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Do you want to know the secret to staying warm? Don’t get cold. At the beginning of a winter training course here at the Northern Warfare Training Center at Fort Wainwright, Alaska, I’ll occasionally pose that question to a group of Soldiers. Some look disappointed when I tell them the answer. Others, however, get it right away and their whole outlook on winter training changes in an instant. By the end of the course, most of them understand the simplicity of this complex and often daunting task.

Fort Wainwright is probably the coldest post in the U.S. military. During the winter months, the temperatures regularly drop to minus 20 F or below for weeks at a time. We teach units in U.S. Army Alaska and, to a smaller degree, other military personnel how to operate in a cold, snow-covered, mountainous area. We train about 500 students a year who then go back and become the trainers for their respective units. The following are some of the training tips we pass down to Soldiers.

**Fuel your body**

The first step to staying warm in a cold environment is to properly fuel your body. Depending on your exertion level, Soldiers should consume between 4,500 and 6,000 calories and 3.5 to 5 quarts of water per day. Light infantrymen will require the upper end of that scale, while someone who works in the tactical operations center will be on the lower end.

Meals, Ready to Eat provide about 1,400 calories per menu, so four per day will usually do the job. Meals, Cold Weather provide about 1,700 per meal. However, palatability is a challenge. MCWs require rehydration for the main meal component. This is best
accomplished with boiling water. You can mix cold water with MCWs, but it will take longer to rehydrate and the food won’t be as pleasant.

An MRE can be used even after being frozen, but it must not be refrozen. The main components of the meal can be placed inside clothing for an hour or so to thaw, or even put in a sleeping bag overnight for a “warmish” breakfast. The other part of the meal, “grazing foods,” should be eaten between meals to refuel your body. Remember, a near constant calorie intake is vital to staying warm.

**Cover your body**

Clothing should do three things: insulate, ventilate and provide protection from the wind. The older Extreme Cold Weather Clothing System and newer seven-layer Generation III ECWCS both do this very well. The challenge is figuring out what to do with all that clothing.

The most important measure to take with any clothing system is to layer. Start out with the lightest polypropylene underwear and build from there. The layers then must be protected by a shell. The ECWCS Gore-Tex pants/jacket combo is an excellent all-around choice. The soft-shell pants/jacket from the seven-layer system works best in high-aerobic activities in very cold conditions.

Heat management is a constant challenge when operating in cold weather. Knowing when to dump or hold heat is the key. I watch students after the 10K snowshoe march and quite a few will be dripping with sweat at the finish. They invariably say, “I just wanted to get it over with.” I counter with, “What would you do if you were forced to stay outside for another five or so hours?” They usually don’t have an answer.

Soldiers must ventilate before it is needed and reduce insulation prior to a movement or exertion. The big, puffy suit in the seven-layer system is meant to be put on while static and put away when moving. Likewise, that fleece jacket may be soft and cuddly and quite the fashion accessory around post, but you really don’t need to wear it on a good, long dismounted movement. If at all possible, have dry layers available to replace or upgrade clothing if needed.

**Move your body**

Cold weather requires people to be proactive. If your fingers become cold, windmill your arms to force blood into the fingertips. Cold toes? Wiggle them or swing your legs. Shivering? Exercise a little. The point is to not allow cold to gain ground in your body.

Observe the other people around you, looking beyond the obvious. We know what is wrong with the Soldier who is shivering and twitching on the ground or has a white patch on his nose. The Soldier who escapes our attention is the one who stands perfectly still with his head drawn down between his shoulders and his arms hanging stiffly at his sides. He grumbles at tiny issues, mumbles when addressed, fumbles when handling simple things and stumbles when walking on easy ground. This Soldier needs help now; but just as important, look for the symptoms of cold weather injury in yourself.

**Conclusion**

At the NWTC, the cadre not only trains in the cold, they enjoy the weather. Winter doesn’t have to be a time of fear and loathing. Embrace the cold — but be smart about it.
Dehydration is a leading cause of injury for Soldiers. To keep them in the fight, it’s essential they remain properly hydrated — even during the winter.

The average adult loses 1.5 to 2 liters of water each day. Being in a cold-weather climate can add to this water loss through the increased excretion by the kidneys, perspiration and evaporation from the lungs (the breath you see on a cold day). To make matters worse, Soldiers may be less interested in drinking water during cold weather and, as a result, become dehydrated. This can lead to inadequate blood flow to the extremities, which can contribute to a Soldier developing a cold injury such as frostbite or trench foot.

According to the U.S. Army Research Institute of Environmental Medicine, Soldiers should take the following steps to maintain adequate hydration during cold-weather operations:

Soldiers must drink even when they are not thirsty. Leaders should establish a program of regularly scheduled hydration.

Soldiers should drink at least two to six canteens of water each day.

Cold suppresses thirst, so schedule drinking at regular intervals. Actual fluid requirements are dependent upon the level of physical work performed, the temperature and what Soldiers are wearing and carrying.

Eating snow or ice for moisture is inefficient, can irritate the lining of the mouth and may lower body temperature. It is better to melt snow or ice and purify it before consuming.

A cup of hot coffee or tea can be a welcome pick-me-up in the cold, but excessive caffeine consumption leads to difficulty sleeping, depending upon individual tolerances. Soldiers should be cautious to avoid sudden withdrawal from caffeine, however, as this can cause adverse symptoms such as severe headaches and nausea. Hot cocoa is generally a better beverage than coffee in the cold. Cocoa is warming, much lower in caffeine and high in needed carbohydrates.

Alcoholic beverages can give a false feeling of warmth and impair judgment, which may be detrimental in the harsh cold. Avoid consuming excess salt (more than the amount normally provided in military rations).

First sergeants and support personnel bringing water to line units can usually tell if Soldiers are hydrating properly by their daily consumption. During winter, it’s not unusual for Soldiers to drink a gallon of water or more each day when moving extended distances in mountainous terrain. Buddy teams must also be trained so Soldiers can encourage each other to drink plenty of water.
Soldiers must understand the importance of pushing fluids before, during and after exertion.

Staying hydrated in cold weather also takes more effort than in warmer temperatures because canteens sometimes freeze. To prevent this, Soldiers should carry at least one canteen in the front chest pocket of their Gore-Tex jacket to allow body heat to keep the water from freezing. Because water freezes from the top down, the canteen should be placed upside down in the pocket. The simple act of positioning the canteen properly will ensure there is at least a quart of water always available.

For Soldiers, working and training outdoors is part of the job — no matter how extreme the temperature. Enforcing proper hydration during cold weather is one of the easiest ways to ensure they stay healthy and arrive ready to fight.

“SOLDIERS MUST DRINK EVEN WHEN THEY ARE NOT THIRSTY. LEADERS SHOULD ESTABLISH A PROGRAM OF REGULARLY SCHEDULED HYDRATION.”

