

ARMY GROUND RISK MANAGEMENT INFORMATION

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Taming Nature



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features



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A popular motivational saying goes something like this: "That which does not kill you makes you stronger." How many times have you heard that one? While this oft-quoted line might have some fundamental truth, it forgets to mention that those things that don't kill you often hurt a lot.

COOL HIT



COLD WOUNDS!

JULIE SHELLEY
Editor

Cold-weather operations present many hazards that, if not approached correctly, can lead to disaster: severe cold injuries, carbon monoxide poisoning, and tent fires, just to name a few. But the winter environment also introduces other not-so-serious risks that can increase pain and decrease productivity. These minor aches and pains are not only a nuisance, they are also costly in terms of lost man-hours and dollars.

Fortunately, most cold injuries are completely preventable if appropriate precautionary measures are taken. But

sometimes even the best-prepared Soldier can fall prey to one of the “minor” injuries listed below. Be on the lookout and seek proper medical treatment if you or one of your buddies exhibits symptoms for any of the following conditions.

Frostnip. This type of injury, along with more serious ailments such as frostbite, can occur any time the air temperature is below freezing (32 °F or 0 °C). Frostnip is caused by water freezing on the skin’s surface. In exposed skin, the risk of a freezing injury increases with higher wind speeds.

Frostnip occurs at temperatures of about 15 °C (59 °F). Frostbite occurs at temperatures of about 0 °C (32 °F)

COLD HURTS!

Solar radiation can "sunburn" unprotected eyes and lead to snow blindness.



Frostnipped skin will appear red and possibly swollen. Although painful, frostnip generally is limited to the skin's surface and causes no further damage after the affected area is rewarmed. However, repeated frostnip in the same spot can dry and crack the skin, making it very sensitive. It also is important to note that distinguishing between frostnip and frostbite can be difficult. Frostnip must be taken very seriously, and all frostnip injuries should be reported immediately.

Sunburn. You don't have to be in the desert or at the beach to get sunburned—the threat of sunburn depends on the intensity of sunlight, not air temperature. Add in snow, ice, and lightly colored objects, all of which reflect the sun's rays, and the scene is set for a major sunburn injury if you're not careful. Sunburned skin will be painful and hot to the touch, appear red, and possibly be swollen and blistered. With the potential to last for hours or even days, sunburn also can cause temporary incapacitation and increase heat loss during cold exposure.

To prevent sunburn any time of year and in all environments, use

sunscreen with a sun protection factor of at least 15 and cover all exposed skin. In cold weather, sunscreen should be alcohol-free. (The Army has an alcohol-free sunscreen that can be purchased under NSN 6505-01-121-2336). If you or another Soldier should become sunburned, prevent further exposure and apply a moisturizing lotion; aspirin or acetaminophen may be given for pain. Soldiers with large areas of injured or blistered skin should be evacuated for medical treatment.

Snow blindness. Snow blindness, like sunburn, is a threat posed by the intensity of the sun's rays, not the temperature outside. Solar radiation can "sunburn" unprotected eyes and lead to snow blindness. Symptoms of snow blindness include painful, gritty eyes with profuse tearing, blurred vision, and possibly headache. Soldiers suffering from snow blindness should be removed from sunlight and rest in a dark area with their eyes covered by cool, wet bandages until they can be evacuated. Bacitracin or erythromycin ophthalmic ointment also should be applied.

Protective eyewear or goggles that block at least 90 percent of ultraviolet radiation help prevent snow blindness, and sunglasses

SEEK IMMEDIATE MEDICAL HELP!

with visible light transmittance in the 5- to 10-percent range are needed to reduce the sun's reflection off snow. In addition to protective eyewear, sideshields or deeply wrapped lens designs should be used to reduce the chances of eye injury. It should be noted that not all commercially available sunglasses block enough solar radiation to protect against snow blindness. Polarized sunglasses purchased under NSN 8465-00-161-9415 will provide the proper sun protection needed in a winter environment.

Dry and chapped skin. The combination of sun, wind, snow, rain, and low humidity can wreak havoc on your skin, lips, nose, mouth, and throat. Nosebleeds, sore throat, minor respiratory difficulties, and chapped skin are all common ailments seen in the dry winter environment. To prevent nose and mouth irritation, cover the bottom part of your face with a balaclava or scarf. Chapped lips and skin can be prevented by using lip balm (NSN 6508-01-277-2903) and by limiting skin exposure to the elements. Use a moisturizing lotion to help the skin retain water.

Slips and falls. An increase in slips and falls, as well as vehicle accidents, generally

is seen during cold weather operations. Paths, walkways, and roads are frequently muddy or frozen. Heat escaping from the entrances of tents and buildings causes cycles of thawing and freezing on the ground surface, making those areas particularly hazardous. Add to the mix fatigue, bulky clothing, and vision-restricting hoods and hats, and the danger becomes very real.

To mitigate the risks posed by slippery, frozen surfaces, snow should be removed from the ground before tents are set up. Slippery paths and walkways should be marked with warning signs, and Soldiers should walk slowly in areas with snow and ice. Finally, sand, salt, ashes, or straw should be spread on known and potentially hazardous areas to increase traction.

Tent eye. Tent eye is an inflammation and irritation of the eyes resulting from exposure to fuel fumes and is most common in poorly ventilated shelters where stoves and heaters are being used. Rubbing itchy eyes caused by these fumes subsequently can lead to an infection. Anyone suspected of having tent eye should be moved to fresh air and taken to a medical facility for evaluation

The following cold injuries require immediate medical attention. Do not delay if you or your buddy exhibits any of the following symptoms:

Hypothermia: Shivering, an altered sense of consciousness, and uncoordinated movements. Hypothermia can be fatal if treatment is not given immediately.

Carbon monoxide poisoning: Flu-like symptoms including fatigue, drowsiness, and headache. Affected individuals also might become confused and develop blurred vision. Carbon monoxide is odorless, colorless, and tasteless. Suspected carbon monoxide victims must be moved to fresh air and given medical attention immediately!

Frostbite: Loss of feeling or a tingling sensation in the affected area along with white, gray, red, yellow, or waxy-looking skin. The frozen tissue will feel solid to the touch.

Trench foot: Numbness in the feet accompanied by burning sensations and shooting pain. Severely affected tissue will appear pale and slightly blue. Trench foot can lead to gangrene.

Chilblain: Reddened, slightly swollen skin accompanied by a prickly or burning sensation. Left untreated, chilblain can lead to more severe cold injuries.

