

Code Blue: Cold Weather Operations

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Objectives

- Identify types of winter conditions that could affect emergency operations and missions associated with cold weather.
- Identify strategies to identify and manage risks of operating in cold weather.
- Identify personal protective measures that need to be considered during winter operations.
- Identify vehicle concerns that need to be considered in preparation for and during winter operations.
- Identify operational concerns that need to be considered during winter operations.

Winter Conditions

- Shorter daylight hours
- Temperatures drop
- Ground freezes
- Frozen precipitation
 - Freezing rain
 - Sleet
 - Snow

Types of Winter Conditions

- Frost / Freeze Warning
- Winter Storm Watch
- Winter Weather Advisory
- Winter Storm Warning
- Blizzard Warning

Cold Weather Operations

- While cold weather makes a disaster medical operation more difficult, it does not make it impossible



Cold Weather Mission Profile

- All usual missions, *plus*
- Mass transit crashes
 - Aircraft, Trains, Multi-vehicle Autos
- Structural collapse
- Water main breaks
- Downed trees
- Downed utility lines
 - Power, Phone, Cable, Internet

Cold Weather Mission Profile

- Road closures
- Supply interruptions
 - Food, pharmacy
- Carbon Monoxide (CO) exposure
- Homebound ill
- Agriculture issues

Personal Protection

Purpose: Provide an overview of protective measures and clothing for individuals to consider while operating in cold conditions.



Personal Protection

Principles:

- Wet is bad
- Layering is good
- Materials are important
- Use multi-purpose items when you can (save on weight and space)

















Personal Protection Tips

- Keep important stuff from freezing (meds/water – wear next to you and/or insulate)
- Know pre-existing problems and/or issues
 - Cold Injury
 - Other susceptibility (disease/med conditions)
 - Metal devices (implants)
- Put an “E” in front of ABCs (or at least mix in)
- Improvise (expedient vapor barrier items)
- Better living through chemistry

Vehicles and Drivers

- The leading cause of death during winter storms is transportation accidents – 70%



Keys to Winter Driving

- Prepare your vehicle for the winter season
- Practice risk management
- Know how to drive in ice and snow
- Know how to react if stuck, stranded or lost on the road

Preventive Maintenance

- Proper routine maintenance tasks are even more critical in cold weather
- The vehicle needs to be winterized
- System oriented approach
- Keep good service records

Starting System

- Batteries
 - Load test
 - Clean terminals and check cables
 - Fill with distilled water if low
- Charging System
 - Alternator
 - Voltage Regulator
- Eliminate losses from accessories

Heating and Cooling System

- Check radiator for leaks
- Check hoses for cracks
- Make sure the radiator cap, water pump, and thermostat work properly
- Test the strength of the anti-freeze
- Test the functioning of the heater and defroster

Oil and Filters

- Change engine oil and filter
 - Use weight recommended for cold weather
- Change fuel, air, and transmission filters
- Grease lube points

Exhaust System

- Check the exhaust system for leaks
- Leaks could send carbon monoxide into your vehicle



Tires and Handling

- Install snow tires including spare
- Inspect snow chains and store in vehicle
- Inspect vehicle jack and lug wrench
- Inspect shocks and leaf springs
- Inspect steering linkages
- Inspect brakes



Windshield

- Clean windows inside and out
- Inspect for cracks and chips
- Remove obstructions from dashboard vents
- Make sure wipers are in good condition
- Fill up with winter washer fluid

Fuel

- Vehicle fuel tanks should be no less than half full – keep topped off
- Purchase fuel from a reputable and busy dealer
- As air temperatures fall, the ability for water to condense in fuel tanks increases

Diesel Fuel

Must be treated with additive to prevent jelling and plugging of system



Other Items to Check

- Headlights, marker lights
- Communications equipment
- Vehicle clean and waxed
- Tool kits and spare parts
- Winter emergency gear
- Personal emergency gear

Risk Management

- Is travel absolutely essential?
 - Check local weather forecasts
 - Check local road and travel conditions
- Vehicle condition
- Driver experience and rest
- Driving in winter conditions causes rapid mental and physical fatigue and reduces reaction times

Have a Plan

- Plan route and alternates
- Take a companion
- Travel in convoy
- Tell reliable person route plan and ETA
- Keep in touch