FYI

The adequacy of fluid intake can also be judged by urine color and volume. Darkly colored urine — orange snow instead of light yellow snow — and not needing to urinate upon waking from a night’s sleep are indicators of significant dehydration. Be aware, however, that this technique may not work for Soldiers who take vitamins, supplements or medications that discolor the urine.
Climate changes not only affect us, but also have an impact on our Army vehicles and equipment. Reliable transportation is vital to keeping Soldiers safe and accomplishing missions. Soldiers and leaders must realize highways and roads can quickly become slick and treacherous during winter. As road conditions deteriorate, drivers shouldn’t overreact with quick starts, turns and stops. When starting, drivers should accelerate slowly while keeping the front wheels pointed straight ahead. They should also keep their speed down and increase following distances behind other vehicles. A four-second gap or more is a good interval on a slippery road. Applying brakes with steady pressure may prevent locked wheels and skids. If the vehicle begins to skid, drivers should lightly turn into the skid and ease the foot off the gas pedal until they regain control.

Another important factor to consider before entering the winter season is vehicle preparation. Vehicle operators need to keep assigned equipment in proper running condition throughout the colder months. Vehicles should be winterized around October or early October — before cold weather sets in. During the winter, not only should vehicles be kept fully mission capable, they also need to be winterized in an effort to avoid inconvenient or dangerous situations while traveling in inclement weather. The last thing a driver needs is a vehicle that breaks down in harsh winter weather. No one should expect vehicles to operate correctly without proper PMCS.

As nearly any driver can attest, the cold months can be quite hard on Army vehicles. Not only does an engine require special attention to get it purring in freezing temperatures, the exterior and other components can take a beating as
well. Although Army vehicles are designed to operate well in all temperatures, take the following measures before the winter weather arrives:

**Perform PMCS.** Conduct the before, during and after checks as prescribed by the vehicle’s technical manual. Ensure scheduled maintenance is performed in accordance with the vehicle service intervals.

**Check engine coolant.** Make sure the recommended coolant has the proper mix of antifreeze and water. A coolant system is not only designed to keep the engine from overheating or freezing, it’s also responsible for protecting it against corrosion.

**Check oil.** Refer to the equipment TM for the vehicle-specific oil level and viscosity. When the outside temperature changes, it will influence the internal engine temperature, so make sure to use the proper oil for the conditions.

**Check battery.** Have the battery checked by maintenance personnel. Also, during PMCS, ensure the battery connections are free of corrosion. A vehicle battery can die without notice. During extreme winter temperatures, a battery’s life may be reduced by 30 percent.

**Check lights, defroster and heater.** Ensure all components are fully operational.

**Check tire tread depth.** Ensure the depth is within the measurement prescribed by the TM and tires are serviceable to avoid hydroplaning or loss of control.

**Check windshield wiper blades and fluid.** Check the condition of windshield wiper blades and replace worn blades before driving. Also, check and fill the wiper fluid reservoir. Limited visibility while driving during the winter months can be frustrating. Precipitation and salt buildup on the windshield can wreak havoc while driving in winter weather.

**Check basic issue items.** Ensure the BII inventory is complete and all items are in the vehicle during operations. Components of BII are designed to aid personnel during emergencies.

**Inspect tire chains.** Ensure they are serviceable and crews are trained on how to properly install them.

**Carry an emergency kit.** Additional items such as gloves, ice scraper, windshield washer fluid, jumper cables, first-aid kit, snow shovel and flashlight will assist during emergency situations.

**Don’t be overconfident.** Whether the vehicle is a four- or two-wheel drive, both will slip on ice, so drivers must be extra careful.

**Check road conditions.** Know the difference between conditions. Vehicle operations may start out as GREEN or AMBER, but could change to RED or BLACK during your mission (see Figure 1 below).

Along with these tips, it’s imperative drivers heed the warning and caution statements listed in the vehicle’s TM. Prior planning, winterizing vehicles and applying safe habits are all key components of safe driving habits. If you’re a driver or maintainer, don’t let frost bite your equipment!

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**ARMY COLOR CODES FOR ROAD CONDITIONS**

**GREEN:** Normal driving conditions exist on post. Roads are clear and dry.

**AMBER:** Cautionary driving conditions exist on post. Roads are very wet or have ice or snow sticking to overpasses, bridges or intersections.

**RED:** Hazardous driving conditions exist on post. Ice or snow is sticking to most road surfaces. Heavy precipitation and/or high winds may limit visibility. Government vehicles should only be used for mission-critical operations through coordination with DOL.

**BLACK:** Extremely hazardous conditions exist with life-threatening driving conditions. All roads are covered with ice or deep, unplowed snow. Heavy snowfall and/or high winds causing low visibility is occurring. Only police, fire, medical and DPW equipment may be dispatched. TMP buses may be dispatched to pick up Soldiers in the field who are exposed to extreme cold that could impact on life, health and safety. All other government vehicles will be restricted from movement unless authorized by DOL (mission critical). DPW workers will be allowed to enter the installation and conduct maintenance missions.

**Note:** The criteria for road conditions may slightly vary by installation. Be sure to check with your installation safety office for local road condition color codes.

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**DID YOU KNOW**

Through proper understanding of winter driving and vehicle operations, the Army will achieve the standard of accident reductions in our formations. With volumes of information and resources accessible in the Driver’s Training Toolbox, every Soldier in the Army has the tools readily available to drive and complete the mission safely. Visit the Driver’s Training Toolbox at https://safety.army.mil/drivertrainingtoolbox for more information.

**Check tire pressure.** Make sure to inflate tires with the proper PSI listed in the TM. Tire pressure is especially important during the winter, as a properly inflated tire will help guarantee better traction in wet, snowy conditions.

**Check brakes.** Ensure the brake lines and hoses are serviceable and

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https://safety.army.mil/drivertrainingtoolbox

9 October 2017
While you may look forward to spending the next few weekends enjoying the sun and outdoor activities with your friends and family, you know, like it or not, colder temperatures, blustery winds and even snowfall are just around the corner in some parts of the country. Unless you live in the southern U.S., snow, freezing weather and even ice storms could be just weeks away.
Here are a few actions you can take — both now in the warmer weather and later in colder temperatures — to ensure your power equipment will be safe and in good working order this winter.

**Now — Prepare and Maintain**

Now is the time to take inventory of your cold weather tools and winter power equipment. Take that snow blower, chainsaw, portable generator, kerosene heater and winter recreational equipment items out of your shed or garage and do a self-service check on its operation and serviceability. If you lack those do-it-yourself mechanical skills, take the equipment to a local small-engine facility for a service check, preventive maintenance and repair, if needed.

Servicing your equipment this time of year has its benefits. For one, it’s still relatively warm outside. You may be able to complete some of the service, maintenance and repair work yourself now rather than waiting until you have to be fully clothed in a cumbersome winter jacket, gloves and warm hat. Two, if you have to take your equipment to a service shop, the repair cost and wait may be substantially less now than it will be when the temperature drops.

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When forced to work in cold, snowy or icy conditions, be aware of your surroundings, the approaching weather conditions and the placement of your winter power equipment while using them — before, during and after use. Know and recognize your own physical limitations as well, which will be severely degraded as the temperature drops.

When using a power snow blower, never remove clogged snow while the engine is on or with your hands or feet. Even when the engine is off, the auger may have a tendency to buck when unclogged, so loosen clogged snow with a stick. Be aware that community snow plows can throw chunks of curb, rock and other debris in with the snow pile at the end of your driveway, so be careful where you aim the outlet chute. Be sure to wear safety goggles and warm, dry gloves, and never operate your snow blower when children are playing nearby.

