# UNCLASSIFIED
## Winter Operations Procedures v2.1
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Cold Weather Equipment and Personnel Guidelines
Effective Date: February 2024

# 1. Cold Weather Equipment Preparation

Operations in cold weather (below 32°F/0°C) require special equipment preparation to ensure reliability and prevent cold-related failures.

## 1.1 Winterization Checklist

Complete the following winterization tasks before cold weather operations:

• Replace fluids with cold-weather grades (engine oil, transmission fluid, hydraulic fluid)
• Install engine block heaters and connect to power source when parked
• Test battery capacity - must maintain 80% minimum charge
• Inspect and replace coolant - verify antifreeze protection to expected minimum temperature
• Check tire pressure - cold air causes pressure drop
• Verify operation of heating systems for operator compartments
• Install winter air intake filters to prevent ice formation

Reference Equipment Maintenance Manual Section 2 for detailed fluid specifications and capacities.

## 1.2 Cold Weather Starting Procedures

When starting equipment in cold weather (below 0°F):

1. Connect to shore power for block heater minimum 2 hours before start
2. Check that all fluids are appropriate cold-weather grades
3. Ensure battery is fully charged and terminals are clean
4. Glow plugs (diesel engines): activate for full cycle before cranking
5. Do not exceed 15 seconds of continuous cranking - allow 2 minute rest between attempts
6. After start, allow engine to warm to operating temperature before loading
7. Monitor gauges for abnormal pressure or temperature readings

If equipment fails to start after 3 attempts, investigate cause before continuing. Excessive cranking can damage starter motors and drain batteries.

# 2. Personnel Safety in Cold Weather

Cold weather poses significant risks to personnel including frostbite, hypothermia, and reduced dexterity. Proper procedures and PPE are essential.

## 2.1 Work/Rest Cycles in Extreme Cold

When operating in extreme cold (wind chill below 0°F), implement work/rest cycles:

• 0°F to -10°F: 50 minutes work, 10 minutes warm-up break
• -10°F to -20°F: 40 minutes work, 20 minutes warm-up break
• -20°F to -30°F: 30 minutes work, 30 minutes warm-up break
• Below -30°F: Suspend non-essential outdoor operations

Warm-up breaks must be in heated shelter. Supervisors must monitor personnel for signs of cold stress. See Safety Guidelines 2024 Section 1.2 for cold weather PPE requirements.

## 2.2 Frostbite Recognition and Response

Frostbite symptoms include:

• Numbness or tingling in extremities
• Skin appears white, waxy, or grayish
• Skin feels hard or unusually firm
• Loss of dexterity in fingers or toes

Immediate response:

1. Move person to warm environment
2. Remove wet clothing and replace with dry garments
3. Warm affected area gradually with body heat or warm water (98-105°F)
4. Do NOT rub frozen tissue - can cause permanent damage
5. Seek medical attention immediately for anything beyond superficial frostbite
6. Do NOT allow refreezing of thawed tissue

Prevention is critical - ensure all personnel have proper cold weather gear and monitor buddy system for early warning signs.

# 3. Winter Maintenance Considerations

Maintenance activities in cold weather require modified procedures and additional precautions.

## 3.1 Cold Weather Maintenance Safety

Special considerations for winter maintenance:

• Metal tools and parts can cause instant frostbite - wear appropriate gloves
• Fluids are more viscous - allow extra time for draining operations
• Use heated workspace when possible for detailed repairs
• Warm metal parts before torque application to avoid stress fractures
• Keep replacement parts at room temperature before installation
• Clean ice and snow from work area to prevent slips and falls
• Ensure adequate lighting - winter days have reduced daylight hours

When maintenance must be performed outdoors, establish windbreaks and use portable heaters to create acceptable working environment. Monitor personnel closely for cold stress symptoms.

## 3.2 Inspection Intervals in Cold Weather

Increase inspection frequency during winter operations:

• Daily fluid level checks - consumption may increase
• Battery condition check every 3 days minimum
• Tire pressure verification weekly (pressure fluctuates with temperature)
• Heating system function test before each use
• Ice accumulation inspection on cooling systems and air intakes

Refer to Equipment Maintenance Manual Section 1 for complete daily inspection procedures. Winter conditions may reveal latent defects not apparent in warmer weather.