs in and the kind that comes with a battery. They are designed to sound the alarm before dangerous levels of carbon monoxide accumulate. The plug-in usually sells for about $50. The battery type costs $20 but requires a new sensor pack every couple of years.

The Consumer Product Safety Commission recommends that every house have at least one carbon monoxide detector with an audible alarm. Although the safety commission recommended installation near a sleeping area, it seems that many consumers are installing them in places where traces of carbon monoxide are bound to be found, such as near the furnace or in the garage that has figured in many "nuisance calls" to the fire department.

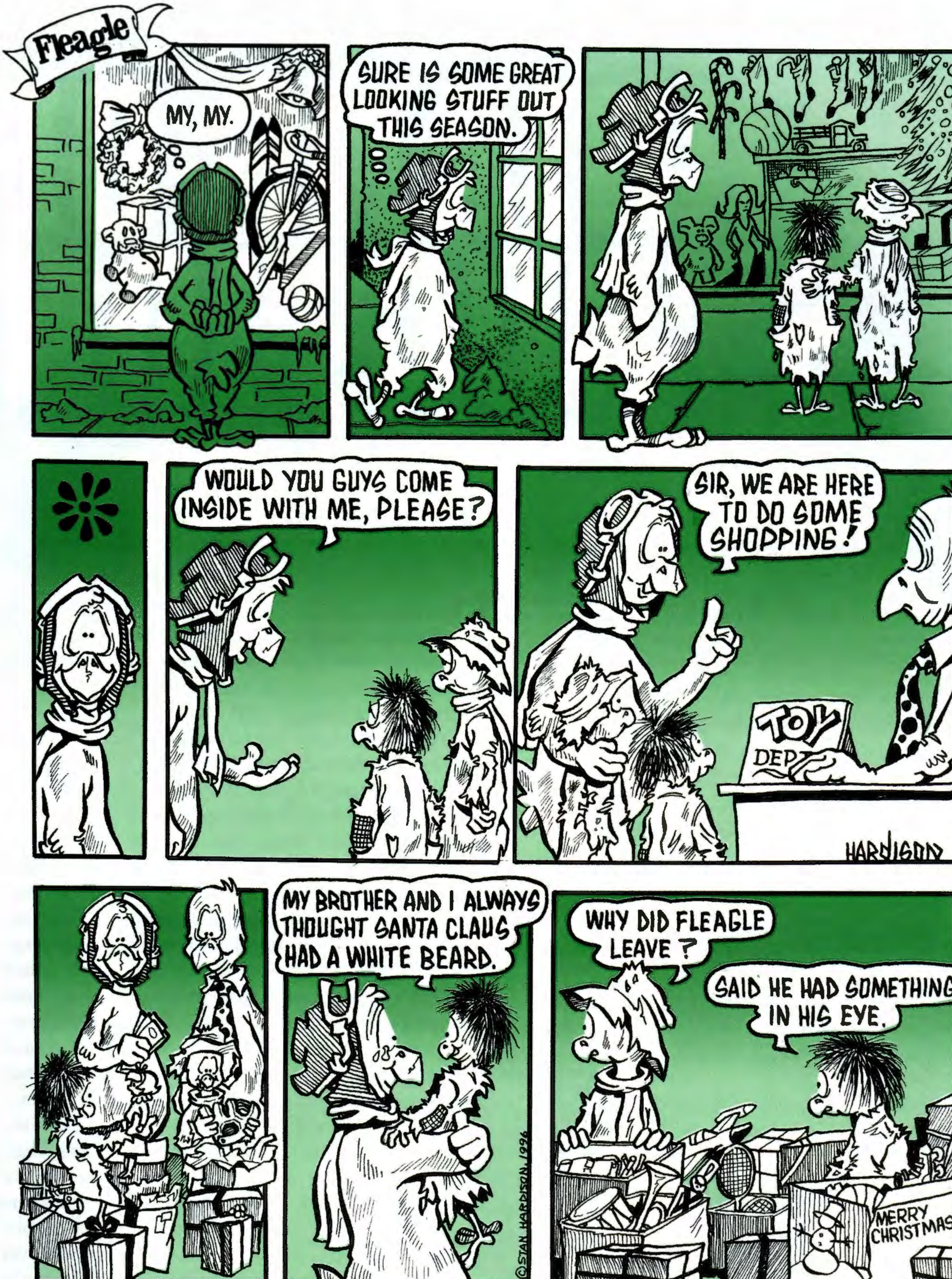
According to a news release from First Alert, exposure to carbon monoxide at 200 parts per million for 20 minutes can cause a headache. Exposure at 1,400 ppm for 20 minutes can cause a coma or brain damage. Occupational Safety and Health Administration Table Z-1 identifies the permissible exposure limit should not exceed 50 ppm.