If you need to use your chainsaw to remove downed limbs caused by winter storms, remember that thick, frozen tree limbs will be more difficult to cut. The chainsaw will need to be checked more often for blade sharpness and the appropriate level of bar lubricant. Once again, wear safety goggles, earplugs and steel-toed shoes or boots.

If you need to use a generator during an emergency this winter, make sure to follow the manufacturer’s specifications. When used in a confined space, generators can produce high levels of carbon monoxide within minutes. Never use one inside a home, garage, crawlspace, shed or similar areas, even when running fans or opening doors and windows for ventilation. Instead, locate the generator outside, far from doors, windows and vents that could allow carbon monoxide to come indoors.

Finally, make sure you replace any first aid, emergency and general preparedness kit inventory items as soon as possible after use. The time to find out you don’t have a much-needed item isn’t during an emergency.

**Conclusion**

The winter months can be dangerous. Being prepared now will go a long way toward ensuring you’re still around later to enjoy spring. ■
Fog

Valley fog forms when cold, dense air drains from areas of higher elevation into low areas. As the cool air accumulates in the valley, the ambient temperature sometimes decreases to the dew point temperature and creates dense fog. Drivers should expect reduced visibility and turn on their vehicle’s lights, slow down and increase the following distances when driving in fog.

Freezing fog is composed of super-cooled water droplets that form when the temperature falls below 32 F. These droplets freeze and form ice as soon as they contact a cold surface. Freezing fog creates driving problems such as reduced visibility, poor traction and directional control, and possible skidding. Drivers should turn on their vehicle’s lights, reduce their speed, accelerate slowly, increase following distances, brake moderately and make turns slowly.

Snow

Snow forms when water vapor in the air freezes and creates small ice crystals. Some common hazards associated with driving in snow include reduced visibility and traction, less directional control and increased braking distance. When snow melts

Weather

At any temperature, whether it is minus 20 F or above 90 F, the weather affects road and driving conditions and can pose serious problems. Because of that, it is important to plan your trip in accordance with the weather forecast.

Your vehicle

Prepare your vehicle for winter. Start with a checkup that includes:

• Checking the ignition, brakes, wiring, hoses and fan belts
• Changing and adjusting the spark plugs
• Checking the air, fuel and emission filters and PCV valve
• Checking the battery
• Checking the tires for air, sidewall wear and tread depth
• Checking the antifreeze level and freeze line

Your vehicle occasionally should also have a tune-up to ensure better gas mileage, quicker starts and faster response for pick-up and passing power. Check your vehicle’s owner’s manual for the recommended intervals for tune-ups.

Necessary equipment

An emergency situation on the road can arise at any time and you must be prepared. Ensure you have a full tank of gas and fresh antifreeze in your radiator. In addition, you should carry the following items in your trunk:

• Properly inflated spare tire, wheel wrench and tripod-type jack
• Shovel
• Jumper cables
and refreezes, drivers encounter even more hazardous road conditions. Intersections, high-traffic areas and shady spots that were exposed to direct sunlight earlier in the day all are prone to ice over from melted snow. During snowy conditions, drivers must reduce their speed, brake moderately, make turns slowly and increase the following distance between vehicles.

**Ice**

Another dangerous condition associated with winter weather is windshield icing. Windshields and other glass surfaces can ice over when the temperature is low enough to freeze moisture on ground surfaces. Conditions are ripe for windshield icing any time there’s visible ground haze. All ice must be removed from the vehicle’s windshield and other windows before operations begin. Preventive maintenance checks and services should be performed on each vehicle to ensure the defroster and heater system are functioning properly. It’s a good idea to keep an ice scraper in your vehicle just in case the defroster stops working.

Black ice — a thin sheet of dark ice on the roadway — is extremely dangerous because it’s hard for drivers to detect before they’re actually on it. Black ice forms when light rain or drizzle falls on a road surface below 32 F or when super-cooled fog droplets accumulate on bridges and overpasses. A roadway covered with black ice appears wet when the ambient temperature is below freezing.

Drivers must use extreme caution when driving on suspected black ice surfaces. Vehicles that hit black ice have little to no traction, which means little to no braking capability, and extremely poor directional control with a heightened possibility of skidding. Optimally, travel should stop in black ice conditions. If that isn’t an option, drivers should reduce their speed, accelerate very slowly, increase the following distance between vehicles, brake very lightly and make all turns gradually and slowly.

Frost heaving, a condition related to icing, is the uneven lifting and distortion of the ground close to the surface. Frost heaving is the result of water within the soil freezing and expanding. This expansion might damage the road surface and loosen tree roots. The biggest danger associated with frost heaving is the possibility of trees falling across roads, but uneven road surfaces are much more common. Such uneven surfaces can interrupt directional control, which is especially problematic in areas such as curves. Drivers should slow down and look for buckled or uneven patches on the road during freezing weather.

**Conclusion**

Remember these guidelines when you’re on the road this winter and, most importantly, slow down! The cold won’t last forever. If you make it through the winter accident-free, you’ll have even more reason to celebrate when spring finally comes!

**Tips**

As a Soldier, you have the Travel Risk Planning System available at https://trips.safety.army.mil/TRiPS. All you have to do is log into TRiPS and follow the easy directions to see areas where you can increase your margin of safety on the road. By taking an overall look at your travel plans, TRiPS can alert you to dangers you may not be aware of and, at the same time, evaluate the level of risk in your trip. This handy online tool helps you to avoid hazards rather than having to confront them on the road.

**Conclusion**

The upcoming holidays contain the busiest travel days of the year, and many of us will hit the road to visit family and friends. Unlike the Guardsmen above, your trip doesn’t have to end with you in the hospital and your car in a ditch. Drive safe!
Know Your Tires

How well do you know your vehicle’s tires? If you’re doing a permanent change of station move to Europe and ship your vehicle, do you know if your tires will be safe for the high-speed conditions of the autobahn? Before you get out there and put the pedal to the metal, you need to know your tires’ speed rating.

What is a speed rating?

Developed in Europe primarily for the German autobahn, speed ratings were originally intended to help owners of high-performance cars select tires to match their vehicle’s speed capabilities. As of 1991, tires are marked with information designating their size and speed rating. In the following examples, the speed rating is designated by the letters H and/or S: 215/65R16 98 H, 225/50SR16, 225/50SR16 89S or 215/50R16 89S.

For more on the most common tire speed rating symbols, maximum speeds and typical applications, see the info graphic below. Note that the miles per hour ratings will appear strange due to the ratings being developed under the kilometer per hour criteria.

It’s important to recognize that high-speed tire ratings don’t mean it is safe to drive the vehicle they’re mounted on at high speed. Also, drivers should consider the road conditions or any unusual handling characteristics their vehicle may have. Regardless their tires’ speed rating, drivers should never operate a vehicle in an unsafe or unlawful manner.

When replacing a tire, check your owner’s manual or the information on the side of the tire to ensure your replacement tire is the appropriate size and style/classification. If the vehicle came with high-performance tires, you may be required to replace the tires with the original or a similar type of tire. Additionally, be sure to not mix and match (put different types of tire ratings on the vehicle). Also, your vehicle’s tire speed ratings should match your driving style.

