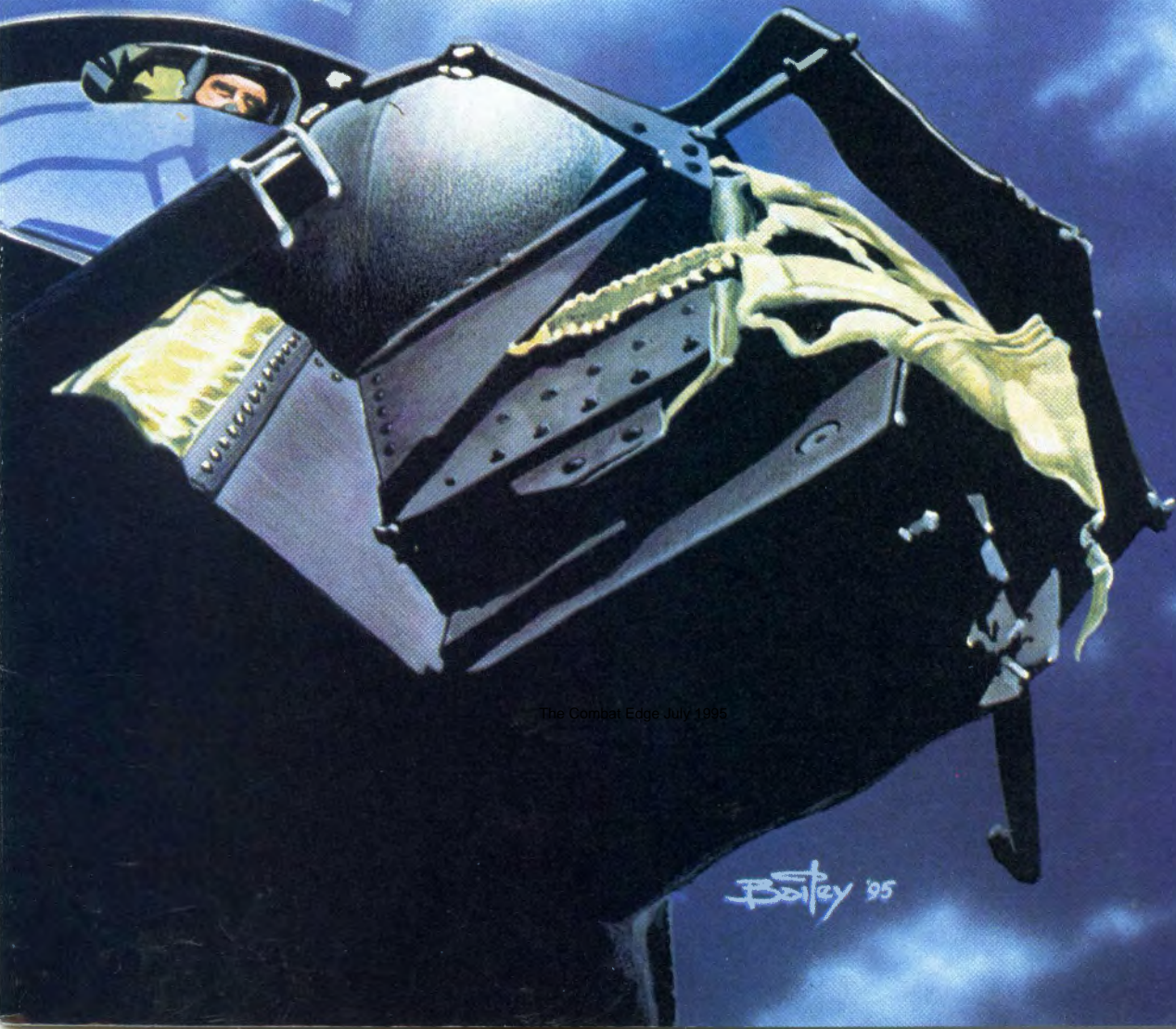


THE COMBAT EDGE

JULY 1995



The Combat Edge July 1995

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JULY 1995

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FEATURES

4

TOO HOT TO HANDLE? NO SWEAT!

*Today's Supervisor
National Safety Council
Catherine B. Kedjidjian*

30

G-EXCESS

"I Hate It When That Happens"

Big head movements while clearing or checking my six are just a part of the job, but I didn't realize it would have that great an impact on my orientation. My spatial orientation! Wow, the clue bird just landed!

DEPARTMENTS

22 24

FLIGHT SAFETY

6 8 10 14

GROUND SAFETY

28

WEAPONS SAFETY

18

AWARDS

29

ACCOLADES

13

FLEAGLE

THE COMBAT EDGE

**Air Combat Command
Safety Magazine**

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Accent on Safety

Congratulations on an outstanding mishap prevention effort over the Memorial Day holiday — zero on- or off-duty fatalities. A great start to the “101 Critical Days of Summer” program! After taking a well-deserved pat on the back, let’s concentrate on our efforts for the rest of the summer season. We still have major holidays, vacation time, lots of recreational activities, and the traditional summer personnel turnover to get through before we can determine the final results for this year. We need to focus for the long haul and not let complacency ruin our great start. By emphasizing our proven mishap prevention concepts of commander and supervisor involvement, education, responsible behavior, and looking out for one another, we can capitalize on our starting effort and make this the most successful “101 Critical Days” ever. YOU can do it!!

Now to a recurring concern that has been highlighted by a recent spate of flight mishaps under investigation or waiting to be briefed — operations factors. Operations factors are particularly nagging contributors to mishaps because they are something that we should have control over. However, it seems that just when we think we’ve got a handle on operations factors as mishap causes, something happens and we realize that we haven’t totally solved the problem. Such is the mishap prevention arena when dealing with people, high technology machines, complex taskings, and fiscal constraints. As with all of our mishap prevention efforts, we need your help to reduce operations factors as mishap causes. The safety office can’t do it alone. We need each and every one of you to get involved.

As we travel around the command visiting units, conducting staff assistance visits, and attending conferences we hear a recurring list of concerns:

- * There is a high self-induced workload in order to keep jobs and get promoted.
- * The loss of field grade pilots at the squadron level has adversely affected the pool of experience and shifted supervisory responsibilities.
- * There is increased pressure and workload on the Top 3 in every squadron.
- * The addition of maintenance organizations to flying squadrons has increased supervisory duties and stretched the span of control.
- * High TDY rates and Ops Tempo continue with no relief in sight.

These concerns portend serious implications for an increase in operations factors mishaps. By looking at these concerns and analyzing our mishap statistics, we can ascertain some developing trends that should serve as warnings.

Fatigue is a definite factor. Tired pilots are more susceptible to spatial disorientation and GLOC. Tired crews don’t mission plan as thoroughly as necessary, sometimes miss vital details, and aren’t capable of dealing with unplanned contingencies or abnormal situations. To stop this trend, supervisors must be vigilant for the warning signs of chronic fatigue; and pilots and crewmembers must remove themselves from the schedule. We also need to understand that our Combat Edge equipment does not prevent GLOC. We still need to use the correct anti-G straining maneuver in all cases.

TDY rates, Ops Tempo, and supervisory workloads are not going to lessen in the near future — they’re a fact of life. However, we can work on countering their negative influences. Take advantage of slack periods to give everyone well-deserved breaks and time off. Recognize and reward people for their good work. Everyone — not just commanders and supervisors — must be ever vigilant for the tell-tale signs of stress overload and burnout. Everyone is susceptible and everyone should be watching and ready to help anyone they work with or for. By working together we can arrest these adverse trends and strengthen our culture of safety. Work hard, play hard — BE SAFE!

Colonel Fack Acker
Chief of Safety



NO

TOO HOT TO HANDLE?

Too hot to handle? No sweat.

SWEAT!

Catherine B. Kedjidjian

Ah, summer! Weekends of picnics, baseball and swimming. Yet the weather that allows us to enjoy the outdoors can also endanger workers. Heat stress isn't only a warm-weather problem; it arises indoors or out, in any climate.

The body burns calories and produces heat to keep its temperature at 98.6 degrees Fahrenheit. When that temperature rises higher, the heart pumps more blood, which circulates closely to the surface of the skin and releases heat. If that process doesn't cool the body enough, you sweat. When sweat evaporates from the skin, you cool off.

Problems develop when those cooling mechanisms don't work. For example, when the air temperature exceeds body temperature, the body can't easily cool itself. If the air is humid, sweat doesn't evaporate quickly. Sweat also doesn't evaporate from a person who works hard or exercises while wrapped in heavy clothing or protective gear. That makes heat stress a concern in any weather, anywhere.

What's the problem?

Heat stress takes several forms. Heat rash occurs when sweat ducts clog up. Heat cramps are muscle spasms caused by the loss of electrolytes from heavy sweating. If workers develop those conditions, get them out of the heat to rest. The next stages of heat stress may not be far away.

Heat syncope, heat exhaustion and heat stroke develop from prolonged exposure to heat. A victim of heat syncope faints when blood flow to the brain decreases because blood pools in the skin surface or other areas of the body.

When the body loses too much water and salt, heat exhaustion sets in. Signs include weakness, dizziness, nausea, headache, heavy sweating, clammy skin and a slightly high body temperature. A heatstroke victim has a rapid pulse, hot, red skin and does not sweat. He or she may show mental confusion and pass out. Heat stroke can lead to brain damage or death.

One danger that heat stress poses on the job is a decrease in alertness. "Heat stress is analogous to having a couple of drinks," says Dr. Thomas Adams, professor and associate chair of undergraduate education, department of physiology, Michigan State University. He says heat stress blurs workers' judgment.