COLD HURTS!

and treatment. Soldiers must ensure their shelters are properly ventilated to prevent tent eye and other serious problems such as carbon monoxide poisoning.

Burns. Stove and heater use sets the perfect environment for burns if Soldiers are not trained properly in their use. Contact with hot surfaces and fires or the explosion of stoves and fuel sources can cause a multitude of burn injuries. In addition, improper fueling and lighting techniques or inadequate ventilation can result in the accumulation of flammable fumes. If these fumes are ignited accidentally, potentially fatal fires can occur.

Anyone who's been burned should be taken from the heat source. Burning or smoldering clothing should be removed and cut away over and around the burn, unless it sticks to the wound. The wound itself should be covered with a dry, sterile dressing tied at the edge of the burn, not over it. **DO NOT** apply ointments, ice, or snow to the burn, and never break blisters.

Injuries stemming from the use of stoves and heaters are totally preventable if the correct safety measures are taken. Only properly trained Soldiers should be permitted to set up, light, refuel, and maintain stoves. A fire guard should be posted any time a stove or heater is being used, and horseplay should be prohibited inside the shelter. Air intake to the stove or heater should not be blocked, and the stovepipe should be tall enough to draft properly and be kept clean of soot and debris. Shelters and tents should not be sealed so tightly that ventilation is blocked completely. Lastly, tent and shelter doorways must be kept clear at all times to allow for easy escape should fire break out.

Remember that it's up to you when it comes to cold weather safety. The environment can't be controlled, but the risks associated with it can. Be prepared and think ahead about the small stuff! 

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don't eat the yellow snow

Yep, it's that time of year again! The thought of cold weather and cold injuries has been all but forgotten after this summer's record heat, both in theater and at home. I just returned from a trip to Pennsylvania State University, where I enjoyed a morning run in crisp 50 °F weather. What a treat! Now is the time for leaders and safety professionals to plan and take action against the upcoming cold.



NOW!

COL JOHN CAMPBELL
Command Surgeon
U.S. Army Combat Readiness Center

Lots of people work hard to ensure Soldiers are protected in adverse weather conditions throughout the year. Despite these efforts, however, cold injuries continue to happen year after year. How can we make this winter different?

I don't have an easy answer because the issue is complex. But I can tell you that proper training, appropriate equipment, physical and mental conditioning, proper nutrition, and concerned leadership can make a big impact on keeping Soldiers ready to fight in the cold. Also, some good "outside the box" thinking might be required in certain situations.

Early in my career, I was involved in an incident at Fort Bragg, NC, where

several ROTC cadets suffered from hypothermia at the beginning of summer. The cadets were at a field site when rain began pouring down. None of them had wet weather gear. After 4 hours of being out in the open and completely exposed, it became evident the cadets had to go back to the barracks. The unit sent buses and 2 ½-ton trucks to pick us up (we were lucky we didn't have to road march back!).

Unfortunately, the trucks didn't have their back covers installed. The soaked, tired, and hungry cadets were then exposed to 45- to 50-knot winds. Did I mention it was almost dark and the daytime temperature was rapidly falling to around 55 °F? Five of the cadets were later admitted to the hospital at Fort Bragg and treated for hypothermia.

I wish I was making this example up, but it really happened. No

one involved in the exercise ever considered the cadets could get a cold injury at that time of year. We began the exercise with good intentions, but our planning and risk assessment failed. Everyone was surprised at the cadets' condition and, needless to say, we had a lot of explaining to do. Fortunately, all five cadets recovered, but they lost a couple of critical training days because of their injuries.

OK, enough war stories. I've got to mention one of the most important aspects of the battle against cold injury—hydration. People generally minimize their activity in cold weather and even eat and drink less simply because they want to stay warm. However, adequate hydration and nutrition, including increased calorie intake, are vital to staying healthy in cold weather.

A good rule of thumb is that if your urine is yellow, "don't eat the yellow snow." At this point you're already dehydrated or well on your way to becoming so. You must drink more fluids! Conversely, if your urine is clear, then you're adequately hydrated.

Leaders can help their Soldiers stay hydrated by providing them with liquids they'll actually drink. Lukewarm drinks with some flavoring are more palatable than ice-cold, tasteless drinks in the winter. However, leaders should remember that excess coffee and soda can actually increase fluid output and lead to dehydration.

We obviously can't control the weather. We can, however, keep cold injuries at bay with appropriate planning and risk assessments and by remembering the lessons learned from past weather-related incidents. Stay warm, stay hydrated, and stay ready for the fight! 

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Left in the Cold

LTC (RET) CYNTHIA GLEISBERG
U.S. Army Combat Readiness Center

This lance corporal’s “death was not an accident. ‘Accidents’ happen. His death didn’t just happen; rather, it was the culminating event in a series of acts, each consciously committed by human beings: intelligent, experienced and highly trained Marine Corps officers and noncommissioned officers.”—*excerpt from the court-martial of the Marine lieutenant in the story below*

It was a cold December day in the desert—the kind most service members dread being outdoors. A Marine Corps lieutenant was ordered to post road guards for a battalion-sized motorized night movement during a field training exercise (FTX). He was supposed to assign the guards in pairs, keep a roster of the postings, and provide the roster to a captain.

There were a number of new Marines in the unit. The battalion commander was aware they might not be accustomed to working in the desert’s extreme conditions. The battalion commander stressed personnel accountability in his instructions to the

lieutenant during preparation for the movement.

Despite this guidance, the lieutenant posted two Marines in separate isolated areas without partners. Two road guards reminded the lieutenant of the two-guards-per-post requirement, but the lieutenant dismissed them. After all, he was senior in rank. He also didn’t prepare a personnel roster with the guards’ names and locations.

Once the movement was over, the Marines began recovery operations to pick up the guards. They thought they’d picked up all the guards but later discovered a lance corporal was missing. He was found dead from exposure more than 40 hours later.

The lieutenant made three deadly failures during the FTX. First, he failed to post the guards in pairs. Pairings would’ve enabled the guards to practice the “buddy system” and protect each other from fatigue, weather, and further possible problems. Second, he failed to post the guards on the main route where they would’ve been seen. Lastly, the lieutenant failed to prepare the personnel roster and ensure all the guards were retrieved after the movement.

DID YOU KNOW?

During Fiscal Year 2005, the Army conducted 1,351 courts-martial—739 general courts-martial and 612 bad conduct-special courts-martial. These trials resulted in 1,295 convictions and 1,027 discharges.