Winter driving tires in Europe

Here are some things to consider before driving in Europe during the winter months:

If you are a skier, most of the alpine areas require the additional use of snow chains, regardless if you have winter tires.

Studded snow tires may not be approved in the country in which you are driving.

All-weather or all-terrain tires may not be an acceptable substitute for winter/snow tires. For example, Bavaria has specific requirements for the type of all-weather tires that may be used.

Check your owner’s manual, tire rating, tire manufacturer’s specifications and the requirements for the country where you’re driving for specific criteria on which tires may be used or required.

Some overseas U.S. military communities have considered adding tire requirements as part of annual vehicle inspections.

Ensure your move overseas goes well. Have your vehicle checked to meet emission, suspension and other standards and make sure to have your tires checked as well. Remember, your life is riding on your tires. Make sure they’re safe so they’ll keep you safe.

Larry A. Strickland
U.S. Army Garrison Hohenfels Safety Office
Hohenfels, Germany
Speed ratings indicate at what level of sustained speed a tire has been tested and certified safe. Speed ratings are issued by the tire manufacturers, and they do not recommend that any of their products be used to exceed legal speed limits. Tires rated for 150 mph are just as capable of driving at 65 mph. Obviously, they are rated for higher speeds for passing, an occasional night at the quarter-mile track and the autobahn. Always consult your owner’s manual or other reference materials for recommended tire ratings for your machine and never mix speed ratings. If you have an H tire on the front, you need an H tire on the rear.

<table>
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<th>SPEED RATING</th>
<th>RECOMMENDED MAXIMUM SPEED</th>
<th>APPLIES TO PASSENGER CAR TIRES</th>
<th>APPLIES TO LIGHT TRUCK TIRES</th>
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<tr>
<td>Y**</td>
<td>186 mph (300 kph)</td>
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<td>W**</td>
<td>168 mph (270 kph)</td>
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<td>V (with service description)</td>
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<td>130 mph (210 kph)</td>
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<td>U</td>
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On a cold, breezy morning, two friends and I set out to duck hunt in the salt marshes of the North Carolina coast. I never imagined this trip could be my last.

After driving more than an hour, we arrived at the Swan Quarter National Wildlife Refuge. From there, we took a 30-minute boat ride, anchored and completed the 300-yard walk to our hunting spot. After a couple of hours of watching hundreds of ducks — but firing very few shots — one of my friends and I decided to walk around and hunt birds that had landed elsewhere. I left my blind bag behind, carrying enough shells to hold me over till I could fill my limit.

About 4:30 p.m., I shot my last bird, which filled our bag limit of 18 ducks. When I went to pick him up, I stepped into a deep and rather soft spot of muck and fell head-first into the water. I was a little damp, but I didn’t give it another thought. That step, however, started a chain of events that turned an awesome hunt into a life-threatening situation.

By now, we were nearly 600 yards away from our original location. About halfway back, I started to cramp and vomit. I had been punishing my body all day, walking on my knees the majority of the time to remain hidden from the ducks. Unfortunately, I neglected to keep myself hydrated — and now I was paying the price. From that point on, I had to stop frequently. The last 300 yards felt like an eternity and darkness was fast approaching.

By the time we arrived back at our original location, my tank was on empty. The cramps were incredibly painful and I didn’t have anywhere dry I could lie down and massage them out. We were also standing in the muck, which made stretching impossible. I sat down for a few minutes, drank a soda and ate a few peanut butter crackers, but then the frequency of my vomiting increased. We still had another 300

“I WAS A LITTLE DAMP, BUT I DIDN’T GIVE IT ANOTHER THOUGHT. THAT STEP, HOWEVER, STARTED A CHAIN OF EVENTS THAT TURNED AN AWESOME HUNT INTO A LIFE-THREATENING SITUATION.”
yards to go to get out of this watery labyrinth and back to the boat, so I finished a second soda and started to push through the darkness. None of our cellphones had reception and my hunting partners knew they had to get me out fast.

By the time we got to the boat, the temperature had dropped to about 19°F and the wind was nearly 30 knots. I got on the boat and tried to warm myself, but to no avail. The cramps were excruciating and I was still vomiting. To make matters worse, the spray from the brackish water turned the outside of my chest waders into a sheet of ice. My gloves were also wet from one of many falls, and the fleece inside was frozen.

High winds blowing in our face slowed our return, turning a 30-minute boat ride into nearly a two-hour ordeal. When we finally arrived at the boat ramp, I was starting to show signs of hypothermia. I was cramping so badly I had to be physically lifted off the boat and into the truck. My hunting buddies helped me out of my wet gear and into fresh clothes from the dry bag we stored in the truck. Now that I was finally out of the elements and in the heated truck, I started to warm up.

This hunting trip nearly cost me my life, and the next few days showed it. The severity of my condition became apparent the following day when I had to be lifted out of bed. I couldn't even stand on my own for three days. We made many errors in judgment and planning. Although I was in good physical shape (I had just returned from a year-long deployment in Iraq, where I spent the majority of my off-duty time conditioning in the gym), I had not hydrated for almost six hours while I was hunting. I had brought something to drink, but it did me no good sitting 600 yards away. We also failed to take the dry bag with us and ensure we had some means of communication in case of an emergency, even though we knew the conditions were going to be hazardous.

This experience taught me the importance of planning and the dangers associated with blatantly disregarding the controls put in place. Although our planning was thorough, we failed to implement our controls to reduce the hazards. This trip changed us from being young, daring sportsmen who thought they could handle anything into methodical and, at times, anal-retentive waterfowl hunters. Planning and properly implementing controls to mitigate risk could have eliminated the problems we faced. I'm just thankful I was able to learn from my experience and live to tell about it.
We were off the ground in less than 10 minutes. It was a 45-minute flight to the forward operating base holding an EPW patient. We made our way through mountain passes to the patient’s location without incident. We had just picked up our first patient when we received a second 9 line for an additional EPW at a FOB about 30 minutes from our home base. Not a problem. We swung by and picked up the second patient and headed home.

We were 12 nautical miles from FOB Salerno, descending out of the mountains and into the Khowst bowl. Our airspeed was at a typical AH-64D sprint — somewhere between 120 and 130 knots true airspeed. We were following our medevac brothers when we heard a loud “WHAM!” and the aircraft yawed hard right and began slipping left. It initially felt as though we had hit severe turbulence, but the aircraft attitude didn’t correct itself, despite the application of full left pedal. It was a dead giveaway that we had a tail rotor malfunction of some kind. The pilot in command calmly told me, “Hold what you got. The aircraft is still flying.”

We called the medevac bird and asked them to take a look at our tail and find out what was going on back there. Knowing we had a tail rotor malfunction to contend with, we pulled out the checklist and began reading through the emergency procedures for “Loss of Tail Rotor Thrust in Cruise Flight — Continued Flight Possible.”

The medevac UH-60 reported the unthinkable — the tail rotor was completely missing, as well as half our horizontal stabilator. This wasn’t exactly what we wanted to hear; however, it didn’t change the fact we had to deal with the following EPs:

Airspeed: A minimum of 90 KTAS (until 10 to 20 feet above touchdown). Not a problem. We were maintaining about 100 to 110 KTAS without descending. We could make it back to FOB Salerno as long as we held what we had.