Hot tips to cool conditions.

As a supervisor, you should know how to recognize a victim of heat stress. Evaluate the symptoms, then follow these first-aid actions:

Heat cramps - Gently massage the cramped muscles and have the worker sip water for an hour.

Heat syncope - Have the worker lie down in a cool area.

Heat exhaustion - Lay the worker down in a cool area with his or her legs raised. Loosen the worker's clothing and give water to sip for an hour. Don't give anything to drink if the worker vomits. Cool the worker with cold, wet cloths and a fan. And keep him or her off the job and out of the heat for about a week.

Heat stroke - Call for medical help immediately. While you wait for help to arrive, move the worker to a cool place, remove his or her outer clothing and apply cold compresses or a cold bath. If you don't have water, fan the victim.

Catch it early

"About 90 percent of corrective measures are very simple and don't cost any money," says Adams. Awareness is vital in order to prevent heat-related illnesses. Supervisors need to watch for warning signs of heat stress in workers. Adams, who consults on heat stress, places responsibility on workers too. "The person who experiences heat stress, if educated to know what to look for, is the first line of defense," he says.

With employees stationed in the Mojave Desert, the Los Angeles Department of Water and Power needs to keep employees educated about heat stress. Supervisors learn to recognize the symptoms of heat stress through lectures and videos, and they receive first-aid training. Jerry Sterling, construction and maintenance superintendent for the aqueduct division in Mojave says that it is important for workers to acclimate themselves to the heat to combat heat stress. "Most of the workers here are born and raised in the desert," he says. "They are used to the heat, and they know their limits." Supervisors don't push workers beyond those limits.

Workers can take other preventive measures to combat the heat:

- * Eat light. The more calories you take in, the more body heat you produce.

- * Drink plenty of fluids before work and throughout the day. Drink at least 8 ounces per half hour.

- * Choose the proper type and amount of clothing. Cotton allows skin to breathe and absorbs sweat. Wide-brimmed hats protect workers from direct sunlight. In cold weather and indoors, Adams suggests that workers adjust their clothing, when possible, so that they don't sweat.

"Heat illnesses, especially in the summer, are as much attributable to not being able to recognize the signs of heat stress as they are to not knowing what to do on the job," says Adams. Hot conditions don't have to be dangerous if you watch for those signs and get cooperation from workers to prevent heat stress. ■



Cost Airmen Life, Career

Reprinted by permission from The Mobility Forum, March - April 1995

On 15 April 1994, a sergeant drank at least two beers, a couple ounces of whiskey, test drove a fancy sports car, and became a killer. On 27 September 1994, he became a convict. I know, because I was trial counsel on the case of United States versus the Air Force sergeant, and my job was to bring the facts to the judge. The facts are chillingly commonplace. The sergeant went to a birthday party with a case of beer under his arm. He drank at least two beers followed by whiskey. He danced, had a good time, felt festive, and was confident. While on the front porch, he was enthusiastically discussing a co-worker's awesome black car. The owner, thinking he was being a friend, offered to let the sergeant test drive the car. The sergeant's co-worker, subordinate, and friend accompanied him for the test drive. The sergeant was euphoric — for almost 60 seconds.

That's all the time it took for him to start the car, drive off at more than 60 mph, blow through a stop sign, step on the brakes, slam into a boulder, inflate the dual air bags, flip the car over onto the passenger's side, skid through a child's swing set, eject the sunroof, crash into an occupied house, and crush his friend's head against the house's foundation.

The sergeant was trapped inside the car with his dead companion until paramedics and firemen cut the car away. The treating paramedic smelled the alcohol emitting from the sergeant's mouth as he was shrieking in pain and fear. The sergeant was fading in and out of consciousness. He lost feeling in his legs. After he was extracted from the car, a helicopter whisked the sergeant to U.C. Davis Medical Center. His blood alcohol content was .09. Paramedics could do nothing for the airman first class, who was dead.

The sergeant pled guilty 27 September to involuntary manslaughter and drunken driving with injury. The judge saw bloody photographs and listened to the Vacaville police officer discuss how the car broke through the house and into an unoccupied bedroom. The airman's mother flew in from Ne-

vada to testify how much she loved and missed her son. When her turn to talk came around, she was crying too hard to speak, so his stepfather tearfully testified instead.

His words will always echo in my ears. He said the airman was the best son he could ever have, even better than his natural children. He was his mother's joy. They learned of his death when an Air Force staff car pulled up in front of their house — a protocol officer, chaplain, and a third officer came to their door. At his funeral, his mother received a posthumous medal and the flag from his casket. He was buried at a veteran's cemetery outside Las Vegas and his parents visit the grave at least once a week, every week. They decorate the grave and bring flowers. In Japanese tradition, they take a soda, tea, or something to eat, and leave it for their son on his headstone. Their house has a memorial to him on the upstairs landing — his official Air Force picture, flowers, fruit, and a flag to attest to the loss of their son. They chose the landing for the memorial because it was open to the rest of the house, so their son could be everywhere with them. His mother bought a Mother's Day card and a birthday card for herself from their dead son. Not a day has gone by that she hasn't cried — her wounds will never heal. Their son promised his mother if she was ever a widow that he would take care of her, that she would live out her days under his care. Now, she will be alone.

The sergeant, visibly shaken and crying, testified how sorry he was. He apologized to the court, to his friend's parents, his own mother, and his wife. He admitted his guilt, his remorse, his sorrow. Looking at him, nobody would say, "He looks like a killer." He was a sharp troop, sober, well-spoken, and he really was sorry. He was sentenced to 18 months, a bad conduct discharge, reduction to the lowest rank, and total forfeiture of all pay and allowances.

He was taken off to jail in chains. The sergeant was just a guy who worked at finance. He is, in many ways, better than the average person. He

FESTIVE

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60 AMW/JA
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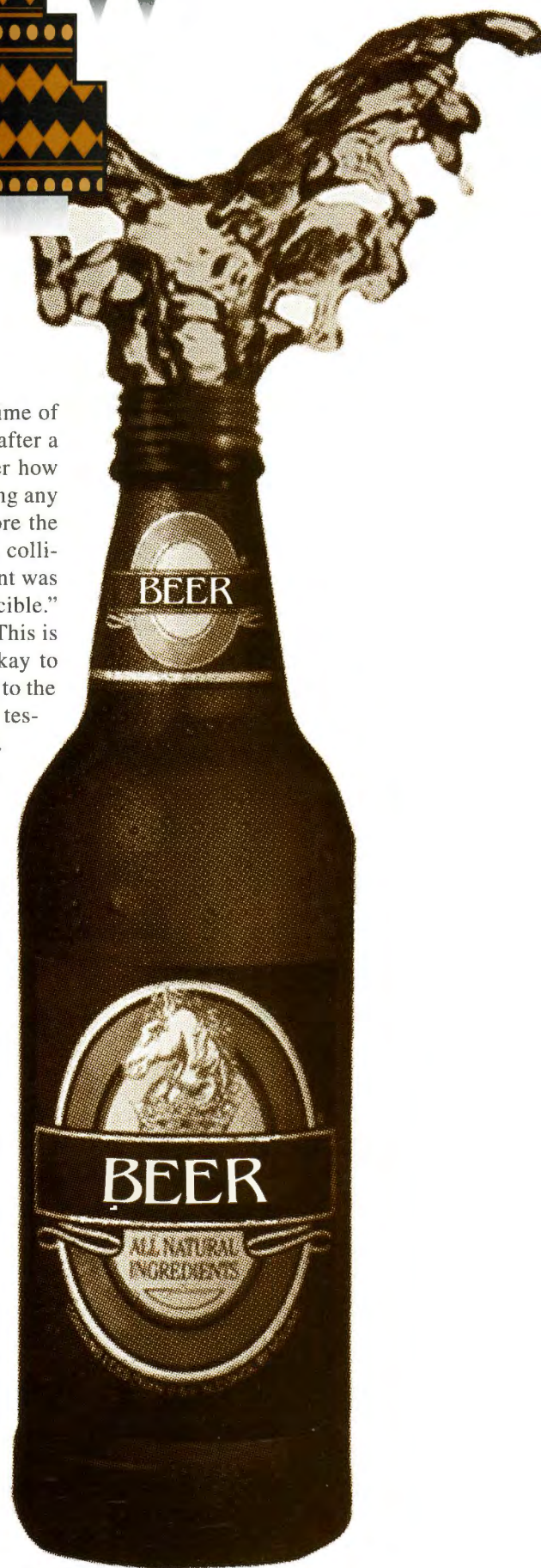
stands tall and strong at 6 feet, 3 inches and 214 pounds. He's in the prime of his life at age 27. If anyone could have handled their liquor and driven after a few drinks, it would have been him. But the truth is, nobody, no matter how tall, big, strong, old, young, or smart they are, can drive a car after drinking any alcohol. This airman's death is proof. Do you need more proof? Before the trial, one of the Vacaville police officers who responded to the 15 April collision told me he was not surprised that the sergeant's blood alcohol content was .09. He explained that at .09, the driver feels "relaxed, happy, and invincible." The driver's reflexes are slow, and the vehicle's speed tends to be high. This is the most dangerous time, because the driver thinks he or she is still okay to drive because they aren't slurring their words or stumbling. I was chilled to the bone when, at the trial, the sergeant echoed the police officer's words by testifying he was "festive" and "feeling confident" at the time he drove off.


The repercussions of the collision are continuing today. Last week, the tenant who was renting the house the sergeant crashed into received an eviction notice and will soon be homeless. It seems the house is not economically repairable.