Legal action was taken against the lieutenant since his failures directly contributed to the lance corporal's death. The Uniformed Code of Military Justice (UCMJ) has several provisions that can be used to charge leaders for inappropriate actions or inactions regarding the performance of their duties and the resulting safety impact on their troops. Using these provisions, the lieutenant was court-martialed and charged under the provisions of Article 92, Failure to Obey an Order or Regulation.

The trial court found the lieutenant guilty of failing to obey a lawful order given by the battalion commander to post two-man teams on the main route. The trial court also found the lieutenant was negligent in his failure to post road guards in pairs at designated checkpoints and to obtain a roster of posted individuals. Finally, the court determined the lieutenant failed to follow instructions because he wanted to accomplish the mission quickly. For these and other unrelated charges, the lieutenant was sentenced to dismissal from the Marine Corps, confinement for 4 months, and total forfeiture of all pay and allowances.

The lance corporal's death was totally preventable. Had the lieutenant taken the time to follow the safety guidelines established by his commander, a fellow Marine wouldn't have suffered a slow, agonizing death from exposure. Had the captain followed up on the guard roster he was expecting but never received, the corporal could've been saved. Had everyone just taken the time to follow the standard, one more Marine would be ready for the fight.

Don't let OPTEMPO cause you to knowingly take shortcuts, disregard safety precautions, and put mission accomplishment above all else—especially your Soldiers' well-being. No training exercise or mission is worth you making the wrong decisions and accepting unnecessary risks. If you have doubts about your obligations as a leader to maintain your Soldiers' health and welfare, contact your local judge advocate for guidance. Ask questions first, because later might be too late. ■■■

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Cold weather has numerous adverse effects on troops in combat. Hypothermia and frostbite are serious medical problems, but Soldier performance can be affected well before an injury takes a Soldier out of the fight. For instance, numb skin and heavy clothes hinder Soldier task performance. Soldiers also might become emotionally detached, lose motivation, and become reluctant to leave their tents or sleeping bags.

WINTER'S FASHION STATEMENT

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Fortunately, all these problems are avoidable. The Army has greatly improved issued clothing and, with proper wear, Soldiers can be comfortable in all climates. I've received a cold weather safety brief every year since I've been in the Army. However, no one has ever explained how Army clothing is designed to protect Soldiers in the cold.

Have you ever heard of COLD—you know, the catchy acronym that describes dressing correctly for cold weather? (Here's a refresher: keep clothing Clean, avoid Overheating, wear clothing Loose and Layered, and keep clothing Dry.) The key to the COLD system is layering.

Soldiers can avoid overheating and stay dry by properly layering their clothes. Any cold weather clothing ensemble consists of three layers: the base layer, insulating layer, and shell. Soldiers who understand these layers can tailor their clothing to specific conditions and missions.

The base layer

The base layer is closest to the skin and is designed to wick moisture away from the body so the wearer stays dry, warm, and comfortable. The base layer's fabric and weight are very important. Cotton kills in the cold because it holds moisture against the skin. Soldiers will sweat even in the cold, so cotton should be avoided at all costs.

Polypropylene and polyester blends are good base-layer fabrics. Issue items that work well as base layers include the brown polypro top and bottoms and black "ninja suit" top and bottoms. The T-shirt issued with the new Army Combat Uniform is made of a wicking fabric and also is a good base layer. Many Soldiers use the polypro tops and bottoms but still wear their brown cotton T-shirt and drawers underneath,

defeating the base layer's purpose.

Soldiers should tailor the base layer's weight to their activities and the outside temperature. For instance, a thinner base layer should be worn during high aerobic activities. During stationary activities, a heavier base layer should be worn.

The insulating layer

The insulating layer traps warm air against the body. Soldiers can use multiple insulating layers, depending on their activity level and outside temperature. Light, bulky fabrics such as wool, down, polyester fleece, or synthetic pile fabrics that trap air make the best insulating layers.

Army-issued items that can be used as insulating layers include the "bear suit," field jacket liner, black fleece, and wool sweater.

Soldiers starting out on a patrol or other strenuous activity should be slightly cold when they start to keep them from overheating and sweating. These Soldiers should carry their insulating layer in their rucksack and put it on when they make a stop.

The shell

The shell protects the body and the other two layers from elements such as wind, rain, snow, and dirt. A good shell is your best defense against wind and water—unless combined with a shell, most insulating layers do not protect against wind and rain. Gore-Tex is the best shell fabric because it's waterproof, windproof, and breathable.

Field jackets provide some wind protection, and the wet-weather system is waterproof and windproof but doesn't breathe. The black

fleece loses most of its insulating ability when even a slight wind picks up. Remember that a good shell not only protects against wind and water but also breathes to let perspiration escape.

At night

These layering principles also apply to boots, gloves, headgear, and sleeping systems. The new Army modular sleep system has three parts. The green bag is the base, the black bag is the insulating layer, and the camouflage Gore-Tex bivy is the shell. They should be used together to ward off cold injuries.

DID YOU KNOW?

The average low temperature in December in Mosul, Iraq, is 42 °F, while the lowest recorded temperature for the same month is 28 °F. In Kabul, Afghanistan, the average low in December is 28 °F, and the lowest recorded temperature is 5 °F. That's a good reason to bundle up!

Soldiers don't have to wear a lot of clothes at night to stay warm. Physical training shorts and a wicking T-shirt (not cotton) will be sufficient in most conditions if the sleep system is used properly. Additionally, a sleeping pad will help insulate the body from the cold air or ground beneath.

The Army will continue to work and fight in cold weather. Remember the principles above and keep in mind they work not only for combat but also for outdoor activities such as hiking, skiing, hunting, running, or sitting in the bleachers at a football game. Cold weather doesn't have to be a hindrance—take advantage of what you've been given and stay ready for the fight. 

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Working in cold weather is a fact of life for Soldiers. At some point, nearly every Soldier will be shivering in a tent somewhere in the world. And, as surely as winter comes, Soldiers will choose to heat their tents by means of a space heater, stove, or other heating device.

Heat on a cold winter night provides many advantages for Soldiers. One major benefit is that Soldiers lose less body heat and conserve more energy while sleeping in a warm environment, potentially improving their performance the next day. Despite the advantages inherent with the use of heating devices, they also pose some unique hazards—especially concerning fire and carbon monoxide poisoning.

Fire can engulf a tent in 10 seconds and destroy it in 60 seconds, giving Soldiers very little time to react.