Wing Stores: Jettison as appropriate. Did we want to jettison? No — there wasn’t any need for discussion. Once again, we decided to hold what we had because it was working for us. Everything was controlled at this point; punching off our left and/or right rocket pods was an unknown. The aircraft’s right yaw was uncomfortable, but controllable.
Power
Levers: Retard as necessary (5 to 10 feet above touchdown). The backseater would remain on the controls throughout the approach while the frontseater assisted by manipulating the power levers. As we neared 5 to 10 feet above ground during our approach, the aircraft started turning right, so we began pulling back the power levers as necessary to maintain lane alignment.

The odds were against us, but neither of us said anything. We locked our shoulder harnesses and lowered the seat in the front cockpit, knowing the main rotor had a tendency to violate the front seater’s headspace during a crash sequence.

We approached FOB Salerno on an extended final for Runway 90. As we made our approach, we experimented with the power settings to determine which one would give us the right airspeed, rate of descent and, most importantly, keep us properly aligned in our lane. While we were looking pretty good on lane alignment, we were going to land long if we committed to the approach on our first attempt. Since you only get one chance, it’s best to set up yourself for success. We were still flying, so we didn’t need to rush the landing. We decided to do a go-around.

The go-around was the worst part of the flight. Up to that point, the flight had been basically straight and level. We now had added two right turns to the day’s excitement, maintaining our airspeed and rehearsing the landing on the downwind leg. The aircraft rolled left as we made wide right-hand turns and we were once again on an extended final for Runway 90. As we began our approach, things were lined up nicely for a landing well within the first third of the runway. We were coming in fast, maintaining the EP’s minimum of 90 KTAS until 10 to 20 feet above touchdown. As we neared the ground, the aircraft lost lane alignment and began turning right. We pulled the power levers back and heard a “Rotor RPM low” warning.

We landed hot — somewhere between 80 and 90 KTAS — perfectly aligned in our lane. Once on the ground, we applied full aft cyclic in an attempt to slow the aircraft. We veered off to the right again, so we pulled the power levers back to the idle stop and then completely off. The aircraft then veered left about 30 degrees, heading toward a ditch on the runway edge. The only way we could control the aircraft heading was applying counter pressure on the brakes — which seemed to have little effect as we barreled toward the ditch. The thought ran through my head, “We have just landed this thing and now we’re going to roll it over in a ditch!”

We hit the ditch and rolled left, but then corrected back upright.

“The odds were against us, but neither of us said anything.”

and to the right. The aircraft then leaned right, but corrected back to a nice upright position. The rocket pods we’d decided not to jettison had kept us from rolling over — potentially saving our lives. The ride of a lifetime ended just short of a fixed-wing aircraft parked off the runway’s edge.
The observation of Fire Prevention Week, October 8 through 14, provides an opportune time to emphasize the importance of people knowing how to protect themselves and their co-workers should a fire happen. According to the Occupational Safety and Health Administration, workplace fires and explosions kill about 200 workers each year and injure nearly 5,000. In many of these workplace fires, inadequate fire extinguishing systems and locked fire exits contributed to the losses. To prevent those losses, it’s important to take a closer look at inspections, exits, fire extinguishers and training.

Inspections
When inspecting workplaces, as a minimum, be sure to check for the following:

- Ensure extension cords are not being used in place of permanent wiring. If additional receptacles are needed to power appliances and equipment, have a certified electrician install them.
- Do not run power cords for appliances and equipment under carpeting. Over time, the protective insulation can be worn or frayed, resulting in bare electrical conductors arcing and starting a fire.
- Ensure flammable materials are properly stored either outside the workplace or in an approved fireproof storage cabinet.
• Permit smoking only in designated smoking areas and ensure noncombustible receptacles are available.
• Do not store combustible items near electrical appliances or equipment. Also, keep the area around this equipment clear to ensure proper ventilation and cooling.
• Check electrical appliances and equipment for the Underwriter’s Laboratory (UL) label before purchasing them.

Exits
• Ensure you check fire exits when doing workplace inspections. Consider the following as you develop your checklist:
  • Ensure your facility has a sufficient number of exits. Each workplace should have at least two separate means of escape.
  • Inspect emergency lighting to ensure it properly illuminates the paths to exits.
  • Check the exit routes from your building to be sure they are properly marked as exits and are free and clear of obstructions.
  • Be sure to keep doors marked as fire exits unlocked at all times while employees are in the building.

Firefighting equipment
Fire extinguishers are an important part of your fire prevention program. When used properly, they can save lives and property by putting out small fires or controlling them until the professionals arrive. In addition, fixed systems can enhance fire safety within a facility by detecting fires, sounding an alarm and releasing a fire suppressant.

Ensure your workplace has enough fire extinguishers and they are the proper type for the fire hazards present. The types and uses of fire extinguishers are listed below:
• Type A: Use for ordinary combustibles such as paper and wood.
• Type B: Use for flammable liquids such as grease, solvents and gasoline.
• Type C: Use for electrical fires involving equipment such as fuse panels, computers and other energized equipment.
• Type D: Use for combustible metals such as magnesium, titanium and potassium.
• Type K: Use for kitchen fires involving combustible cooking liquids and fats.

Conduct monthly visual inspections of fire extinguishers for proper marking, maintenance and serviceability. During your inspection, be sure there are no obstructions blocking access to the extinguishers.

If your workplace is equipped with a fire suppression system, be sure it is inspected and properly maintained.

Employee training
Workers need to know how to properly use fire extinguishers and should be taught, as a minimum, the following:
• Sound the fire alarm and notify the fire department.
• Before approaching a fire, identify a safe evacuation path and ensure nothing obstructs it.
• Use the appropriate extinguisher for the type of fire encountered.
• Discharge the extinguisher within its effective range using the PASS (Pull, Aim, Squeeze, Sweep) technique (see info box above).

• Move away from an extinguished fire just in case it flares up again.
• If the fire extinguisher has been fully discharged and the fire is not out, evacuate the workplace immediately. Be sure workers also understand they are to evacuate immediately if the fire progresses beyond their ability to control it.

For more information on preventing workplace fires, visit the Occupational Safety and Health Administration website at http://www.OSHA.gov.
joined the Army when I was 17, so I was near the end of my first enlistment before I finally turned 21 and could legally drink. As a young enlisted Soldier, I lived in the barracks — not exactly a place you want to hold a party. So my plan was simple: I'd ride my motorcycle to my civilian friend's house and we'd go out and celebrate my birthday from there. Not much of a plan, but it was a start.

I rode my Honda 350 Enduro to my buddy's house. I wasn't even inside the door before I had my first beer of the night. While we sat around discussing the evening's plans, I drank three beers, and we hadn't even left for the bar yet!

My friend and his wife took me to the bar in their car. I'd been there before using a fake ID, so everyone knew me. I don't remember buying a single drink that night. It seemed like every time I turned around, someone else wanted to do a shot with me. But, hey, these were my friends and they wanted to help me celebrate.