Families who lost their loved ones to drunk drivers are calling me up to relive their losses and express their desire to stiffen drunk driving penalties. Their anguish is so heavy I can feel the weight over the phone. The airman's parents are now home, forever with their pain. The sergeant is in jail and his family is alone. Soon, they may be facing overwhelming debts, as the airman's parents, the insurance carrier, the owner of the wrecked house, the City of Vacaville, the helicopter, and U.C. Davis Medical Center all have the right to repayment of their expenses. But wait, you say, doesn't the military cover the health-care costs? No, the sergeant was not in the line of duty at the time he killed the airman and injured himself.

Some young people may feel that drinking alcohol is a sign of maturity. No. Getting so drunk that you lose control, vomit, or slur your words are the signs of a fool. The sergeant probably did not feel mature when he was trapped in the crashed car with his dead friend. I believe he was frightened, hurt, and in anguish.

I issue a challenge to everyone who has made it this far in the article: before you have even one drink, make sure you have a sober ride home, a place to sleep, or cab fare. If you are going to a party, and are over 21, then live it up. But don't become a killer by thinking you are just sober enough or can handle your liquor, or you're so big and strong that you are invincible and can make it home. It's not up to your friends to hide your keys if they notice you're intoxicated. You can party harder, and live longer, by knowing in advance of your first drink that you will not be driving. ■





Maj (Dr.) Mike Reznicek
1 MG
Langley AFB VA

SUICIDE In The Air Force

cides from 1983 to 1993 revealed an annual rate of 11.8 active duty suicides per 100,000 members, or approximately 66 suicides each year. That rate was not significantly different from the civilian population nor from the other military services. While suicides occurred across the spectrum of rank, age, sex, and race, the demographic data reveals that the typical suicide victim is a white male with relationship problems, trouble at work, and a recent history of heavy drinking. In fact, when suicide rates are compared by race and sex and proportionately adjusted, white males have rates almost 4 times that of black males and 5 times that of all females. Furthermore, it is still true that women *attempt* suicide more frequently than men, but men *complete* suicide more often. Men ensure a successful suicide by choosing more violent means, such as firearms, while women are more likely to choose non-violent and less successful means, such as drug overdoses.

The most frequent stressor among those who commit suicide is a problem with intimate relationships, occurring in 76% of suicide victims. Stable nurturing relationships seem to be protective. All of which confirm the adage that when a marriage is good, there's nothing quite like it, and when it's bad, there's nothing quite like it.

Over half of suicide victims show clear signs that they were depressed, demonstrating disturbances in sleep, appetite, concentration, and

Nothing can upset a cohesive military unit quite like a suicide, and in the Air Force that happens once every 5 days on the average. The sorrow of losing a friend and co-worker is exceeded only by the guilt that something wasn't done about all those warning signs that, only after the fact, seem so compelling.

In the United States the incidence of suicide is remarkably stable over time, occurring about 12 times for each 100,000 population per year. Only in the 1930's, during the Great Depression, was there a significant change. Then more than 17 per 100,000 took their lives, usually after suffering financial collapse.

An OSI study that looked at Air Force sui-

energy levels over a period of at least 2 weeks. Yet, less than one-quarter of the victims were being followed in a mental health clinic. A third of successful suicide victims abused drugs or alcohol in the weeks before their suicide, and 40% were intoxicated at the time of death. Not only will substance abuse create other stressors, but substances use *per se* tends to be disinhibiting, thus increasing the risk-taking mind-set that is required to commit suicide.

Almost 25% of the victims experienced financial problems and 16% were fighting legal problems. Most who eventually commit suicide, however, are dealing with multiple problems and close to half communicate their intention to take their life.

Why do people choose suicide? Those who have survived suicide attempts often say they saw no other way out of their problems. They were haunted by a prevailing sense of hopelessness. In retrospect, they can identify how distorted their thinking had become, how they couldn't see the forest for the trees, how they made mountains out of mole hills. But to paraphrase Samuel Johnson, surviving a suicide attempt must wonderfully concentrate the mind. Survivors often gain a new lease on life and become more effective in dealing with personal problems.

While there is much talk about the stressful effects of downsizing and "doing more with less," the military is not experiencing a rash of suicides. There is no evidence that working long hours increases one's risk for suicide. In fact, the sense of accomplishment and teamwork that arise out of increased productivity probably enhances one's self-definition and counteracts hopelessness.

Can suicide be prevented? I have no doubt that individual suicides can be prevented by the timely intervention of those close by. On a larger scale, however, there is no evidence that increasing mental health services, setting up suicide hot lines, or sending hordes of therapists into the workplace has any benefit.

Nor are there objective tests to determine who is likely to commit suicide. Some have undoubtedly read about studies showing that the chemical serotonin was decreased in the brain fluid of many who committed suicide. But not

all suicide attempters have the abnormality nor do all with the abnormality attempt suicide. Moreover, the last thing a distraught individual needs is a 4-inch needle piercing his spine to withdraw the necessary fluid. The test has no practical use and remains a research tool.

Effective suicide prevention will not come from the health care system but rather from those closest to the individual: from co-workers, family, and friends. Supervisors and commanders need to be aware of the aforementioned risk factors. When offering help to a member who seems distraught and is having personal problems, don't avoid asking whether they are having suicidal thoughts. There is no evidence that asking the question "implants" the thought. In my experience every distressed individual who is feeling hopeless has already had suicidal thoughts, albeit short-lived. When suicidal thoughts or suicidal behavior is present, the mental health clinic should be contacted immediately.

Those in the chain of command, however, need to be aware of services on base that are available to those who are having personal crises. Counseling and spiritual guidance are available through the Chapel. Chaplains have the added benefit of absolute confidentiality with clients. The Family Support Center offers limited counseling, help with financial planning, and financial aid. Mental health clinics offer medical evaluations, more intensive counseling services including substance abuse counseling, and access to hospitalization when self-protection is required. Family advocacy clinics help counteract family violence as well as coordinate services for family members who have special medical needs.

A recent innovation in Air Combat Command is the Care On Target Team (COTT), a wing-level meeting comprised of these same base agencies (and more) who track the emotional pulse of the base community. While the COTT is designed to meet quarterly, a tragedy like suicide may drive an ad hoc meeting to coordinate a targeted base response.

While the nation as a whole is unlikely to see a drop in suicide rates, the astute supervisor and commander play pivotal roles when it comes to suicide prevention. ■

SAFETY TIPS FOR

Trailer Your Boat



Reprinted with permission from
U.S. Coast Guard Safety Tip Brochure

CHOOSE THE RIGHT TRAILER for your boat. More damage can be done to a boat by the stresses of road travel than by normal water operation. A boat hull is designed to be supported evenly by water. So, when it is transported on a trailer it should be supported structurally as evenly across the hull as possible allowing for even distribution of the weight of the hull, engine, and equipment. It should be *long* enough to support the whole length of the hull but *short* enough to allow the lower unit to be extended freely.

ROLLERS AND BOLSTERS *must* be kept in good condition to prevent scratching and gouging of the hull.

TIE DOWNS AND LOWER UNIT SUPPORTS *must* be adjusted properly to prevent the boat from bouncing on the trailer. The bow eye on the boat should be secured with a rope, chain, or turnbuckle in addition to the winch cable. Additional straps may be required across the beam of the boat.

The CAPACITY rating of the trailer should be greater than the combined weight of the boat, motor, and equipment.

THE TOW VEHICLE *must* be capable of towing the weight of the trailer, boat, and equipment and the weight of the passengers and equipment which will be carried inside. This may require that the tow vehicle be specially equipped with an:

- ENGINE OF ADEQUATE POWER
- TRANSMISSION DESIGNED FOR TOWING
- LARGER COOLING SYSTEMS FOR THE ENGINE AND TRANSMISSION
- HEAVY DUTY BRAKES
- LOAD BEARING HITCH attached to the frame, not the bumper **BEFORE YOU GO OUT ON THE HIGHWAY *make sure*** :

- The tow **BALL** and **COUPLER** are the same size and bolts with washers are tightly secured. (The vibration of road travel can loosen them.)

- The **COUPLER IS COMPLETELY OVER THE BALL** and the **LATCHING MECHANISM IS LOCKED DOWN**.

- The **TRAILER IS LOADED EVENLY** from front to rear as well as side to side. *Too much* weight on the hitch will cause the rear of the tow vehicle to drag and may make steering more difficult. Too much weight on the *rear* of the trailer will cause the rig to fishtail and may reduce traction or even lift the rear wheels of the tow vehicle off the ground.

- The **SAFETY CHAINS** are attached criss-crossing under the coupler to the frame of the tow vehicle. If the ball was to break, the trailer would follow in a straight line and prevent the coupler from dragging on the road.

- The **LIGHTS** on the trailer function properly.

- **CHECK THE BRAKES**. On a level parking area roll forward and apply the brakes several times at increasing speeds to determine a *safe stopping distance*.

- The **SIDE VIEW MIRRORS** are large enough to provide an unobstructed rearview on both sides of the vehicle.

- **CHECK TIRES and WHEEL BEARINGS**. Improper inflation may cause difficulty in steering. When trailer wheels are immersed in water (*especially salt water*), the bearings should be inspected and greased after each use.

TOWING PRECAUTIONS

Pulling a trailer presents problems: *More time* is required to brake, accelerate, pass, and stop. The turning radius is also much *greater*; curbs and road-side barriers must be given wider berth when negotiating corners.