Conversely, carbon monoxide is odorless, colorless, and tasteless and can quickly kill Soldiers while they're sleeping. It's released when fuels are burned inefficiently. In fact, most people killed in house fires die from carbon monoxide poisoning before they're burned.

While commercial off-the-shelf (COTS) heaters and stoves might seem to be a good solution for heating problems in the field, Soldiers must be trained on proper procedures before using such equipment. For example, locally procured COTS heaters that are unflued or unvented (i.e., no smokestack) vent exhaust fumes, including carbon monoxide, directly into living spaces. In addition,

no COTS heaters on the market meet Army requirements for field environments. Standard military heaters, on the other hand, are designed to vent combustion fumes to the outside, are tested for safe field use, and should be used instead of COTS heaters.

The following heaters are approved for Army use:

H-45 (NSN 4520-01-329-3451). The H-45, or Space Heater Medium, replaces the old potbelly M-1941. The H-45 burns liquid and solid fuels and is designed to heat General Purpose, Tent Extendable Modular Personnel, and Tactical Operations Center tents. It has an output capacity of 45,000 BTU.

Space Heater Arctic (NSN 4520-01-444-2375). This heater replaces the gasoline-burning

M-1950 Yukon heater and is a lightweight, portable heater for 5- and 10-man arctic tents. It burns liquid and solid fuels and has an output of 25,000 BTU.

Space Heater Small (NSN 4520-01-478-9207). This heater has an output capacity of 12,000 BTU and is ideal for use in smaller tents such as the four-man Soldier Crew Tent. It burns liquid fuel and has a built-in tank, so no fuel can or stand is needed.

Space Heater Convective (NSN 4520-01-431-8927). This heater provides forced hot air for tents and shelters. It generates its own power, recharges its battery, and has an output of 35,000 BTU.

Thermoelectric Fan (NSN 4520-01-457-2790). The Thermoelectric Fan is a compact, self-



STAYING



powered unit that fits on top of any military tent heater. It uses heat to turn the fan blades, which circulate heated air, improve comfort, and save fuel.

To keep Soldiers both warm and safe this winter and in all cold weather environments, follow these tips:

- Operate all heaters and stoves in accordance with the applicable technical manual.
- In the event of a tent fire or suspected presence of carbon monoxide, the first and most important task is to evacuate the tent.
- Heating shelters at night requires a fire guard at all times. A fire guard can make use of the time by cleaning his weapon and equipment, washing and shaving, and preparing hot drinks for sentries outside.
- Do not wear wet clothing while sleeping in sleeping bags in an effort to dry them.
- Do not pile combustible materials such as grass and pine needles on the tent floor for insulation, as they can catch fire easily.
- Stoves in tents with wooden floors must be placed in sandboxes.
- Always use the specified type of fuel for the heater or stove.
- Each heating device and all its components must be inspected and cleaned thoroughly before storage and use. Special attention should be paid to checking for leaking valves, holes in gas cans, and proper assembly.
- Secure stovepipe opening covers with tie tapes so the covers will not contact the stovepipe.
- Use enough stovepipe sections so one complete section is above the highest point of the tent. Ensure the sections are vertical and do not contact any part of the tent.
- Be sure to leave enough air space between

WARM THE RIGHT WAY

JULIE SHELLEY
Editor

the tent wall and the heater or stove. Heating devices situated too close to the tent wall can ignite the tent.

- If the heater flame is accidentally extinguished, wait until the burner cools before relighting. An explosion could occur.
- Fuel should not

be taken inside a tent warmed by fire. The fuel can for the heater must be located outside the tent as far from the tent as the fuel hose allows.

- Do not exchange the heater unit fuel can unless the heater is turned off.
- Do not smoke or drop cigarette butts

around combustible materials or go to sleep with a lantern or candle burning.

- Do not open a stove or heater while it is still hot, even after a flame-up has subsided. Fresh air will feed a fire and reignite it.
- Adding water to a gas fire will cause the fire to flame up and spread.

• Even in extreme cold, do not operate heaters at full capacity. An overheated stovepipe could ignite the tent, and high temperatures can warp grates and damage other components.

- Provide sufficient ventilation for fresh air to enter the

tent at all times.

- Ensure fire extinguishers are available in every tent that has a stove or heater and have a fire plan ready and rehearsed.
- Ensure emergency agencies such as fire departments and paramedics have access to all structures using heaters and other flame sources.
- Do not leave stoves or heaters unattended. As fuel levels decline, pressure drops and the drip valve must be readjusted to maintain the proper flame.
- When lighting a heater or stove, always turn your face away from the chamber door. If a flash occurs, it most likely will happen

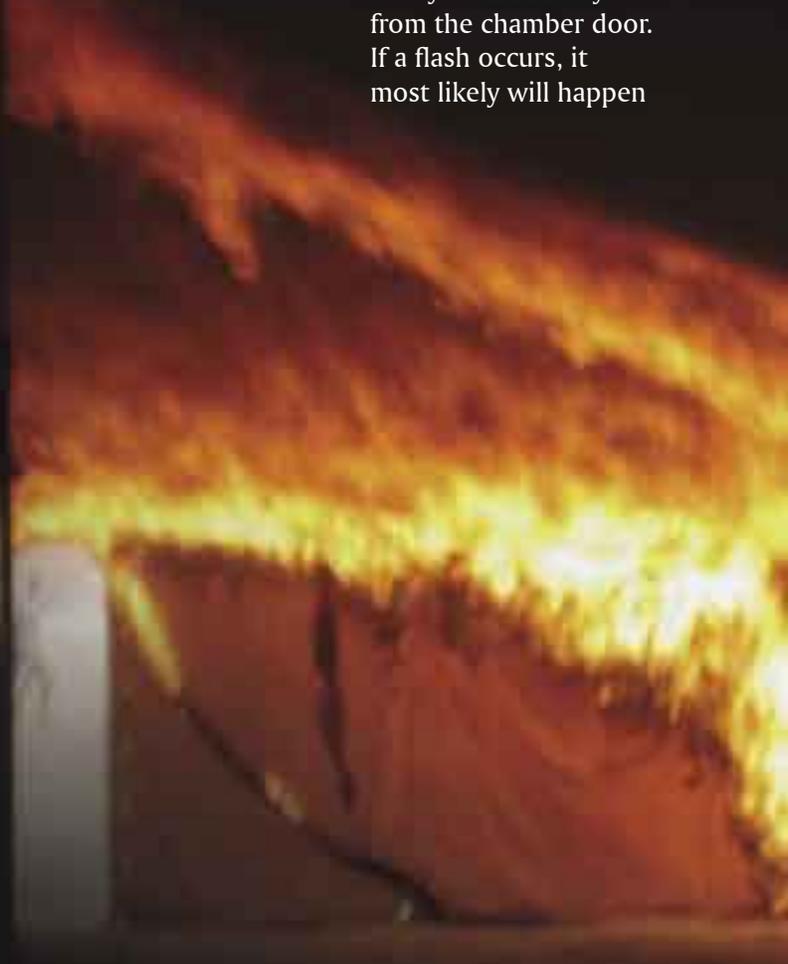
YOU MIGHT NEED TO KNOW...