We partied till the bar closed, downing our final shots as last call was announced. I'm not sure how much I drank that night, but I do remember hoping the alcohol wouldn't kill me. It had been a heck of a party and I'd succeeded at my plan of getting trashed. Too bad my plan didn't also include getting back to the barracks safely.
My buddy and his wife drove me back to their place, where we said our goodbyes. I got on my motorcycle and prepared to ride back to the barracks. The only problem was my motorcycle died as soon as I started it and, try as I might, I couldn’t get it restarted. My buddy came out and started my motorcycle for me. I remember him saying something about me being an idiot for forgetting to turn on the fuel. We laughed and I got on my bike. I sped to the end of his street, where I had to make a left turn. As the streetlight got closer, I remember thinking, “I should be doing something.” Then it hit me ... “Oh, yeah, the brakes!” Just as I grabbed the brakes, I looked up and saw the front tire hit the curb.

The next thing I noticed was there were a lot of stars that night. I remember that because I was lying on my back in the street looking up at them. I looked around and saw my motorcycle lying on its side with the handlebars bent 90 degrees from where they were supposed to be. My bike was leaking fuel and the shift lever was broken off. Beyond that, I’d broken my helmet visor and was bleeding from my arm, leg and hip.

So, what does a guy do when he is so drunk he rides his motorcycle into an immovable object? Call for help? Maybe get a taxi? Nope. I just picked up my bike, bent my handlebars back as best I could and rode home in second gear because I couldn’t shift.

I don’t remember how I got back to the barracks, but I clearly remember the next morning. When I rolled over in bed, pain shot through my body. My sheets were bloody, but they weren’t as bloody as my clothes, which I was still wearing from the night before.

Fortunately, I lived through this experience so I could later absorb some lessons learned. We have all heard the warning to not drink and drive, but that requires having a plan so you don’t have to ride or drive after drinking. Sure, I’d planned for my party, but what about afterward? I could have planned to stay with any of my friends, but I never asked. Or, as an alternative, I could have taken a taxi or bus home. I wasn’t looking out for myself.

Unfortunately, neither was my buddy. If he had been, why would he have started my bike when I was too drunk to start it myself or allowed me to ride home drunk? The truth is he wasn’t looking out for me. A real friend would have done everything he could to not let me ride drunk.

The takeaways from this are obvious. First, if you’re planning to drink, then plan for what you’re going to do afterward. Stay with friends, have a designated driver or take a taxi. Don’t wait until you’re cross-eyed drunk to come up with a plan.

Second, ask yourself who is really looking out for you — your drinking buddies or your real friends. You can tell the difference because real friends won’t send you off drunk to die on the highway. Make sure you plan to have your real friends looking out for you. It’ll beat waking up the next day a bloody mess — or not waking up at all.
The mission, a cross-country flight in Pakistan, was now becoming routine. Our flight of four CH-47s was to depart under night vision goggles and take supplies to Kandahar, Afghanistan. Crew selection is always an important part of pre-mission planning, and I was paired with a senior aviator who had just been signed off as an NVG pilot in command. The decision was made that our aircraft would be lead because we both were NVG PCs.

Our flight departed just after sunset and headed north toward Afghanistan. We always flew at altitude while in Pakistan to avoid small-arms fire, but when we crossed the Afghanistan border, we descended to terrain flight altitude. Once inside Afghanistan, the weather began to deteriorate and visibility steadily decreased due to blowing sand. The zero-illumination conditions and blowing sand made artificial lighting useless and a hindrance. Despite the conditions, we picked our way through the sand dunes to Kandahar.

Once we landed, I went to talk with the other crews about the return trip. After having a conversation with a friend who suggested we make the flight at 500 feet above ground level, I returned to tell the other pilots the change in plans. During our run-up procedures, the briefed PC determined it would be too risky to fly at an altitude of 500 feet in Afghanistan. Instead of arguing, I decided we had made it in and we would make it back out the same way. I briefed the rest of the flight on the most current change. We departed Kandahar with no problems for the return trip.

We had been flying for about 15 minutes at 125 feet AGL when the lack of illumination and blowing sand made it impossible to see the desert floor. I was on the controls and the other pilot was calling out altitude using the radar altimeter. I looked at the radar altimeter and saw our altitude had dropped to 100 feet. I put in a small amount of power to start a climb and noticed the radar altimeter read 80 feet. The next thing I saw was the radar altimeter reading 8 feet.

At that point, a crewmember began yelling that he had terrain out the cabin door. I immediately applied maximum power and aft cyclic, but there was a huge impact — much like a car accident. The rotors lit up as the sand flew into the air from the impact. We both struggled to maintain control of the aircraft after striking the ground. No one saw it coming and we weren’t sure if it was over, but within seconds, I regained control of the aircraft and returned to level flight.

We suddenly received a call over the intercom from our crew chief in the back that the ramp was missing. With our hands full flying the aircraft — to include eight caution capsules and inter-flight communications, among others — losing a ramp didn’t seem like much of a problem. Hearing fear in the crew chief’s voice, I tried to calm him down by telling him not to worry about the ramp. However, I was not expecting his next transmission: “Clay was on the ramp.” Clay was our flight engineer, and I knew there was no way he could survive what had just happened.

As hard as it was, we had to make a quick decision. We now had the task of saving the remaining five lives onboard the aircraft. We made a radio call to the rest of the flight to inform them we had lost our FE. The other aircraft volunteered to remain in the impact area to search for Clay. The weather continued to deteriorate and, while conducting a brief search, two more aircraft in the flight almost slammed into the ground.

We decided to make our way back to Kandahar. While en route, we performed a damage assessment. All four landing gear were ripped off, as was the ramp; both main fuel tanks were cracked; and the aircraft structure was bent in two places. We also had multiple fuel leaks and no utility hydraulic system.
Thankfully, there was good news. On our way back, the crew chief yelled that we still had Clay. I thought, “What?” The crew chief spotted him hanging in his harness underneath the aircraft. He had done what was briefed and hooked his tail to the aircraft floor, not the ramp. The remaining three people in the back were unable to pull Clay into the aircraft. I knew that with the blowing sand, we never would be able to get him if we put him down.

We made an emergency call to tower, explained our position, and told them to have an ambulance waiting for us at the end of the runway. As we approached the runway, we had to be extremely careful. We couldn’t land because we didn’t have any gear, and we didn’t want to cause any additional injuries to Clay. We lowered him to the runway, and the crew chief cut Clay’s restraint.

After rescuing Clay, we continued down the runway and were instructed to hover until a landing pad could be constructed. Ground support personnel and fellow pilots built a landing pad out of Air Force pallets. I was able to get the aircraft on the pallets and shut it down without further incident. As it turned out, we’d hit a 150-foot wall of sand on the backside of a river valley. We didn’t descend; rather, the ground came up and we never saw it.

**Lessons learned**

When I think back on that night, there were many things we could have done that might have helped us avoid this situation. I want people to learn from what we went through because no one died. This was not a training mission, so the rest of the crew and I wanted to make sure we accomplished this mission.

This incident could have ended tragically, and I would venture to say we were about four feet from that happening. Zero-illumination operations are what we train to fly in and learn to love due to the concealment darkness provides. Nevertheless, when flying over very low-contrast terrain with blowing dust and sand, special considerations must be taken, including possible adjustments to altitude and airspeed. When I left Afghanistan, no NVG flights were allowed if illumination was below 23 percent. I’m not sure this restriction is the answer, but it has helped.