Prevent Carbon Monoxide Poisoning

Here are a few safety tips:

- Don't try to heat your kitchen or home by leaving the gas stove burners on or the oven on with the door open.
- Never burn charcoal indoors.
- If you have an attached garage, pull the car all the way out when warming it up. Leaving the garage door open is not enough.
- Have a professional regularly check combustion appliances, including your fireplace and chimney. ■

For a **free brochure** *about carbon monoxide, write:*
Underwriters Laboratories
333 Pfingsten Road
Northbrook IL 60062


Fleagle
MY, MY.
SURE IS SOME GREAT LOOKING STUFF OUT THIS SEASON.
WOULD YOU GUYS COME INSIDE WITH ME, PLEASE?
SIR, WE ARE HERE TO DO SOME SHOPPING!
TOY DEPT
HARDISON
MY BROTHER AND I ALWAYS THOUGHT SANTA CLAUS HAD A WHITE BEARD.
©STAN HARDISON 1996
WHY DID FLEAGLE LEAVE?
SAID HE HAD SOMETHING IN HIS EYE.
MERRY CHRISTMAS

Explosives Safety...

GUARDIANS OF DESTRUCTION!

SMSgt John P. Guillebeau
Superintendent,
ANG Weapons Safety
Andrews AFB MD

SMSgt John P. Guillebeau Superintendent ANG Weapons Safety Andrews AFB MD

Explosives Safety... guardians of destruction!

Thousands of low-angle, high-speed fragments rip across the flightline cutting through millions of dollars worth of aircraft, support vehicles, and human flesh. The ensuing blast wave ruptures fuel tanks, collapses buildings, and destroys what was once a mission ready unit.

The stage is being set...thousands of tons of high explosive bombs, advanced missiles, gun ammunition, mines, grenades, flares, and many more types of explosives begin to converge into the installation from locations all across the globe. Explosives-loaded cargo aircraft start to back up on the taxiways as stacks and stacks of munitions begin to pile up on the hot cargo pad. In the distance, the amber sun slips below the horizon as night operations spin up. Suddenly, the indigo sky turns into a sickly orange haze. Thousands of low-angle, high-speed fragments rip across the flightline cutting through millions of dollars worth of aircraft, support vehicles, and human flesh. The ensuing blast wave ruptures fuel tanks, collapses buildings, and destroys what was once a mission ready unit. Sound possible? It should, because without the vigilance of some very important individuals —The Guardians of Destruction— it could certainly happen. In the high stress and fluid combat environments of the future, commanders will be making rapid decisions, pilots will be anxious to launch, maintenance crews will be pressed to meet sortie times, munitions crews will be scrambling to fill changing frags, resupplies of explosives will continue to pour onto the installation, and hopefully, the explosives safety managers will be there to help control, advise, and prevent explosive safety violations (and mishaps). As guardians over some of the most complex and lethal weapons systems in the world, our ultimate goal as explosives safety managers, and individuals, is to minimize (and hopefully eliminate) the probability that our explosives will be involved in a mishap. In this era of unit drawdowns and limited resources, it is even more critical now than ever that we strive to maintain a zero Class A and Class B explosives mishap rate. Too much is at stake for us to chance the loss of our mission capability and gamble the defense of our nation to an explosives mishap. We only have to look a few short years back to Desert Storm and a bit farther back to the incident at Ben Hoa, Vietnam, to see that catastrophic mishaps can and do occur with explosives. As commanders, supervisors, and workers, we must be diligent in complying with all established safety standards. We must be even more diligent, particularly in the area of explosives safety, to ensure that we know and clearly understand the implications of an explosives mishap, and how to reduce the probability and seriousness of a mishap.

Two of the most important tools available to the explosives safety manager to prevent explosives mishaps is to ensure that ALL personnel, from the senior most commanders to the lowest ranking workers, are aware of and understand the importance of explosives safety. Awareness and understanding are the keys to an effective mishap prevention program. These may be accomplished in several ways.

First, develop positive relationships with all those we come in contact with. Take the time to listen to those individuals who have concerns and suggestions. Show some courtesy when dealing with customers on a daily basis. Take the time to meet commanders, supervisors, and key workers to let them know of your concern for their well being. Ensure that people understand that your primary goal is to advise and help. Remember the old adage: Leadership by example...it goes a long way.

Second, have an aggressive and highly visible marketing program throughout the installation. Get with the base graphics department to create some eye-catching posters and handouts (or design them yourself on the computer). There are several explosive safety films that may be obtained from the Air Force Audio Visual Center for showing on the base cable channel, at commander's calls, safety council meetings, training sessions, or other type gatherings. Additionally, take the time to write interesting articles for the base paper, safety newsletter, or even for command safety magazines. Be creative and use as many mediums as possible to get your message out.