The Army Communications-Electronics Command recently released Safety of Use Message (SOU) 05-001, which is of particular interest to Soldiers looking to stay comfortable in shelters and tents this winter. The SOU concerns Field Deployable Environmental Control Unit (FDECU) models FDECU-2, FDECU-3, FDECU-4, and FDECU-5 (NSN 4120-01-449-0459/LIN A26852).

The FDECU provides cooled or heated air in various portable shelters and tents. However, a few Soldiers have suffered smoke inhalation when the heater assembly (P/N 9454066, NSN 4520-01-494-3852) overheated and filled their tent with smoke. Worn wiring insulation is believed to have caused the overheating.

Unit maintainers must inspect the heater assembly annually. Now is an excellent time to complete this inspection since winter is approaching rapidly. Follow the procedures in item 6, table 4-1 of the Unit Preventive Maintenance Checks and Services in Technical Manual 9-4120-411-14.

To read the complete SOU, go to the Army Electronic Product Support Web site at <https://aeps2.ria.army.mil/commodity/soum/cecom/05/csoum05-01.html>. If you have any additional questions contact Steven Chan, CECOM Directorate for Safety, at DSN 987-7473 or (732) 427-7473; or Donald Oglesby, CECOM Logistics Readiness Center, at DSN 992-3990 or (732) 532-3990.



when the fuel first ignites.

- Keep stoves clean and always practice safety when doing so. Hitting a stovepipe and pouring in a little water to clean out soot is extremely dangerous; throwing blanks into a burning stove to clean out carbon buildup in the stovepipe is even worse.

- Do not touch metal parts of heaters or stoves when temperatures are below freezing without protective gloves. Skin may freeze upon contact and cleave from the flesh.

- Use caution when handling sharp-edged pipes to avoid cuts.

In any dangerous situation, the first response is to save Soldiers' lives—Soldiers lose their lives in inches and seconds. In a tent fire or carbon monoxide incident, there are no seconds to spare. Use the right equipment and stay ready for the fight! 

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equipment gets cold too

G3, OPERATIONS DIVISION

U.S. Army Combat Readiness Center

Operating in cold weather presents many challenges for Soldiers and their leaders. Things as simple as preventing drinking water from freezing in the field and protecting Soldiers from cold weather injuries are extremely trying in harsh winter conditions.

But what about our equipment? Are there different procedures for operations in the cold? There are numerous opportunities for mission failure in cold weather due to equipment damage and personnel injuries. Personnel injuries have been discussed in detail already in this issue. It's important to remember there are also hazards associated with equipment maintenance in the cold.

The operator's manual for any piece of Army equipment has specific procedures to follow for cold weather operations. Soldiers should follow these procedures and allow time for vehicles and other equipment to warm to an adequate operating temperature. When we roll out of our sleeping bags on a cold morning, it takes us standing around the stove and a few cups of coffee to get started. The same principle holds true for equipment. Remember to give those systems an electric cup of "joe" before asking them to perform.

The systems are now up and running and ready to go, right? Wrong! Now is the time to focus on the mechanical systems.

Transmissions, gearboxes, and even tires need to be warm to give 100 percent. Transmissions and gearboxes are lubricated by either oil or grease. Both of these lubricants are affected by temperature and tend to thicken in cold weather. Thicker fluid means higher pressure on seals. In maintenance lingo, that means lots of blown seals. Tires also are affected by the cold and sometimes will get flat spots after sitting for a while.

Let's now talk about our most important resource: people. Getting Soldiers to work in cold climates can be a challenge, but it's also a very big responsibility. Take an active role in caring for your Soldiers. Small things like hot coffee and soup go a long way. Also make sure your Soldiers are dressed for the environment.

The bottom line is that, as leaders, we are responsible for our equipment and Soldiers. Use Composite Risk Management and other tools to keep your unit from becoming a statistic. Think of it this way: By doing little things like taking care of your equipment, your Soldiers won't have to be out in the cold repairing something because someone else didn't adhere to the standard. Stay warm and stay safe! 

Comments regarding this article may be directed to the editor at (334) 255-1218, DSN 558-1218, or by e-mail at julie.shelley@us.army.mil.



Soldiers from all components of the Army—active, Reserve, and National Guard—serve in many different capacities all over the world. Sometimes, however, Soldiers are called to support their fellow countrymen at home. Hurricanes Katrina and Rita devastated the U.S. Gulf Coast in August and September 2005, and tens of thousands of U.S. troops continue to respond to the twin disasters with no immediate end in sight.

AFTER THE STO

Disaster relief efforts are hazardous by their very nature, and resources often are stretched to the breaking point. There's never a good time for an accident, but this is especially true in disaster situations. Responding to an accident can halt relief efforts and drain the resources intended for disaster assistance.

In response to the Katrina and Rita efforts, the Army Combat Readiness Center published a “Leader’s Risk Management Guide for Disaster Relief Operations,” found on the Web at https://crc.army.mil/guidance/leaderguides/Disaster_Relief_Leader_Guide.pdf. The following excerpts are intended to complement safety and readiness assessments for leaders and Soldiers assisting in relief efforts. Units deploying to the Gulf Coast or other disaster sites are encouraged to download

the entire guide from the CRC site before deployment.

Personal injuries

- **Eyes:** Soldiers should wear protective lenses, goggles, or face shields when the job calls for it. Activities most likely to produce eye injuries are chain saw work, carpentry, metal work, and motor pool or maintenance work.

- **Ears:** Leaders must enforce the use of hearing protection when personnel are operating heavy equipment, generators, or chain saws; on board Army aircraft; and in any high-noise areas.

- **Head:** Helmets or hard hats should be worn in construction areas in accordance with unit requirements.