We all, as Army aviators, want to complete our missions successfully and safely. We must do whatever it takes to complete the mission, but we can’t let things stack up against us to the point an accident happens. Remember that the mission can be changed without canceling it. If you have the luxury of flying with a crew in the back of the aircraft, listen to them. Without our crew’s quick thinking and decision-making abilities, this would have been a fatal accident.

The final point I would like to mention is Clay hooked his tail to the aircraft floor and not to the ramp, just the way he had been taught. If he would have done otherwise … well, I don’t want to think about that. All things considered, we were very lucky. I hope my experience will help others recognize when conditions warrant a change of mission.
Here’s a quiz: Which four-wheel vehicle is among the toughest, hardest-working and has, at times, a center of gravity several feet off the ground? If you guessed monster truck, you’d be wrong. The correct answer is forklift. Despite the fact forklifts are slow and not very sexy, they demand a lot of attention from their drivers. And if they don’t get it, they can hurt you!

While forklifts make work easier, operators and bystanders can be seriously injured or killed if the proper safety protocols are not followed. Because of that, it is vital forklift operators remain completely inside the cab while operating the equipment. Operators who stick their heads from beneath overhead guards run the risk of being hit by falling objects or striking their head against something outside the cab. And it’s not just heads that are in danger; forklift drivers also need to keep their hands and feet inside the cab. Protruding limbs are liable to get caught on objects as the forklift passes by, pulling the driver out of the cab and causing serious injuries.

Another important element of forklift safety is operators knowing how much weight the forks can safely handle. Some
operators might assume if the forks can
lift the weight, it's safe to do so. This is not
ture and could lead to serious injury if the
weight causes the forklift to lose its balance
and topple over. Bystanders could also be
crushed if the cargo falls off the forks.

In addition, forklift operators need
to be aware of their surroundings at all
times. Sudden drop-offs, hills, potholes,
walls and other obstructions could lead to
disastrous consequences for the operator.
Bystanders and forklift drivers also need
to stay out of each other’s way because
a collision could be unforgiving.

Operators must receive site-specific
training, as well as instruction on the particular
forklift they will be driving. This training must
be documented and copies of lesson plans
kept on file. In some circumstances, such as
an accident or near-miss incident, refresher
training should be provided to operators.
Otherwise, the performance of all operators
must be evaluated at least every three years.

Accident prevention measures

Forklift accident prevention is a significant
challenge to Army leadership. Operator and
material-handling errors are the most hazardous
types of forklift accidents. Accident reports
have documented operators who had improper
licensing, failed to follow procedures and safety
standards, lacked ground guides, worked without
supervision for difficult jobs or lacked training
for the specific forklift in use. The following is a
list of procedures unit leaders must implement:

- Ensure your forklift driver training program
  is to Army standard and enforce the standards
  set out in Army Regulation 600-55.
- Ensure strict compliance with Occupational
  Safety and Health Administration Standard,
  1910.178(l)(1), Forklift Safety Standards.
- Enforce the use of seat belts
  when forklifts are in operation.
- Enforce 29 Code of Federal Regulations
  1910.178 (Powered Industrial Trucks); if in
  Germany, BGV D 27 Flurförderzeuge.

Eliminating hazards in the workplace is the
right thing to do and makes good business
sense. In addition to OSHA compliance,
other benefits include reducing injuries for
Soldiers and employees, reduced workers
compensation rates, lower forklift maintenance

costs and less product damage.
All licensed forklift operators are to be certified
that they understand the safety aspects of forklift
operations. Certification will be accomplished
by attending a safety class, passing a written
test and demonstrating their ability to operate
a forklift safely. Before taking a safety class,
operators must have a valid state driver's license;
a current Defensive Driver's Course card; DA
Form 348, Equipment Operator’s Qualification
Record; and OF 346 - U.S. Government Motor
Vehicle Operator’s Identification Card.

Licensed forklift operators who pass both
the written and hands-on portions of the test
will receive forklift certification as follows:

- DA Form 348 - date certification is completed.
- OF 346 - overstamped with class, powered by
capacity of forklift.

Personnel without a forklift license will be issued
a learner’s permit — after passing the written test.
They will be required to have at the minimum of 30
hours of training with a licensed forklift operator.
Supervisors will submit an MFR that personnel
have attained the required hours of training and
are capable of operating a forklift without direct
supervision. Personnel with a learner’s permit
will demonstrate their ability to safely operate
a forklift and the following documentation:

- DA Form 348 - date certification is completed.
- OF 346 - overstamped with class, powered by
  and capacity of forklift.

Forklifts make moving heavy loads a breeze.
Failure to follow standard operating procedures,
however, can lead to serious injuries and
even death. Ensuring employees are properly
trained to operate a forklift will go a long way
toward creating an injury-free workplace.

FYI

OSHA’s Powered Industrial Trucks
(Forklift) eTool focuses on the safe
operation of forklifts in order to
prevent employee injury. Check
it out at https://www.osha.gov/
SLTC/etools/pit/index.html.
Many pilots who have been overseas have experienced some noncombat-related close calls. The extreme temperatures, dusty conditions and less-than-ideal parking situations add up. Combining these factors with fatigue or complacency can create a recipe for disaster. This was the setting for one of my “closer” calls to damaging an aircraft.

If a warning light comes on, a chime flashes or a system fails completely, most of us can recognize the problem and execute the corrective emergency procedure. However, what about emergencies not covered in the checklist? Training Circular 3-04.11, Commander’s Aircrew Training Program for Individual, Crew, and Collective Training, states: “A PC [pilot in command] is an aviator that has demonstrated the judgment and ability to perform all of the mission requirements for the assigned aircraft, uses proper procedures and operates the aircraft safely and maturely.” This means being ready for anything that comes along and quickly understanding the effects. Here’s my story.

I was returning from a night mission flying an AH-64D in eastern Afghanistan, and the sun had just come up as we taxied into parking at Forward Operating Base Salerno. As I turned to line up in the drive-through parking setup, my canopy cover flew into the air. These canopy covers are 8- by 12-foot heavy-duty pieces of canvas with straps hanging off them in all directions. It was supposed to have been locked away in the flyaway box located on the parking pad. My mind started spinning with options and possible consequences. Do I continue forward and hope the cover passes behind me or do I pull the engines off and bring the rotor brake to lock? I thought if I could reduce the induced flow, I could stop the canopy from being sucked in or whipped back through the tail rotor. I didn’t even want to imagine what could happen to the crew chief on the wing cord on the opposite side of the parking pad if the straps came toward him.

“MY MIND STARTED SPINNING WITH OPTIONS AND POSSIBLE CONSEQUENCES.”

CAPT. JEFFREY B. MEINDERS
1st Battalion, 145th Aviation Regiment, 1st Aviation Brigade
Fort Rucker, Alabama
Nothing in the checklist even remotely covered this type event. The pilot in the front seat was also fixated on the cover flying over us, wondering why the locked box where the cover was stored was even open. I knew this was a dangerous situation and time was not on our side. I reduced the collective and applied the brakes, as the cover was about 20 feet above and five feet in front of my rotor. The cover stayed aloft in the upward flow of air created by the ground effect and floated over to the next parking pad. We landed safely and I was more than relieved nobody was hurt.