Starting Strategies

- Keep vehicles inside whenever possible
- Start vehicles every four hours
- Keep batteries warm
 - Use electric blanket or remove from vehicle and bring into heated, vented area
- Plug in block heaters while the engine is still warm as opposed to trying to heat a cold engine with a block heater

Starting a Diesel

- The wait light must be off prior to starting because the glow plugs must be warm first
- Let engine come up to operating temp
- Do not race the engine
 - you may burn out the turbo
 - oil has not yet circulated
 - racing the engine provides no heater advantage

Clear the Vehicle of Snow

- Sweep snow off roof and hood
 - Flying snow and ice a hazard to others
- Turn on defrosters
- Scrape windows and mirrors
- Clean snow from all lights
- Clear running boards

This does not qualify as “cleaned off”





Effects of Snow and Ice

- Less forward visibility
- Harder for others to see you
- Less traction
- Physical obstruction
- Lane markings and road signs obscured
- Snow banks restrict visibility
- Narrower width of road
- Glare



- A white vehicle in snow is camouflaged
- Keep headlights on at all times



Driving Tips

- Seatbelts a must
- Use sunglasses to combat glare
- Adjust speed to conditions – slow down
- Increase distance between vehicles
- Maintain steady steering
- Easy on the throttle
- Easy on the brakes

- If your view is like this, you're too close



Driving Tips

- Don't use cruise control
- Test the roadway surface in a safe place
- Use turn signals sooner than usual
- Tap brake lights to warn others of your intention to stop
- Do not stop or park in travel portions of the roadway



Driving Tips

- Don't let 4 wheel drive make you overconfident
- Never try to pass a snow plow
- Watch for ice on bridges and shaded areas
- Watch for pedestrians, wildlife, off road vehicles, abandoned vehicles, downed trees and power lines, etc.

- Too much wheel spin will even get a four-wheel drive stuck



Getting Unstuck

- Avoid getting stuck in the first place
- Accelerate just enough to cause the drive wheels to move. Excessive acceleration just causes your vehicle's tires to spin and provides no traction.
- Get additional traction from chains, mats, sand
- Use winch or get a tug out

Trapped in Vehicle

- Don't panic
- Stay in the vehicle
- Display a trouble sign
- Call for help
- Run engine occasionally to keep warm
- Watch for signs of hypothermia

Setting up Camp

- Site selection
- Use of fixed structures
- Use of tents
- Showers, latrines, handwashing
- Use wooden stakes with reflectors to mark routes

Using Fixed Facilities

- Snow loading on roof
- Snow loading on canopies and covered walkways
- Ice and snow falling from structure



Fire & Ice 2004

Logistic Considerations

- Arrangements for snow plowing / snow removal / sanding
- Supplemental heating units
- Supplemental lighting towers
- Extra shelters to set up portable toilets
- Specialized vehicles (all terrain vehicles, 4WD, tractors, etc.)

Logistic Considerations

- Extra generators to power vehicle engine block heaters
- Additional food and water requirements

Communications

- Expect to have to create communications linkages in a no infrastructure environment
- Keep equipment within operating temperatures
- Keep batteries warm
- Keep antennas and satellite dishes clear of ice and snow

Protecting Equipment and Supplies

Three general principles to follow when safeguarding equipment are:

- Remove water and moisture
- Add antifreeze, or
- Provide heat

Protecting Equipment and Supplies

- Keep oxygen bottles warm
- Protect medications and IV solutions

Additional Safety Considerations



Personnel Accountability

- Must have a system in place to account for all personnel during duty and non-duty hours

Walking on Ice

- Wear proper foot gear
- Take small steps to keep your center of balance under you
- Keep both hands free for balance
- Keep your eyes on where you're walking

Moving Snow

- Risk of injury
- Cardio workout
- Clear snow early and often
- Avoid shoveling snow
- Use power equipment wisely



Snowthrowers



- Keep hands and feet away from the auger and the discharge chute
- Discharge snow in a safe direction

Aircraft Operations



Carbon Monoxide

- Keep any CO sources well away from tents and structures
 - Generators
 - Vehicles
- Monitor CO levels



Thank You!

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