- **Hands:** Rings are a common source of personal injury. Personnel frequently catch rings

on the tailgates of vehicles while dismounting, causing severe hand injuries or amputations.

- **Back:** In most cases, back injuries occur when individuals overextend themselves. Leaders must remind personnel to get help when lifting heavy objects and to lift with their legs, not their backs.

- **Feet:** Leaders must enforce wear of protective boots in areas that require toe protection such as maintenance, engineer, warehousing, and materiel-handling facilities. Also ensure personnel change their socks regularly to prevent trench foot and fungal infections.

Health and hygiene

Water

- Ensure water is treated—serious diseases can be transmitted by untreated water.
- Treat all water as if it is



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G3, OPERATIONS DIVISION
U.S. Army Combat Readiness Center

contaminated. Do not go in the water unless it is necessary or it has been approved by the chain of command.

- Water in trailers should have the chlorine level maintained at 5 ppm. Use water in trailers primarily for showering and cooking because the chlorine taste will discourage Soldiers from drinking it. Bottled water should be the primary source of drinking water.

- All personnel should be immunized appropriately.

Food

- Keep perishable foods below 45 °F or above 140 °F before serving.
- Dispose of perishable foods kept in insulated containers for more than 4 hours.
- If using Meals, Ready to Eat, ensure personnel stay well hydrated to avoid constipation.

- Bacterial diarrhea, viral diarrhea, chemicals, pesticides, and heavy metal poisoning are hazards associated with eating food from unapproved sources.

- Do not consume food procured from or prepared in the immediate hazard area by local personnel.

Latrines and waste disposal

- Designate a field sanitation team (FST) before deployment.
- Ensure FSTs deploy with appropriate equipment and references.
- Ensure portable latrines are available, cleaned regularly, and are located in low-lying areas.
- Ensure methods are available to establish adequate waste disposal procedures.
- Do not burn trash or waste without approval from appropriate military personnel.
- To minimize rodent and stray

animal activity, designate locations and storage facilities for trash away from living and work areas.

Critters

Snake and insect bites

Personnel must leave snakes alone. There are poisonous snakes in many parts of the U.S., but bites from nonpoisonous snakes also can be harmful if they are not cared for properly and become infected. Anyone bitten should immobilize the affected area and seek medical help immediately. When ice is available, apply it to the bite to slow the spread of venom. Tourniquets and attempts to suck venom out of the wound can cause more harm than good.

Bites from spiders, mosquitoes, and other insects can cause illness and lead to infected wounds. Ensure personnel shake



out their clothing before getting dressed and check their boots before putting them on. Where possible, boots should be placed off the ground or inside a waterproof bag or other container. Ensure personnel wear the appropriate seasonal uniform with the sleeves down and apply repellent in accordance with the DOD Insect Repellent System. If possible, use insect repellents that contain DEET.

Animals and other reptiles

Wild animals such as bats, raccoons, and skunks, as well as feral dogs and cats, might be injured, hungry, or have rabies or other diseases. These animals and other domestic pets might be more aggressive or dangerous than usual. Ensure personnel do not taunt, play with, or handle any animals. In addition, alligators are very common in the swampy southeastern United States. Make sure all personnel stay away from alligators.

Blood-borne pathogens

Everyone involved in rescue and cleanup operations must be aware of the risk from blood-borne pathogens. There currently is and will continue to be disease contamination at all rescue sites. Ensure personnel have current Hepatitis B and tetanus immunizations at a minimum. Precautions must be followed, and the equipment below must be provided:

- Latex or rubber gloves
- Over-garments for clothing protection
- Face masks for respiratory protection
- Goggles for eye

protection from splashes or spills

- Bleach and chlorine for cleanup and decontamination of biohazards

- Biohazard bags

A collection site for contaminated items must be established. In addition, sites must be designated for showering and clothing changes before personnel leave for non-contaminated areas.

General

Personnel assisting in site recovery or rescue operations face a variety of hazards. Remind them to:

- Be aware of their surroundings and not enter damaged structures.
- Be alert for exposed electrical, gas, and other utility lines.
- Wear gloves and other protective clothing.
- Avoid moving or tampering with propane tanks.
- Watch where they step for nails, glass, and other sharp objects.
- Personnel should not attempt to recover human remains unless they are part of a recovery crew. Ensure personnel are briefed in advance on what to do if human remains are discovered.
- Ensure personnel have respirators with filters for asbestos. Many older buildings and schools contain asbestos.

Electrical hazards

Large electrical transformers might contain PCBs or cancer-causing chemicals. Electrical lines also might be energized and present a shock hazard. Ensure personnel:

- Do not attempt to move transformers during cleanup.
- Mark transformers and report their locations to the chain of command.

Power lines

- Downed power lines might be energized. **DO NOT TOUCH.**
- Electricity might be restored to dead power lines without notice. Beware of dead lines and anything touching them.
- Emergency generators must come off line as power is resupplied. Only qualified utility or engineer personnel should conduct the changeover.
- If downed power lines are difficult to see but are in a traffic area, clearly mark the area so no one inadvertently steps on a downed wire.

Hazardous materials

There are many sources of hazardous materials. Remind personnel to:

- Avoid areas near damaged propane tanks, oil containers, or other chemical drums.
- Mark and report suspected waste dump sites to the chain of command and avoid such areas.

Chain saw operations

- Ensure operators receive training before operation, especially in procedures for cutting down trees to ensure trees fall in a safe direction.
- Ensure operators have the physical strength and dexterity to operate equipment.
- Enforce the wear of personal protective equipment including eye protection and gloves.
- Do not cut toward the body.
- Cut with the blade where it enters the drive body.
- Avoid cutting with the tip of the saw to avoid kick-back.
- Do not refuel a hot saw.
- Check for nails, wire, and other metal objects before cutting.

Vehicle operations

General

Vehicle operations in a disaster environment are extremely dangerous. Personnel

must drive defensively and be alert to potential hazards.

- Enforce the use of restraint systems by crew and passengers.
- Establish and enforce safe speed limits for various road and environmental conditions.
- Pair experienced drivers with inexperienced ones to provide supervision and hands-on training.
- Use experienced drivers in difficult terrain.
- Remind drivers to slow down in limited visibility, on rough terrain, and during inclement weather. Driving too fast for conditions is a primary cause of accidents.
- Establish procedures for vehicle stops and breakdowns to warn approaching vehicles.
- Reinforce braking and downhill driving procedures with all operators.
- Keep vehicle antennas secured to prevent contact with power lines and other objects.
- Check to ensure operators have installed vehicle antenna tip covers to prevent injury and damage.
- Ensure there are proper floatation devices in each vehicle operating in flooded areas.
- Take into account the maximum fording depth for each vehicle type, and ensure proper fording equipment and accessories are installed before entering water areas (i.e., exhaust extensions).

