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Don't Let Frost Bite Your Equipment

GROUND DIVISION
U.S. Army Combat Readiness Center
Fort Rucker, Alabama

During the winter, driving becomes more hazardous, and extreme weather can take its toll on our vehicles and drivers. Taking appropriate steps such as conducting by-the-book preventive maintenance checks and services and applying risk management before hitting the road could save you from breakdowns and potentially dangerous situations.

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

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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

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.

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 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.

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.

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- Check brakes. Ensure the brake lines and hoses are serviceable and brake fluid is at the proper level.
- 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.

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! ■

ARE YOU READY?



ARAP

ARMY READINESS ASSESSMENT PROGRAM

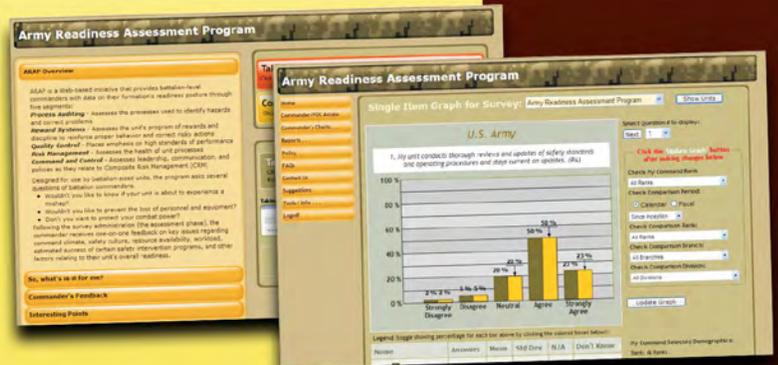
Wouldn't you like to know if your unit is about to experience a mishap?

Wouldn't you like to prevent the loss of personnel and equipment?

Don't you want to protect your combat power?

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Ride of a Lifetime

CAPT. WENDY REED

Arizona Army National Guard

The day started like any other day on quick-reaction force duty. We had just completed preflighting our aircraft when the call came in. It was a 9-line medevac chase for an urgent pickup of wounded enemy prisoners of war. This was just another day of escorting medevac birds across Afghanistan.

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



“The medevac UH-60 reported the unthinkable — the tail rotor was completely missing, as well as half our horizontal stabilator.”

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

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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

“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.”

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 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. ■

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Winter Road Hazards

ERIK JOHNSON

Winter is approaching and, depending on your location, many of us are already encountering varying weather conditions. Regardless the weather, the mission must go on. As such, we must be prepared to drive in all types of hazardous conditions, be it fog, snow or ice.

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.



“ When snow melts and refreezes, drivers encounter even more hazardous road conditions.”

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 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

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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

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.

forever. If you make it through the winter accident-free, you'll have even more reason to celebrate when spring finally comes! ■

“Frost heaving, a condition related to icing, is the uneven lifting and distortion of the ground close to the surface.”

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

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



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When standards aren't enforced or followed, that's when an mishap is likely to happen.

Whether handling an assigned or a privately owned weapon, remember to always **THINK** safety:

TREAT EVERY WEAPON AS IF IT IS LOADED.

HANDLE EVERY WEAPON WITH CARE.

IDENTIFY THE TARGET BEFORE YOU FIRE.

NEVER POINT THE MUZZLE AT ANYTHING YOU DON'T INTEND TO SHOOT.

KEEP THE WEAPON ON SAFE AND YOUR FINGER OFF THE TRIGGER UNTIL YOU INTEND TO FIRE.

YOUR LIFE, OUR LOSS

When a Soldier dies in a preventable accident, it has a detrimental effect on the morale and welfare of the unit. That Soldier's absence, however, extends far beyond the Army because often they also leave behind a heartbroken family, friends and colleagues. Remember, **IT'S YOUR LIFE, BUT OUR LOSS.**

Visit our **Range and Weapons Safety Toolbox** at <https://safety.army.mil> for more information about safe weapons handling.