**What happened?**

The crew chief that launched the aircraft had gone back to the flyaway gearbox and left the cover out for unknown reasons. Whether the crew chief had been sidetracked, re-tasked or an emergency came up, he forgot to close or lock the box, which definitely caused an eye-opening experience for the crew that morning. We saw how easily a dangerous situation materializes by someone’s distraction. This could’ve been a catastrophic accident, damaging the main and tail rotors, requiring the whole driveline to be replaced and, most importantly, injuring or killing all personnel within 50 feet of the aircraft.

**Lessons learned**

Remaining alert while on a long deployment can be stressful, and that is why supervision and teamwork are so crucial to the Army’s mission. Not every accident can be predicted, and simply avoiding risks is not safe. That’s why we rely on inherent training to know what to do when we have an emergency.

The training PC candidates go through plays a major part in the thought process and actions taken during non-standard emergencies. My unit instructor pilots focused on airworthiness and how to keep the aircraft flying. Challenge pilots. Use what-if questions to lead pilots into unfamiliar territory, bringing them outside their comfort zone and into discovery mode. In the long term, challenging pilots increases the safety success of your organization.
It was a cool fall night in the sandhills of Nebraska, and I was about halfway through my shift as a state trooper. Assigned to a remote duty station, I’d learned to work by myself. When something happened, many times I talked directly with the local sheriff’s office, which was in the middle of my work area. I was patrolling near the city of Alliance when I received a radio call of an accident with injuries.

The dispatcher gave me the location as seven miles south of Alliance at the county line. I recognized it as a big curve on Hall Ranch Hill. The dispatcher reported a vehicle had overturned, pinning the driver beneath it, and that an ambulance had been called from the volunteer fire station. I activated my red lights and siren and rushed to the location.

As I approached the scene in my patrol car, I could see a large vehicle on its top in the northbound ditch. A deputy sheriff also arrived as I bailed out of my unit. When we ran down to the car, all we saw was a hand sticking out from beneath it. The deputy grabbed the exposed hand and shouted to the person that we were there to help. The young man gripped the deputy’s hand and would not let go. As we looked to the left, we could see fuel leaking onto the ground from the gas tank. The driver, a 14-year-old boy, was pinned face-up with only about two inches between his head and the car’s caved-in roof.

We realized we had to get him away from the car before it had the chance to catch fire. We knew there was no way the two of us could lift the car to free him, so I ran to my unit and retrieved a spade from the trunk. When I got back to the wrecked vehicle, I quickly dug a trench in the sandy soil beneath the driver as the deputy continued
to console him and grip his hand. Once the trench was deep enough, we slid the driver into it and pulled him from beneath the car to safety. He cried as we freed him from what had been a death trap and the possible danger of being burned alive. In the distance, we could hear the siren of the approaching ambulance that would transport him to the hospital.

Once we got the vehicle removed from the scene, we drove to the hospital to check on the boy’s condition. I interviewed him and his parents to complete my investigation. The interviews revealed that the boy had been home alone and decided to take the family car for a joyride. He was speeding when he lost control in the curve, went into the ditch and rolled twice and the car landed on its roof. Not wearing his seat belt, he was thrown through the driver-side window onto the soft sand, where he landed on his back. As so often happens in rollover accidents, he was ejected into the path his vehicle was rolling, and the car landed on top of him. Ending up well away from the highway, he was able to reach a piece of chrome door trim and flag down a passing motorist.

Although the car was a total loss, the young driver walked out of the hospital the next day with just bumps and bruises. The fact that he survived was purely a matter of luck. Most ejected motorists who wind up beneath their vehicles don’t walk away.

So what about you? When it comes to seat belts, will you obey the rule or hope to be the lucky exception? If you roll the dice and lose, you may come up short.

FYI
According to the National Highway Traffic Safety Administration, occupants who are wearing their seat belt are 75 percent less likely to be killed in a rollover crash.
The mission began as a routine night vision goggle aerial refueling proficiency mission. The MH-47 crew of six preflighted, briefed and filed their crew packet and flight plan with operations. The aircraft was ready, as was the crew.

In accordance with standing operating procedures, the crew chief carried an aircraft mechanics toolbox with the necessary tools for MH-47 repair and maintenance. The toolbox was stored securely on the floor in front of the 800-gallon Robertson auxiliary fuel tank in the forward cabin area. In the toolbox were two 14.4-volt DC batteries and a drill driver used for removing panel screws. The toolbox had foam inserts, neatly cut out to account for and secure the tools and two batteries. With the exception of the odds and ends crew chiefs carry to complete those minor unscheduled maintenance tasks, the toolbox also included assorted common cotter pins, nuts, washers and a spool of .020-inch safety wire.

The crew departed shortly after the end of evening nautical twilight and had about 45 minutes of en route time before the air refueling control time. The ARCT is a “hard” time where the receiver, in this case the MH-47, and the tanker, an MC-130, must join up for the aerial refueling.

About 20 minutes into the flight, while still low level, one of the pilots reported smelling smoke. After a short discussion, the pilots realized the aircraft was flying over an area that was conducting a controlled forestry operation.

“THE RED GLOW WHEN VIEWED THROUGH NVGS AMPLIFIED THE SCENE AND HE REPORTED “FIRE!” ON THE INTERNAL COMMUNICATION SYSTEM.”
burn. However, the smell increased in intensity and the crew began looking for the source of the smoke. The pilots immediately turned back to base.

The crew chief in the forward cabin area followed the odor to the vicinity of the toolbox. When he raised the lid of the toolbox, the tray holding the spool of .020-inch safety wire was glowing red and producing fumes and light smoke. The red glow when viewed through NVGs amplified the scene and he reported “FIRE!” on the internal communication system. The cry of “fire!” ranks right up there with “wires!” as a pilot’s least favorite thing to hear on the ICS.

Immediately following the cardiac episode, the pilots began a descent and prepared for an emergency landing. What the crew chief had seen was a spool of .020-inch safety wire resting against the terminals of one of the 14.4-volt DC batteries for the drill driver. The spool was smoking, glowing red and melting the plastic surrounding the battery terminals. The crewmember calmly reported the clarified version of what he saw to the rest of the crew and the pilot aborted the landing and turned the aircraft back to base.

The crew chief then carefully pushed the safety wire away from the battery, but it came to rest on the other battery and began to glow and smoke exactly like the first. With one more attempt, he was able to separate the safety wire from the battery and remove the source of smoke and fumes. After a hectic minute or two, the crew was able to relax and again changed course to resume the route back to the tanker for their aerial refueling mission.

This crew was lucky they found the fire source in time. The hazard of storing a spool of safety wire in close proximity to the drill driver battery could have resulted in a fire and/or explosion. The 800 gallons of JP-8 conveniently placed within a foot of the toolbox presented a ready fuel source. This could have easily resulted in a destroyed aircraft and possible fatalities.

The remedy was extremely simple. In our case, we moved the safety wire to another drawer in the toolbox, away from the conductive material in the batteries. This was a valuable lesson learned.
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