Preventive maintenance checks and services (PMCS)

- Stress that PMCS is critical, especially under adverse or unusual conditions.
- Ensure operators perform special requirements covered in the "Operating Under Unusual Conditions" section of their respective operator's manual.

Route reconnaissance

- When possible, conduct a physical reconnaissance of the

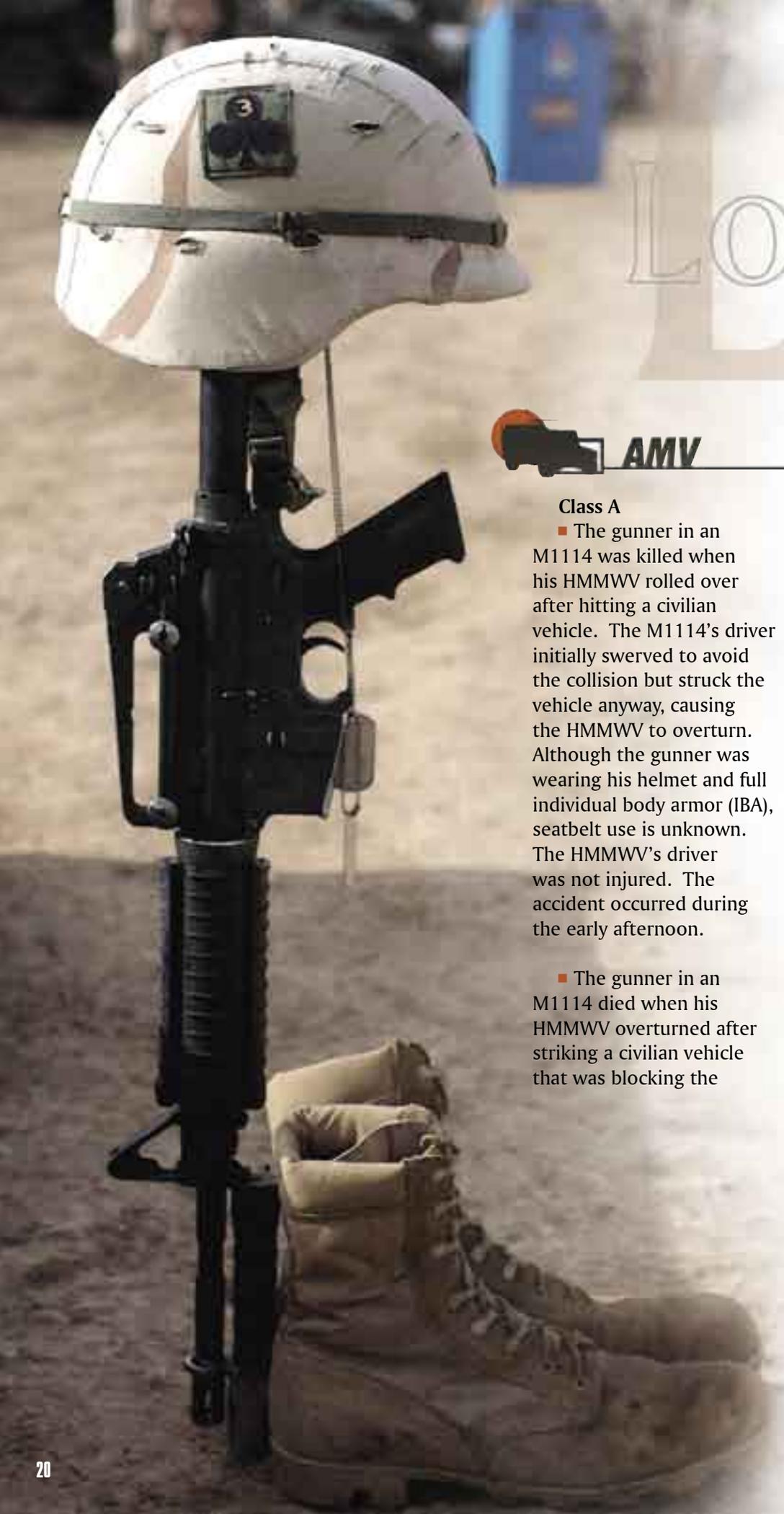
route to avoid the worst terrain hazards. Mark unavoidable hazards on a strip map and include them in the convoy briefing.

- Reconnoiter the route for bridges or underpasses that might be too low for large vehicles.
- Caution drivers that roads, bridges, and overpasses might not be posted with weight or height restrictions.
- If possible, reconnoiter routes for hazards below the water line before operations begin.
- Check water height before driving through to ensure vehicles will not get swept away. A good rule of thumb is to not drive into running water deeper than the vehicle axle.

Ground guides

- Train drivers in the correct use of ground guides, and train all personnel in how to perform as ground guides.
- Stress the importance of ground guides in congested areas and during periods of limited visibility.
- Remind drivers to use two ground guides while backing or when their view is restricted.
- Equip ground guides with suitable lights during periods of limited visibility or darkness.
- Always use ground guides in assembly areas, displaced persons camps, etc.
- Remind drivers to keep ground guides in view at all times and to stop the vehicle if they lose sight of them.
- Instruct ground guides to never walk backward and to stay out of the path of backing vehicles. 

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Lost

AMV

Class A

■ The gunner in an M1114 was killed when his HMMWV rolled over after hitting a civilian vehicle. The M1114's driver initially swerved to avoid the collision but struck the vehicle anyway, causing the HMMWV to overturn. Although the gunner was wearing his helmet and full individual body armor (IBA), seatbelt use is unknown. The HMMWV's driver was not injured. The accident occurred during the early afternoon.

■ The gunner in an M1114 died when his HMMWV overturned after striking a civilian vehicle that was blocking the

roadway. The HMMWV's driver, who was not injured, rammed the back of the civilian vehicle, which refused to move after repeated warnings. The truck commander and another passenger were injured. The gunner was wearing his helmet and full IBA, but seatbelt use is unknown. The accident occurred during the mid-morning.

SEATBELT SUCCESS



st

- A foreign national civilian was killed when his vehicle was struck head-on by an M1117 Armored Security Vehicle. The driver of the civilian vehicle reportedly lost control and caused the collision. The accident occurred during the early evening.