LAUNCHING

For the courtesy of others and to prevent rushing,



prepare your boat for launching away from the ramp.

- *Check* the boat to ensure that no *damage* was caused by the trip.

- *Raise the lower unit* (remove supports) to proper height for launching so that it will not hit bottom.

- *Remove tie downs* and make sure that the winch is properly attached to the bow eye and locked in position.

- *Put the drain plug* in securely.

- *Disconnect the trailer lights* to prevent shorting of electrical system or burning out a bulb.

- *Attach a line* to the bow and the stern of the boat





For the courtesy of others and to prevent rushing, prepare your boat for launching away from the ramp.

When everything has been double checked, proceed slowly to the ramp remembering that your boat is just resting on the trailer and attached only at the bow.

so that the boat cannot drift away after launching and it can be easily maneuvered to a docking area.

- *Visually inspect the launch ramp* for hazards such as a steep drop off, grease, and sharp objects.

When everything has been double checked, proceed slowly to the ramp remembering that your boat is just resting on the trailer and attached only at the bow. The ideal situation is to have one person *in the boat* and one observer *at the water's edge* to help guide the driver of the tow vehicle.

When launching:

- *Keep* the rear wheels of the tow vehicle out of the water. This will generally keep the exhaust pipes out of the water. If the exhaust pipes become immersed in the water, the engine may stall.

- *Set* the parking brake and place tire chocks behind rear wheels.

- *Make sure* someone on shore is holding the lines attached to the boat.

- *Lower* the outdrive and prepare to start the engine (after running blowers and checking for fuel leaks.)

- *Start* the boat motor and make sure that water is passing through the engine cooling system.

- *Release* the winch and disconnect the winch line from the bow when the boat operator is ready.

At this point the boat should be able to be launched with a light shove or by backing off the trailer under power. Finish loading your boat at a sufficient distance from the ramp so that others may use it.

RETRIEVAL

The steps for removing your boat from the water are basically the reverse of those taken to launch it. First, load the boat at a mooring if possible. Next, maneuver the boat carefully to the submerged trailer and raise the lower unit of the engine. Then, winch the boat onto the trailer and secure it. Be sure to hook-up your safety chains. Finally, drive the trailer with boat aboard carefully off the ramp to a designated parking area for cleanup, reloading, and an equipment safety check. Practice will make launch and retrieving a simple procedure. The best advice is just, "do it cautiously with safety as your main concern."

STORAGE

Since your boat may be sitting on its trailer for quite some time before it is used again, it is important that it be stored properly. To avoid damage from sun and weather, cover the boat with a tarp. To remove weight from the wheels, put cinderblocks or wood beams under the tongue and all four corners of the trailer frame. ■

Fleagle



SAFETY FI

When Fueling Your Boat

*Reprinted with permission from
U.S. Coast Guard Consumer
Fact Sheet # 23, July 1993*

HAZARDS TO AVOID

Hazardous conditions are present when fueling your boat. Fueling requires your undivided attention and a great deal of caution. Gasoline vapors are very volatile and can easily cause fire or explosion if not carefully supervised. Static electricity can be generated internally throughout the length of the gas hose by the flow of gasoline and by atmospheric conditions. The Coast Guard recommends that all recreational boaters follow these sensible safety rules when fueling.

AT THE FUEL SERVICE DOCK

- Stop all engines, motors, fans, and other devices that could produce sparks.
- Turn off galley fires, lights, electrical equipment, radios, stoves, and other appliances.
- Extinguish smoking material.

BEFORE FUELING

- Check to see mooring is secure.
- Close all hatches, ports, doors, and windows.
- Be sure fuel tanks are vented overboard.
- To avoid spilling, be sure you know exactly how much fuel your tank will hold. Allow space for fuel expansion by filling the tank to only approximately 95% of its capacity.

DURING FUELING

- Place the nozzle of the hose or can in contact with the fill opening to avoid static

spark.

- Make sure no fuel escapes into the hull or bilge.
- Portable fuel tanks should be filled on the dock or somewhere off the vessel.
- Don't light matches or cigarette lighters.
- Don't throw any switches.

AFTER FUELING

- Close all fill openings tightly.
- Wipe up any spilled fuel immediately.
- Open hatches, ports, doors, and windows to air out vessel.
- Run the exhaust blower for at least 5 minutes.
- Check the bilges for fuel vapors before starting engine or lighting fires.

(Dangerous gasoline vapors will settle to the lowest level of the bilges.)

- NEVER start the engine until you are sure

RST

r Boat



all traces of fuel vapors are eliminated.

- Use your nose; it is the best vapor detector.
- Be prepared to cast off mooring lines from the dock as soon as the engine starts.

DIESEL FUEL

- Diesel fuel, being less flammable, is not as hazardous as gasoline, but boaters should exercise the same caution when fueling with diesel.

ADDITIONAL FUELING PRECAUTIONS

- Always fuel or refuel during daylight hours, except in an emergency.
- Be sure you have enough fuel to follow the one-third rule — use one-third of your gas supply to go out, one-third to return, and have one third in reserve for emergencies.
- Be aware of the dangers of handling gasoline and be thoroughly familiar with the most effective means of extinguishing a

gasoline fire.

- **ALWAYS FOLLOW THE SAFE FUELING RULES TO THE LETTER!**
- Remember, you can learn these rules and much more about recreational boating by taking a boating safety course and having a free Coast Guard Auxiliary Courtesy Marine Examination of your boat's safety equipment.

For information call the Boating Safety Hotline at 1-800-368-5647.



Artwork Contributed By:
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SINISTER



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WINGMAN

PILOT SAFETY AWARD OF DISTINCTION

Maj James Diesing, 49 TS, 49 FW, Holloman AFB NM



Maj Diesing was performing rear cockpit instructor duties in the F-4E while awaiting takeoff clearance, when the Holloman AFB tower controllers issued landing instructions to a light aircraft. The tower's directions were to land the light aircraft on Runway 25 (the primary takeoff runway) to deconflict from normal fighter aircraft landing operations on Runway 16. However, the light aircraft misidentified the parallel taxiway as the landing runway and was preparing for a potentially disastrous touchdown. Maj

Diesing noticed the flight path of the light aircraft and, realizing that it only had VHF communication capabilities, issued a directive UHF transmission to tower to direct a go-around. At the tower's direction, the light aircraft aborted the landing at no more than 50 feet above the ground with numerous aircraft on the taxiway. The light aircraft aborted its landing at such a low altitude that the ramp lights became a hazard during the go-around. Maj Diesing's clear, timely, transmission to the tower prevented a catastrophic mishap.

AIRCREW SAFETY AWARD OF DISTINCTION

Capt John Burda, Capt Curtis McGiffin, 1Lt Rhett Binger, Sgt Jerry Schmidt, 7 ACCS, 55 WG, Offutt AFB NE



Captains Burda and McGiffin, Lt Binger, and Sgt Schmidt were flying an EC-135 round-robin air refueling mission out of Souda Bay NAS, Greece. Unable to join up with the tanker due to a line of thunderstorms over Italian airspace blocking the tanker's route to the refueling track, the crew headed back to Souda Bay. At approximately 7 miles from the runway and descending through 5,000 feet, a bolt of lightning struck the airplane's radome. The crew reported a deafening "bang" and a blinding flash of light, followed by a "ball" of static electricity traveling down the throttle quadrant through the boom operator's legs (he was sitting in the jump

seat), and to the rear of the aircraft. Momentarily blinded and disoriented, the pilot performed a go-around and climbed to 10,000 feet, while the crew attempted to determine what systems were still operable. Then, using radar, the navigator established the aircraft on a modified downwind (over the water) to the published holding pattern. After one turn in holding, the pilot's instruments started to operate normally, and he commenced the approach using navigator radar directed approach procedures as a backup. They broke out of the cloud layer at minimums (approximately 700 feet AGL) and sighted the runway lighting only 2 miles from the runway threshold and accomplished an uneventful landing.

CREW CHIEF EXCELLENCE AWARD

SSgt Carson E. Smith, 38 RS, 55 WG, Offutt AFB NE

On 17 Mar 95, Sergeant Smith was monitoring a LOX servicing operation near the tail of an RC-135V parked on the 55 WG flightline at Offutt AFB NE. At 0330 hours, he noticed smoke bellowing from the nose area of an adjacent RC-135. Immediately, he ordered the LOX operation discontinued and ran to the nearby aircraft to find the source of the smoke. The burner of an H-1 heater unit used by a repair team had "flamed-out" and was leaking JP-8 fuel onto the flightline. Sergeant Smith quickly released the parking brake of the unit to remove the heater from the area. Just then, the heater exhaust port burst into fire with flames shooting outwards more than 15 feet according to witnesses; he then dragged the burning heater unit over 20 yards

from the endangered aircraft. Sergeant Smith battled the flames for several minutes before finally suppressing the fire. With the fire out, he directed the clean-up of the spilled JP-8 and the removal of the heater to prevent any further danger to aircraft parked on Offutt's ramp. The courageous, selfless actions of Sergeant Smith prevented a mishap with potentially catastrophic results. The burning cart was only 10 feet from a \$400 million national asset, and less than 100 feet from a volatile LOX servicing operation. Prior to this incident, all operations on the flightline were normal and all safety precautions had been taken.