Third, provide current and accurate information. Keep up to date with the latest explosives safety information by learning the standards, attending conferences, being active "on-line" with the Air Force Safety Center and the Army Technical Center's electronic bulletin boards and other sources. Use this information to update lesson plans, training materials, and checklists. Network with other explosives safety managers to share information and improve current programs.

Fourth, perform comprehensive inspections and evaluations of local programs. Be proactive and spend a lot of time working to identify possible violations or areas of non-compliance. Take the positive approach. Don't simply "write-up" and wait for corrective action. Use these "visits" as opportunities to build relationships, retrain, and educate. Make every attempt to provide positive solutions to any problems that are identified.

And last but not least, recognize those sections and individuals that have good programs or have contributed to explosives safety. Get to know what awards are available in Air Force regulations or in other publications. There are times some awards are not given because no one was submitted for them. Take the time to submit those deserving individuals or sections. Additionally, you can develop your own awards program at the local level. Simply put, recognize your people and they will normally continue to do a good job.

The bottom line is this — Explosives safety is **everyone's** responsibility. As explosive safety managers we have many, many tools to help get the word out and to identify potential problems. As individuals, we have the responsibility to comply with established standards at all times. There are enough challenges during peacetime, and even more during wartime, without adding any unnecessary risks involving explosives. Remember, we are all Guardians of Destruction! ■

ACColades

Accolades

QUESTIONS OR COMMENTS CONCERNING DATA ON THIS PAGE SHOULD BE ADDRESSED TO HQ ACC/SEF, DSN: 574-7031

	TOTAL			ACC			CANG			CAFR		
	OCT	THRU OCT		OCT	THRU OCT		OCT	THRU OCT		OCT	THRU OCT	
		FY97	FY96		FY97	FY96		FY97	FY96		FY97	FY96
CLASS A MISHAPS	0	0	1	0	0	1	0	0	0	0	0	0
AIRCREW FATALITIES	0	0	0	0	0	0	0	0	0	0	0	0
* IN THE ENVELOPE EJECTIONS	0	0	2/0	0	0	2/0	0	0	0	0	0	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)

		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
ACC	FY 96	0	1.1	0.8	0.6	0.9	1.2	1.0	0.9	1.0	1.4	2.1	2.0
	FY 97	0											
8 AF	FY 96	0	0	0	0	0	0	0	0	1.2	1.0	1.7	1.5
	FY 97	0											
9 AF	FY 96	0	0	0	0	0	1.1	1.0	0.8	0.8	2.1	1.9	1.9
	FY 97	0											
12 AF	FY 96	0	3.4	2.4	1.8	2.9	2.3	2.0	1.7	1.5	1.4	3.1	2.9
	FY 97	0											
DRU	FY 96	0	0	0	0	0	0	0	0	0	0	0	0
	FY 97	0											
CANG	FY 96	0	1.9	1.3	2.2	1.8	2.2	1.9	1.7	2.0	1.8	2.0	1.9
	FY 97	0											
CAFR	FY 96	0	0	0	0	0	0	0	0	0	0	0	0
	FY 97	0											
TOTAL	FY 96	0	1.3	0.9	1.0	1.1	1.4	1.2	1.0	1.2	1.1	1.9	1.8
	FY 97	0											
MONTH		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

(BASED ON PROGRAMED HOURS FLOWN)

HONOR ROLL

Units without a "Command-Controlled" Class A flight mishap since the stand-up of ACC on 1 Jun 92, or their respective assimilation into the command.

5 BW	120 FW	148 FW	314 AW
24 WG	122 FW	150 FW	403 AW
28 BW	123 AW	153 AW	419 FW
55 WG	124 FW	156 FW	440 AW
79 TEG	125 FW	165 AW	442 FW
85 GP	129 RQW	166 AW	482 FW
93 BW	130 AW	167 AW	509 BW
94 AW	132 FW	169 FW	552 ACW
102 FW	133 AW	174 FW	908 AW
103 FW	136 AW	175 FW	910 AW
104 FW	137 AW	177 FW	911 AW
106 RQW	138 FW	178 FW	913 AW
109 AW	139 AW	179 AW	914 AW
113 WG	142 FW	181 FW	916 ARW
114 FW	143 AW	184 BW	926 FW
116 BW	144 FW	185 FW	928 AW
118 AW	145 AW	187 FW	934 AW
119 FW	146 AW	189 AW	939 RQW
	147 FW	301 FW	

As of 1 Nov 96


Happy Holidays
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