Class B

- Soldier suffered a permanent partial disability when he lost control of the

M977 HEMTT he was driving. The Soldier was negotiating a steep downgrade when he lost control of the vehicle and drove through a ditch. The Soldier suffered a head injury. Seatbelt use is unknown. The accident occurred during the early afternoon.

a concussion. All three Soldiers were wearing their helmets, IBA, and seatbelts. The accident occurred during the early morning.

- Soldier suffered various fractures when he was crushed between the engine and

Class A

The gunner in an M1114 suffered fatal injuries when his HMMWV overturned after swerving to avoid a civilian vehicle. The gunner was crushed when the HMMWV rolled over. The gunner was wearing his helmet and full IBA, but seatbelt use was not reported. The HMMWV's driver was not injured. The accident occurred during the mid-afternoon.

Class C

- Two Soldiers were hospitalized after the up-armored HMMWV they were riding in overturned. The HMMWV's driver was not injured. One Soldier suffered spinal injuries, and the other suffered

transmission of the M88A1 he was servicing. The Soldier had changed the vehicle's engine and was trying to attach it to the transmission. During the accident sequence, the driver was told to turn the vehicle slightly left, at which time the brakes gave way.

STORIES Class C

Spotlighting Soldiers who wore their seatbelts and walked away from potentially catastrophic accidents



- Soldier was driving an M915A2 fuel tanker from a logistical support area to a forward operating base (FOB) when a civilian truck jackknifed on the opposite side of the road. The Soldier steered the tanker to the right to avoid a head-on collision, but the civilian truck spun around and hit the tanker's rear, spilling 4,700 gallons of fuel. A third vehicle then became entangled under the tanker's front bumper. The Soldier was

wearing his seatbelt and helmet and was not injured. The accident occurred during the late morning.

- Three Soldiers, including the gunner, suffered minor injuries when their M1078 Light Medium Tactical Vehicle (LMTV) overturned. The vehicle was going through a checkpoint when it ran through a large crater, jerked left, hit a barrier, and rolled over. The truck commander was treated

and released from the local combat support hospital, and the other two Soldiers returned to duty within 2 weeks. All three Soldiers were wearing their helmets and seatbelts. The accident occurred during the early morning.

- Two Soldiers were treated for minor abrasions after their M915A1 overturned on its side. The Soldiers were returning to their FOB after a long convoy mission and were

hauling two 20-foot containers on a flatbed trailer behind the truck. The driver reportedly was speeding and took a 90-degree turn too fast, causing the trailer and truck to roll over. The Soldiers were taken to the local troop medical center, where they were released and returned to duty. Both Soldiers were wearing their helmets and seatbelts. The accident occurred during the late afternoon.

The Soldiers did not use a tether line to steady the engine while connecting it to the transmission. The accident occurred during the early morning.



Personnel Injury

Class A

■ Soldier suffered fatal injuries when his head struck an M109 Howitzer barrel. The accident happened when the M88A1 recovery vehicle the Soldier was driving lurched forward toward the Howitzer. The accident occurred during the late afternoon.

■ Soldier was killed when an unidentified piece of ordnance exploded in a tent. The Soldier was moving equipment from one tent to another at the time of the explosion. The accident occurred during the early morning.

■ Soldier died at a local hospital after collapsing on post. The Soldier had just completed the 2-mile run portion of the Army Physical Fitness Test and was walking back to his building when he grabbed his leg and fell down. The accident occurred during the mid-morning.

Class C

■ Soldier suffered a gunshot wound and fractures to his leg when an M14 rifle accidentally discharged. The Soldier was in an M1025 HMMWV returning to a FOB after a mission when the rifle fired. The accident occurred during the mid-afternoon.



Lost

WHAT THINK were they

That'll stop you . . .

A Soldier was tasked to perform a road test on an M998 HMMWV following scheduled maintenance. It was a clear, crisp fall afternoon and no one else was on the road. Why not open it up a little—after all, HMMWVs are made to go fast, right? Uh, no, and there's this little thing called the laws of physics that can really mess you up if you're not careful. The Soldier lost control of the HMMWV, skidded across the road, and hit a tree. The one thing he did right was wear his seatbelt, an action that most likely allowed his commander to log the mishap as a Class D accident and not a Class A.

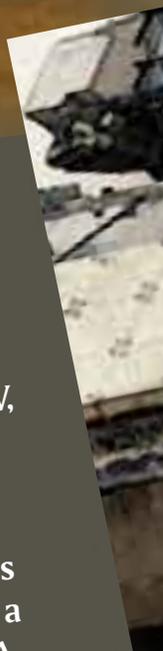


Illustration based on preliminary reports of ground accidents.



ing?

Why don't these things come with a cup holder?

Ah, a vehicle's floorboards, so often used for storage when they shouldn't be—like when an M915A3 is hurtling down the autobahn in the middle of the night. One thirsty Soldier driving a mail truck reached for her water bottle, which she'd stood upright on the driver's side floorboard, only to discover the bottle had fallen over and rolled by the truck's pedals. As she reached down to retrieve the bottle, the truck veered to the right and flattened 50 feet of guardrail. Fortunately, the Soldier wasn't hurt physically, but pride might be another matter. She was ordered to attend remedial driver's training and take a checkride before operating another AMV.



I wasn't expecting that!

There's nothing like a little bang to get your attention, particularly in a combat zone and especially at 0430 on patrol. A Bradley Fighting Vehicle was performing rear security on an early morning mission. The Bradley's gunner was traversing the weapon when, suddenly, a civilian dump truck came out of nowhere.

(Well, not really out of nowhere. It had been on the road the entire time; the Bradley commander just didn't share this information with the gunner.) The jutting weapon barrel plus the passing dump truck equaled one loud noise and more than a few sparks when the two collided. Once his heart stopped pounding,

the startled gunner realized he was OK thanks to his PPE and seatbelt. The dump truck driver either didn't notice or didn't care that he'd just had a very close encounter of the accident kind because he kept on driving. The cost of damage to the Bradley was just over \$8,000—one expensive communications failure!

HE does rollovers... **YOU
DON'T.**

Maintain crew rollover procedures outlined in Graphic Training Aid (GTA) 55-03-030 and rehearse rollover drills. Ensure drivers and vehicle commanders are familiar with the capabilities and limitations of their assigned vehicles, and brief them on the hazards that cause or contribute to rollovers. Use Composite Risk Management and prepare yourself for the unexpected.



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