FLIGHTLINE SAFETY AWARD OF DISTINCTION

SrA David M. Taylor, 23 MS, 23 WG, Pope AFB NC

I was sitting "left" seat as the run supervisor on C-130E 63-7809, performing a pre-isochronal engine operational check. As I was advancing the engines to 705 degrees Turbine Inlet Temperature (TIT), the brakes suddenly failed. With that much power applied to the engines, the aircraft immediately lurched forward over the chocks, and started toward a row of C-130s directly in front of us. My "right seater" immediately switched from emergency to normal brake systems, but the plane continued to roll. As a last ditch effort, I took the throttles to reverse, careful not to set the aircraft on its tail. The plane stopped; but when I moved the throttles back to ground idle, the plane would start moving again. To alleviate this situation, I went to low speed

ground idle, and shut the engines down. After exiting the aircraft, I realized we had stopped without brakes in less than 20 feet, although it seemed a lot longer. All of these events took place in a matter of seconds; and had I not followed the checklist to a "tee," it could have easily ended in a major mishap. Fortunately, all these actions came naturally because this was my first engine run out of the simulator. After troubleshooting the system, it was determined that faulty rigging to the power brake valve had allowed all brake pressure to slowly bleed off. The moral of this story is proper training and preparation really does work.



GROUND SAFETY INDIVIDUAL AWARD OF DISTINCTION



Mr. Doug Beaver, 366 CES, 366 WG, Mt Home AFB ID

During a training session for confined space entry conducted by 366th Wing Safety, Mr. Beaver identified a need in the 366th Civil Engineering Squadron (CES) for unit procedures. Although he was not the unit safety representative, he volunteered to work with Wing Safety and the Confined Space Program Team (CSPT) in setting up a comprehensive confined space program for CES. Mr. Beaver developed a list of all confined spaces that Civil Engineering may enter and then accompanied the CSPT during the evaluation process. He developed a comprehensive operating instruction, outlining responsibilities of all squadron personnel and included a copy of the master entry plan that was established by Wing Safety, Bioenvironmental, and the

Fire Department. He established a tool crib so Civil Engineering shops can check out necessary confined space equipment and he now monitors Civil Engineering confined space permits. Finally, after completion of the confined space evaluation by Wing Safety, Bioenvironmental, and the Fire Department, Mr. Beaver set up a training course for all confined space entry supervisors. This course was conducted by Wing Safety, Bioenvironmental Engineering, Fire Department, and Mr. Beaver. It consisted of a review of the new civil engineering operating instruction, wing safety policies, how to use air monitoring equipment, and self-rescue procedures. Mr. Beaver's initiatives and follow through has filled a critical gap in the CES safety program.

UNIT SAFETY AWARD OF DISTINCTION

4th Fighter Squadron, 388 FW, Hill AFB UT



The 4th Fighter Squadron's operational capabilities have been challenged by a recent transition of Block-50 to Block-40 F-16s. The unit was tasked to transfer 20 aircraft to units throughout ACC and accept 14 jets from 3 other units while transitioning itself to a new mission in brief time frame. This tasking was further complicated due to deployment of 30 of its personnel and continuous rotation of unit pilots to Luke AFB for LANTIRN training. The 4th Fighter Squadron continued to fly a full schedule and complete the aircraft transition with zero

mishaps or injury to personnel or equipment. The unit has successfully maintained a flawless Explosive and Missile mishap record for the entire fiscal year and sustained impeccable flight-related mishap records, command-controlled mishap records, and reportable on/off duty mishap records throughout the second quarter. The bottom line: The 4th Fighter Squadron's discipline, teamwork and sense of mission accomplishment have enabled the unit to complete a large-scale operation under demanding conditions with zero mishaps or injury to personnel or aircraft.

WEAPONS SAFETY AWARD OF DISTINCTION

Sgt Michael Connett, 55 WG, Offutt AFB NE

Sergeant Michael Connett is the Fightin' 55th's highly motivated, dedicated Weapons Safety Manager. His desire to ensure the safety of the munitions community on Offutt AFB and his natural appetite to learn all he can about this career field have made the 55th Wing one of the safest in Air Combat Command as this has been validated by the Department of Defense Explosives Safety Board finding zero discrepancies on their recent survey of the wing. Sergeant Connett has taken a program with numerous areas of concern and made it a program the command can be proud of. He was our "point man" for resolving significant issues concerning a sub-standard maintenance and inspection fa-

cility. His tireless efforts ensured the facility was brought up to command standards in the shortest time possible that allowed the 55th Wing to remain fully operational and meet all taskings while sustaining the highest TDY rate in the command. He has also been an integral part of the planning process for a new maintenance and inspection facility ensuring all command requirements are met. As a result of his diligence, solid spot inspections, and applying "bird dog" follow-up procedures, Sergeant Connett ensured the Fightin' 55th did not have a single explosives incident during the past year.



*Maj David R. Uzzell, Capt Arnaldo Fonseca
475 WEG, Tyndall AFB FL*

A BQM-34A drone was intentionally shot down during a Combat Archer live-fire mission supporting the WSEP, administered by the 475th Weapons Evaluation Group located at Tyndall AFB FL. Shortly after launch, the drone refused to respond to ground control guidance commands, including the command to terminate its flight. The drone continued its uncontrolled climbing turn, during which time the mission commander, Maj Uzzell, directed the drone be shot down. The uncontrollable drone's circular flight path included two passes over St. Andrews State Park and Tyndall AFB outside of the warning area. The Range Safety Officer, Capt Fonseca, anticipated the flight path of the drone and

quickly located a sterile area free of civilian boats within the Gulf Range complex to conduct the shootdown. The surface boat information was provided by the E-9A's airborne sea surveillance room. Maj Uzzell passed the urgency of downing the drone to the two airborne F-15s that carried AIM-9M, air-to-air heat-seeking missiles. Ground-controlled intercept officers vectored the F-15s to the sterile area and gave the clearance to shoot down the drone. The AIM-9 ripped through the drone's engine from the stern. The drone disintegrated and the debris fell harmlessly into the Gulf of Mexico.



A FIGHTER PILOT'S PERSPECTIVE



Maj Andy Parrish
333 FS

Seymour Johnson AFB NC

Last year I reached the milestone of 2,000 hours of fighter flying time. Since then I have been running over in my mind just what I have to show for my 12 years and almost 3,700 hours of Air Force flying. What important lessons or skills have I learned? Some of my friends would say “not many,” but I’ll proceed anyway. None of these thoughts are original; most date back to the Wright brothers. Maybe some young pup will benefit from the review. Maybe we all can.

EXPERIENCE

A couple of years ago someone asked me what was my greatest weakness as an officer and fighter pilot. I didn’t know what to say, so I said that I was still a young fighter pilot in terms of experience. If asked the same question today, I think I’d give the same answer. Many of my peers have a greater breadth of fighter experience to include having flown in combat or several different fighters. Most have more fighter time than I do, if that’s a measure. However, those that believe they’ve seen and done it all are headed for a fall. Experience doesn’t mean anything when the youngest pilot in the squadron capitalizes on your BFM (basic fighter maneuvers) mistakes or takes your money on the bombing range. Experience aids in judgment, but you can never assume your

performance will automatically be up to par just because you’ve been there before.

LEADERSHIP

I have had the good fortune to work for the finest operations officers and squadron commanders in the Air Force. They all had different styles and personalities, but they all led by example. They were the best flight leads, the best instructors, and worked hard to stay that way. They were in the books (I could tell by the questions in the brief), led the most challenging missions, did the thankless jobs, and handled the responsibilities of their job without complaint. If I ever become a commander or operations officer, I won’t want for lack of role models. The challenge for all of us is to take the elements of their leadership that inspired us and incorporate them into our own style.

MATURITY

We all have crazy-young-lieutenant stories about ourselves or others back in the good old days. However, there comes a time when the new nugget is expected to mature a little. Around the squadron, maturity and hard work are what distinguish more professional people. Away from the squadron, young lieutenants are free to be a little foot loose, but there are bounds. Remember that all your actions reflect on your professionalism, whether at work or away. Pro-

professionalism is always in style; if you need to be the center of attention, then go back to grade school.

AIRMANSHIP

It is one of the strengths of our modern Air Force that we develop good airmanship skills in our young airmen. An important part of airmanship is attention to detail. Attention to detail is alive and well in aviation; just read the mishap reports for the last 10 years or more. As a young pup, a reputation for attention to detail is one of the best compliments you can aspire to achieve. You will be the person the commander wants to do the job. We all make errors every time we fly, but it's the missed detail or misprioritization that can kill. Stress attention to detail on the ground and in the air in order to develop it in yourself. The Academy tried to teach it to me through a myriad of menial tasks - room organization, uniform, marching, etc. I don't know if they succeeded, but I do know it is a prerequisite to being a good aviator. The best tacticians I know all have it.

TRAINING

In my old fighter squadron a young lieutenant walked into scheduling where his flight commander (one of the best instructors I've known) was building the schedule for the next day. "Shucks," he said, "Just a BFM sortie, I was hoping for a 4v4 dissimilar mission with F-18s." The young lieutenant was nearly consumed by the ensuing verbal explosion from the crusty flight commander. I'll abbreviate, but basically he said that the lieutenant couldn't find a certain body orifice with both hands, let alone find the turn circle and that once he was proficient at BFM inside, on, and outside the turn circle, he could press on to dissimilar air combat training.

The strength of our Air Force is the training we give and receive. The finest fighter pilots I have flown with have several traits we should all take to heart. First, they all stress the basics. The basics keep you alive and are a must for everything else. The best BFMers are also the best intercept tacticians and the best bombers. They are always in the books. Most have a reading list that they continually cycle through to include aircraft and weapons manuals, regu-

lations, and threat manuals. The 3-1 employment manuals are outstanding. They were written by the best and have improved with every edition. If you don't know the salient chapters inside and out, you are not doing your job. Lastly, the best tacticians are their own worst critics. They don't let deviations go unnoticed (attention to detail) or uncorrected. How do you think they got so good? They weren't born great instructors, they practiced and critiqued every mission. They took notes on what they did right and wrong. We all need to do the same every day.

FREE ADVICE

Here are a few things I wish I'd done. First, keep good notes as you progress through upgrades, whether it be flight lead, instructor, or mission commander. You will get rusty and these notes can help prevent making the same mistakes again. Second, figure out how you can be better 6 months from now. That may include study, practicing certain flying skills, or just working on your mission briefing/debriefing skills. Third, find the "best" in your squadron and get everything you can out of them. I wish I could go back and have just a couple of hours to learn from some of the great people I admire from my old fighter squadrons. Fourth, spend a few hours riding around with your squadron's expeditor or production superintendent. If you keep your eyes open, you'll learn a lot. I count many of these NCOs among my leadership role models. Last, if you have something to say, then say it in a professional and convincing manner. Otherwise, it pays bigger dividends to just listen and learn. Most of us would be better off if we heeded this advice.

If this came across as a confession — forgive me. What really prompted this article are my feelings about the many people I've seen lost over the last 12 years in Air Force aviation. Young guys are amazed when I say that I've lost more friends than I can count on my fingers and toes. Some were good friends, most were just acquaintances. Only one was lost in combat. Unless you are working to be better, you are losing ground. I'm convinced that strong basic fighter skills and attention to detail are what count. ■

ART AND LIVE BOMBING BASICS

Capt Merrick E. Krause
57 OG/OGV
Nellis AFB NV

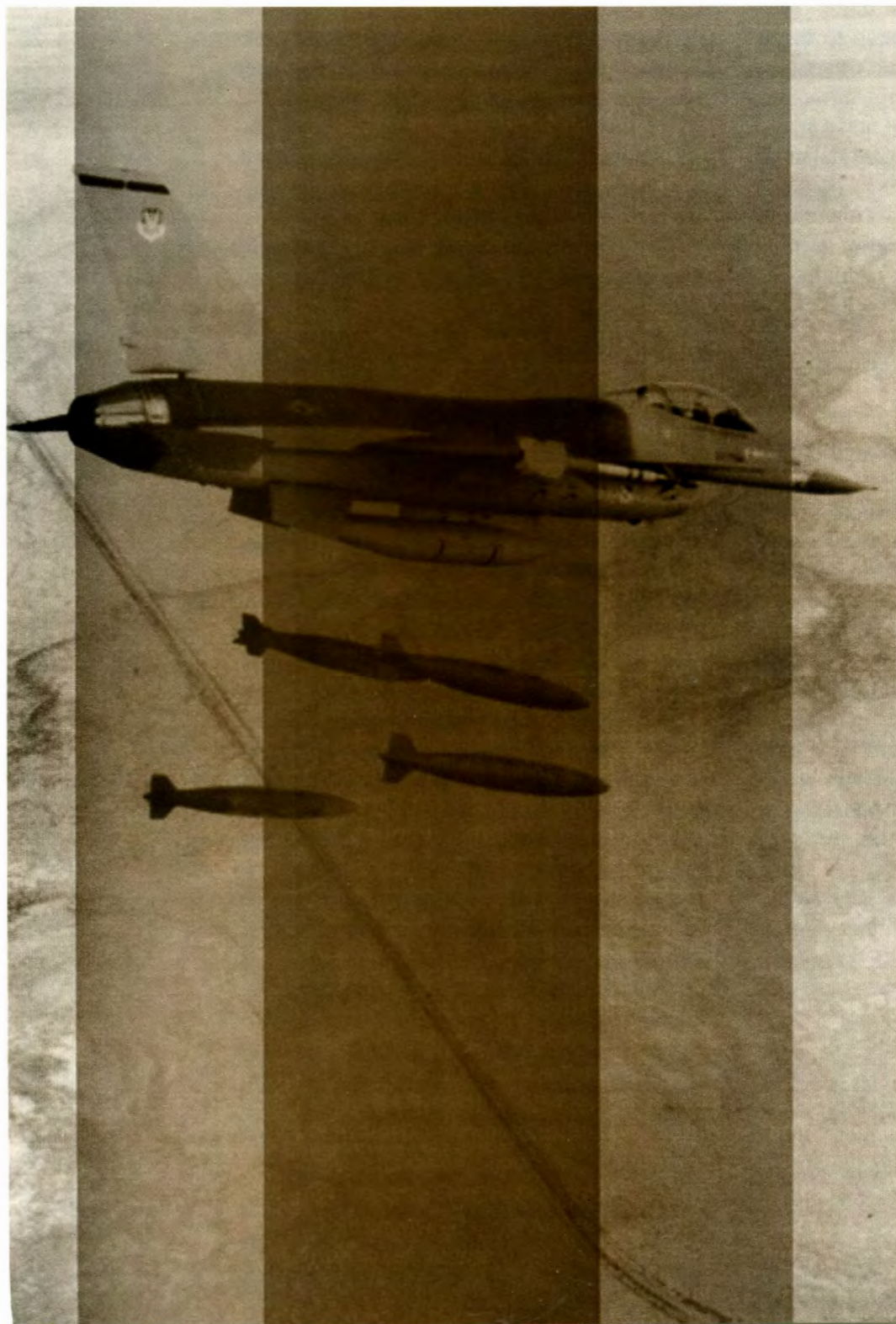
"2's in." Steep, fast, but at least I'm pressing — standard! I'm a tiger, so tiger errors are A-OK. Pipper on the target, and "Pickle!" Five G's in 2 seconds; going like clockwork. Moving mud is what it's all about. A quick look back, and "BAM!"

"Hey! What was that and why're the fire lights on?"

Art and Bombs

In peacetime and in war, accurate planning and precise flying are required to get bombs on target and to live to brag about it. Using Mr. Computer to do math in public while computing bombing parameters, then adding a "pad" of "a couple of feet for "Ma" to adjust the bomb release altitude, just doesn't hack it anymore. This article discusses some live bombing basics. These basics include the critical elements of planning, briefing, flying, emergencies, and debriefing a live munitions sortie. Knowing the basics is required as part of good airmanship, but how the basics are manipulated is truly an art form.

If you aren't a bomb dropper, please note what we "iron-haulers" consider and take these comments into account for combined force operations. A C-130



cruising over a hot target area to drop supplies or an F-15C chasing a bandit at low altitude near a potential target are both susceptible to "frag" from friendly bombs or secondary explosions. In fact, a friendly may actually fly through bombs as they fall to their impact point after being dropped from a fighter or bomber flying at a higher altitude if all players are not aware of the where's and when's of bombing missions. For bomb-dropping crews this article is a review of a few of the many events you should already accomplish prior to, during, and after a live bombing mission.

Planning

There are a variety of aids to assist in the important exercise of planning a live ordnance mission, including: MCM 3-1, MCM 3-3, Weapons Officers, Instructors, the Weapons Review, and specific aircraft technical orders (T.O.'s). The 1M-34, aircraft specific -34, combat weapons delivery software (CWDS), and your jet's Dash 1 are the key players. Some planning elements that become critical for a live ordnance sortie include: the mission attack card, operating limits, safe separation, safe escape, and takeoff and landing data (TOLD). TOLD is required for every flight; but with the added weight of the ordnance, the numbers may look unusual. If an air tasking order (ATO) is distributed for a Red Flag flight or in combat, additional considerations might include the characteristics of the weapon assigned, the target type and composition, the Joint Munitions Effectiveness Manual (JMEM) numbers, and package members or other aircraft around the target area any time near (including both before and after) the ordered time-on-target (TOT).

Typically, after following the process of reading the ATO, determining if the fragged munition matches the target, and coordinating the mission package, a flight lead will assign someone in the flight to plan the attack. The attack planner, entering the T.O. tables with a specific munition delivered from a particular attack pattern (pop pattern, dive bomb delivery, medium altitude delivery, low altitude loft, etc.), determines desired altitude of release for his munition and other required data. Particularly important are the computations of safe separation (if required), safe escape, the bomb's frag pattern, minimum release altitudes to avoid damage to your aircraft from your own bombs or a wingman's bombs, and minimum altitude to release to ensure the fuze has time to arm and each bomb functions correctly. The CWDS can provide much of this data from a computer, but it should always be confirmed by consulting the tabular data.

The creativity involved in planning requires the crews to construct a simple plan that is both effective, adaptable, and easy to memorize. In combat particularly, a missile shot at the flight can change a

game plan in seconds; so the plan itself and the people flying the attack must be flexible. Complicated plans are usually too tough to memorize and execute under fire, either from the enemy or a flight examiner.

Briefing

The flight should know the plan prior to the briefing. Draw, copy, and distribute attack cards early to allow for changes and memorization. A good attack card typically contains all information required to navigate from the initial point (IP) to the target, release ordnance, and egress. Bomb settings and preflight information are also frequently available on attack cards. The briefing ties together all the various planning factors so everyone in the flight is "reading from the same sheet of music." This includes preflight, departure and recovery, contingencies, alternate missions, emergencies and special subjects.

Live ordnance missions require additional depth while covering some high interest items including: hung ordnance procedures, jettison procedures, and a re-emphasis of the Training Rules (TRs). With hung live munitions, procedures vary with base, type aircraft, type ordnance, and how the munition is mounted on the jet. Switchology, resetting switches to attempt another release, and jettison procedures are worth reviewing. TRs are always briefed, but the attack and TRs should be associated in the briefing.

"What-ifs" are an important briefing issue to discuss. There are three techniques to "what-ifying" a mission — too many contingencies explained in far too great detail, hitting the most likely contingencies briefly, and the "we'll just see what happens" technique. Obviously, it pays to think about as many "what-ifs" as possible, and then briefing the most likely, in the limited time available. The idea of brainstorming a mission and contingencies in advance of the briefing applies to all flight members, not just the attack planner or flight leader. Not discussing contingencies is as frequent a mistake as spending too much time on unlikely events, and not leaving enough time for the real plan. Sometimes a situation occurs in flight that was not covered in the briefing, but the general procedures and briefed game plan, good judgment, and basic airmanship will fill in any contingencies not discussed in depth.

Flying

All good flights begin with a solid plan, strong briefing, and a thorough preflight. Always use the appropriate checklists and check all munitions on the jet. Live bombs have checklists for their fuze, the bomb, and the rack or pylon. Even if there are quite a few bombs on a jet, every single aspect of all bombs should be inspected by the aircrew. More than once, bomb number 11 or 12 is found with a

bad fuze setting or incorrect pitch valve. Step as early as required so rushing is not necessary.

After a detailed briefing, everyone knows that any contingency not covered on the ground will invariably occur at the worst possible moment. Taxi and takeoff emergencies with live munitions always ratchet-up the tension of any jet problem. A solid foundation of simulator practice and a review of the TOLD and takeoff emergency procedures in the briefing pay big benefits. It is important to be cognizant of folks on the ground and have a plan in mind for a takeoff problem prior to rolling onto the runway. A jettison immediately after takeoff is a hazard not only to the folks driving to work just off the departure end of the runway, but to your own aircraft and the wingman in trail if the bombs explode with low or high order detonations.

Going to a bombing range or en route to an enemy target, keep the weapons master arm switch safe as long as possible. Almost everyone has heard a horror story of someone spitting out bombs on downwind on the range when they thought they were trimming. Use briefed regulation and checklist procedures to decrease the likelihood of a gross error.

When on the range or at the point in a combat mission when arming the weapons is logical, select the appropriate arming switches. Since the attack card should be memorized, a quick glance at the card is the most that should be needed. Obviously, in a threat situation or high risk portion of the flight (a low altitude ingress, for instance), time may not be available to reference a card, so memorization is important. The attack should be flown as closely as possible to the planned parameters. Even with "fancy" computer bombing systems, if the pipper is not on the target or the velocity vector is not on the steering line, then a miss will make the mission non-effective. Correct parameters are also important to ensure the desired weapons effects are achieved and no duds or fragging occurs.

After releasing the bombs, often the first instinct is to check the score — if you don't care about the score, then why did you work so hard planning. Well, that instinct is exactly wrong. Almost everything up to this point has been technique, but the escape maneuver from any bombing delivery, and particularly a live bomb delivery, is a critical procedure! To fly the escape maneuver incorrectly not only increases the chance of fragging the jet; but staring back over your shoulder while climbing away from a delivery near the ground or in multi-ship attacks, regardless of threat, increases the chance of smacking a jet into the ground or hitting a wingman. Complete any escape maneuver fully and check the target area later, away from the ground, other aircraft, and past target area threats. If the mission was flown correctly to this point, the bombs will

most probably hit the ground near where they were intended.

After egressing the target area and enemy airspace, a battle damage check is appropriate. These were called "bomb checks" in the brown-shoe days; check not only for remaining bombs on your jet's computer, but visually check each wingman and look for holes in both your and each wingman's plane. Early fuze function has caused damage on more than one jet, even when the bombing attack was flown flawlessly.

Emergencies

There are a couple of typical emergencies that can occur on live bombing missions. It is best to "think-them-out," or chair-fly them in advance. Hung ordnance procedures and jettison procedures discussed in the briefing should be second nature, but always refer to the appropriate checklist or In-Flight Guide. Battle damage or bomb damage to a jet may lead to further problems, so emergency airfields, their services, and a snap heading should be at an aircrew's fingertips. If landing with a hung live bomb, or even live unexpended bombs, consider avoiding populated areas and land from a straight-in without maneuvering over the airfield anymore than is absolutely necessary.

Debriefing

No mission is complete without a well structured debrief. The debrief is not for fear and ridicule; instead, a recap from planning to filling-out the forms, while distilling lessons learned, is the best overall method. Debriefing guides and techniques vary, but the theme always must be to learn from both mistakes and "good calls." Live missions should obviously focus on the event of weapons delivery, with a tape and score review; but ancillary topics cannot be ignored. Although gloves must come off in a good debriefing, egos should be left at the door, allowing constructive criticism to flow freely. There should never be any "slack." Bad days are not acceptable when hauling 12,000 pounds of iron. And lessons learned should be passed to other flights to increase everyone's capability.

Conclusion

Good bombing is not only a science, but also one of the ethereal arts. A few minutes spent thinking and planning on the ground can save a boat-load of time standing in a brace in front of an Ops Officer. Attention to detail in planning, briefing, flying, and while handling emergencies can increase the chances for a successful sortie with live bombs. Debriefing becomes the opportunity to tie together lessons learned, and pays great dividends by improving techniques for the next mission while increasing combat capability. Just remember, if you must use rules of thumb: a "pad" is only something to write on, and "slack" is half a pair of pants. ■

THE BIGGEST DECISION

I'd like to share one of the biggest decisions I've made in my military career. On the surface, it seems like it was one that all maintenance officers make; however, this one was different for me. It was a significant emotional event. As I share my thoughts, I hope the true message comes through because it illustrates the types of decisions we maintainers make every day, sometimes without even realizing it.

On 11 February 1995, one of our jets, a Block 50 mini-D equipped with the F110-GE-129 engine, had to make an emergency landing for an engine problem just 60 miles from the Iraqi border while on an Operation Southern Watch mission. We sent in a crack team to fix the jet and send it back to Dhahran. We brought the engine back to Dhahran for an inspection. I was the engine impoundment official, so the responsibility immediately rested on my shoulders.

After performing some in-depth research and checks, our best engine mechanics concluded that the digital electronic control (DEC) had failed internally and caused the inflight emergency. I was faced with merely changing the DEC and putting the engine back into service or shipping the engine home for Shaw to fix and run on the test cell. It seemed like a pretty easy fix, except for the fact that the pilot had experienced "noticeable" vibrations during the emergency, which some pilots said should not have been there. Additionally, the General Electric representative back home was leery about the vibrations and initially recommended shipping it home for a test cell vibration run. Of course, we went well above and beyond the requirements with our field checks to ensure the engine was good; and once all the information was relayed back home, they agreed that we could fix it locally by changing the DEC. In addition, although a functional check flight (FCF) was not required, we decided it would be prudent to do one. Clearing it to fly was my responsibility as the impoundment official. The vibration aspect cluttered an otherwise easy decision — and I was right in the middle of it.

On one side, my mechanics, the best I had, told

me it was the DEC, hands down. Do I trust these guys or do I disregard their experience and knowledge? Is it worth risking a pilot (a dear friend as well), a jet, and a career? Wouldn't it be easier to ship it home and let someone else worry about it? Yes. But, I decided to trust my instincts and my workers and press with the DEC change and do an FCF.

As I followed the jet to the end-of-runway (EOR) area, I tried to keep the negative thoughts out of my mind. Despite my best efforts, self-doubt eased into my mind. However, decisions like this are easier when you have true professionals on your side. As I watched our maintainers doing their EOR checks, I pondered the magnitude of the decision. This was it. This was the last chance to find something wrong before the jet got airborne. All done; he was ready to go. I felt the huge rumble and watched him race down the runway. He cleared the field and pointed that magnificent machine we supplied him toward the sun. If anything could go wrong, there was a good probability that it would happen on this maneuver. No radio calls; good sign.... I could breathe a little easier. I went to the operations desk and anxiously awaited any radio call. Forty minutes later, he "squawked" Code 1 for the engine and a huge burden lifted from my shoulders. He landed safely, engine good, dear friend, and 25 million dollar jet all safe.

Why the story? I believe it illustrates the type of processes we maintainers go through every day, on one level or another. We put pilots into products of our labor and pray we did everything correctly. It's life or death. It's that simple. Every time you pre-flight a jet, hang a missile, fix a flight control problem, sign in tools, debrief a pilot reported a discrepancy, schedule a sortie, or perform a phase card, you make life or death decisions directly or indirectly. It's the most basic premise of our profession. Don't ever get desensitized to these decisions and don't let others do it either. Our roles are too important. Lives depend on us. We keep 'em flying and the decisions roll on. ■

Capt Larry Stephenson
Squadron Maintenance Officer
78 FS (Deployed)

EXPLOSIVE ORDNANCE DISPOSAL THEN AND NOW

SMSgt Ernest J. Lorelli
4404 CES/EOD Flight Superintendent
APO AE 09894-0408

I'm writing this to comment on the interview with Lt Gen John P. Jumper in the April 1995 issue of **The Combat Edge** magazine. In the interview, General Jumper pointed out the unfortunate mishap we had in the AOR when an Explosive Ordnance Disposal (EOD) craftsman was severely injured in a range incident. This man lost a leg and an arm. As the superintendent of the 4404th's EOD flight, and a CMSgt Select in the EOD career field, I'd like to point out how far we've come since that tragic day in 1993.

We take the injury or loss of one of our own very personally and look very hard at the circumstances contributing to the mishap. To make sure we don't have a repeat, we've placed major emphasis on senior NCO involvement in all operations here in the AOR. A CMSgt or SMSgt must be the flight superintendent. We created the toughest training and qualification program in the Air Force EOD program which all new arrivals to the flight, including the flight chief and superintendent, must pass before going on alert status. Strict compliance with technical information and operating instructions is enforced throughout the team. The results of this effort are evident.

During Operation VIGILANT WARRIOR,

we deployed to Al Jaber Air Base, Kuwait, to establish a forward operating area for the wing's A-10s. Al Jaber was "bombed to its knees" during Operation DESERT STORM, so the unexploded ordnance (UXO) threat to US personnel was very real. Although the Kuwaitis had told us the areas of the base we were to use were cleared of UXOs, we found quite a bit to do. My teams performed surface and sub-surface clearances of over 2,000,000 square feet of base real estate. They found, recovered, and destroyed 1,200 UXOs of various types without a single injury. We also destroyed 10,500 items of damaged or unserviceable explosive ordnance from US and coalition forces without so much as a cut finger. Quite a change from the attitudes and behaviors which contributed to the range mishap.

The 4404th EOD Team has one of the largest and most difficult missions in the Air Force EOD program. Safety of the team is essential to completing that mission, and we've ensured it's there. In fact, we've recently been submitted for a Safety Award of Distinction by our wing safety office. As I end my tour and return to Cannon AFB, I'm confident we'll continue to improve on the safety record of the team. ■

ACColades

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

	TOTAL			ACC			ANG			AFR		
	MAY	THRU MAY		MAY	THRU MAY		MAY	THRU MAY		MAY	THRU MAY	
		FY95	FY94		FY95	FY94		FY95	FY94		FY95	FY94
CLASS A MISHAPS	3	9	13	1	6	6	1	2	7	1	1	0
AIRCREW FATALITIES	8	9	4	1	2	2	1	1	2	6	6	0
* IN THE ENVELOPE EJECTIONS	0	7/0	12/1	0	6/0	4/0	0	1/0	8/1	0	0	0
* OUT OF ENVELOPE EJECTIONS	0	1/1	0/1	0	1/1	0/1	0	0	0	0	0	0

* (SUCCESSFUL/UNSUCCESSFUL)

CLASS A MISHAP COMPARISON RATE

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

ACC	FY 94	0	1.1	1.5	1.8	2.4	2.4	2.0	1.7	1.7	1.8	1.8	1.9
	FY 95	2.1	1.1	0.7	0.6	0.9	1.6	1.6	1.7				
8 AF	FY 94	0	0	0	0	0	0	0	0	0	0	0	0
	FY 95	0	0	0	0	1.8	1.5	1.3	1.1				
9 AF	FY 94	0	0	0	2.1	3.3	4.0	3.2	2.8	2.2	2.1	1.9	1.6
	FY 95	0	0	0	0	0	1.2	1.0	0.9				
12 AF	FY 94	0	0	2.0	1.6	1.3	1.1	.9	.8	1.4	2.0	2.4	3.1
	FY 95	6.5	3.3	2.3	1.7	1.4	1.2	2.0	2.6				
DRU	FY 94	0	14.9	8.6	6.7	11.2	9.5	7.9	7.0	6.3	5.7	5.3	4.6
	FY 95	0	0	0	0	0	5.3	3.7	3.5				
ANG	FY 94	0	1.9	2.6	2.2	2.7	3.7	3.2	3.4	3.5	4.0	3.6	3.3
	FY 95	0	0	0	0	0.8	0.7	0.6	1.0				
AFR	FY 94	0	0	0	0	0	0	0	0	0	1.4	1.3	1.3
	FY 95	0	0	0	0	0	0	0	1.3				
TOTAL	FY 94	0	1.2	1.7	1.8	2.3	2.7	2.1	2.1	2.2	2.4	2.3	2.3
	FY 95	1.3	0.7	0.4	0.3	0.8	1.1	1.1	1.5				
MONTH		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

* (HOURS NOT AVAILABLE)

Lt Col Sam Holoviak
USAFSAM/FP
Brooks AFB TX

The fighter pilot had just executed the perfect 30 degree dive bomb delivery. Breaking hard to the right in a crisp, snappy fashion then back to the left, he looks back over his shoulder to spot that 2 meter bomb...what a thing of beauty...just look at that. Turning back to the big ADI in the sky, he sees a windscreen full of dirt, rocks and trees! What the...he rolls and pulls for all the limiter will give him, squeezed down into the seat he instinctively tenses every muscle from his toes to his nose. Seeing his peripheral vision closing in, he fights it until that beautiful pastel shade of blue fills the windscreen. Safe at last. Unloading, he finally feels the beads of sweat that tracked down his temples joining the ones already coming out from around his mask. "What the heck was that all about!" he asks himself.

Back at the ranch he pulls into the chocks and shuts down. On his way home his mind replays the events over and over, trying to make sense of them. Then he remembers something one of those physiology guys mentioned during his last altitude chamber refresher class. The guy mentioned something about this thing called the G-excess Illusion. Could that have been it? What could have contributed to the set up for such an illusion? It started coming back to him now.

The instructor put up a slide showing spheres on a black background, seemingly floating in space, a bunch of them. Asking, "Starting now I want you to count all the spheres you see on the screen." He continued to talk a little more. Not really paying much attention to the instructor, I counted the spheres. "OK, stop" was the next thing I heard. Then the instructor asked, "How long was that?" Wait a minute...he asked us to count the spheres, not pay attention to the time? One guy said 5 seconds, another said 25, still another said 40. The point was, apparently, we humans slightly lose track of time whenever we start to concentrate on something.

Next he asked for a volunteer to read the words

written in three columns on the screen. They were colors, like the words Red, Green, Blue and so on. They were written in simple black and white type. Another guy timed while a volunteer nonchalantly read down the three columns of words. "Eleven Seconds" the timer revealed aloud. The instructor wrote that time on the board. Now the reader was asked to read the words again. But the instructor switched things on him. Now the words were in color...but the wrong color! The first word Red was colored green, the second word Green was colored blue and so on. The trick was to now look at the printed word but not read it, instead he had to say what color it was. Well that brought a chuckle from everyone. The reader tried hard, but

he was obviously slower this time. "Twenty seconds" the timer said this time. "Wouldn't you agree," the instructor asked, "that for some simple tasks, if you complicated them into becoming true cognitive tasks, it could take almost twice as long to perform?" Well sure, we just proved it. I mean 20 seconds minus 11, that's 9 seconds more; it doesn't take a rocket scientist to figure that one out.

The instructor asked, "Remember back in pilot training they talked about a 'Standard' pilot reaction time?" Yea, I remembered that. It was something around 3 seconds. Pretty short. He asked, "would you not agree with me, if we use the same criteria we just demonstrated, that if you were challenged with a true

G-EX

"I Hate it When

CESS

That Happens"

cognitive task, you could conceivably double that 'Standard' reaction time?" Adding another 3 on the board the time now went up to 6 seconds. Everyone nodded, yea so...

Then he put up a slide that showed some times to ground impact for aircraft flying between 100 and 500 feet for speeds between 240 kts to 480 kts. He said, "For a minute imagine yourself flying at 500 feet above the ground at 480 kts, and all you did was simply ease off the back pressure on the stick and allow the aircraft to nose over only 1 degree, just a single degree. How long would it take for that aircraft to impact the ground?" Well for a 480 kt aircraft it was 35 seconds. "Is that a long time," he asked, "For pilots, you bet it is."

Now let's look at that same aircraft in a 3 to 4 G turn and because of some large head movements (looking back), the pilot unknowingly rolls an additional 10 degrees into the turn. His lift vector becomes lower than it should be, the nose of the aircraft starts to drop, and no matter how much back pressure he puts it just pulls the nose lower. His aircraft begins to slice through the horizon and falls faster aided by the force of gravity. Now the time to impact was only a measly 5.8 seconds. He pointed to the 5.8 seconds on the slide with one hand and the 6 seconds written on the board with the other and said "You just ran out of time!"

Wow! Is that what happened to me today? That big head movement looking back over my

shoulder was only part of it. Looking at my 2 meter bomb only seemed to take a second, but could I have spent more time looking than I imagined? I mean I did have to change my focus a little, maybe I took longer than I thought. Now add that to the G-excess stuff he described and maybe it kept me from recognizing the increased roll. I guess I needed to get back looking out the front sooner and get the nose tracking above the vertical again. I wonder?

But the instructor said something else that now makes sense. He said, "It wouldn't be enough for me to tell you about this illusion without recommending something that may help. Next time you start to look for that perfect score on the range or are clearing with large head movements, limit the time you spend away from cross-checking your flight path, whether it be an instrument cross-check or visual look out front."

Then a guy in the back said, "wait a minute... you told us that we can experience temporal distortion when we get busy and that we might not be able to tell for sure how long were looking away." "EXACTLY," he replied. That's why you need to go back to basics. Do what you were taught as a kid in counting seconds. That's right 1 Potato, 2 Potato, Stop. All you have is about 2 seconds to take a mental picture of that perfect score and then get back forward clearing again. He made the point that pilots do this all the time anyhow. Glancing down at the instruments to check the engines or another instrument or gauge. Taking a mental snapshot of what the gauge looked like, returning to the clearing task out the windscreen and then thinking about what the gauge said.

Try to limit my time away from my cross-check. Big head movements while clearing or checking my six are just a part of the job, but I didn't realize it would have that great an impact on my orientation. My spatial orientation! Wow, the clue bird just landed! It made sense now. I'll have to try that next time before I scare the dickens out of myself..... again! ■

