

Maintenance doesn't stop just because the weather turns cold. Army Technique Publication (ATP) 3-04.7, Army Aviation Maintenance, states in Appendix E, Aviation Maintenance in Extreme and Demanding Environments: "This appendix provides a discussion of the impact on aviation maintenance operations within the various environments. Each environment brings unique challenges that must be anticipated and planned for by the commander and staff. Some maintenance procedures work consistently regardless of the environment; however, the majority of maintenance activities are directly affected by the environment."

Of the environments, which most are very harsh to equipment, aircraft, and personnel, cold weather operations are more equipment intensive. What should aviation commanders, crewmembers, and maintenance personnel be familiar with so their unit is ready to conduct maintenance operations in the extremes of cold weather climates?

General Cold Weather Environment Considerations:

- Cold Weather operations require a considerable amount of specialized equipment; such as tracked vehicles, sleds, heated shelters, heated facilities, and aircraft modifications. Every item of equipment is affected by extreme cold and snow in the winter.
- Helicopter operation, particularly with their inherent vibrations, in temperatures below -35 degrees Fahrenheit results in a marked increase in metal fatigue. All metals become increasingly brittle as the temperature decreases. Aircraft fatigue is evidenced by an increased number of skin cracks and popped rivets in stress areas. Careful attention must be devoted to these areas in all stages of maintenance operations. Areas to inspect on a more frequent basis for stress cracks, as a direct result of the environment include but are not limited to the following: engine decks, tail-boom hard points, and gearbox mounting points.
- Operation of aircraft at temperatures below -50 degrees Fahrenheit should not be attempted except in emergencies; unless the aircraft has the appropriate winterization kit and auxiliary systems that have proven reliable at lower temperatures. Lubrication products must be examined to determine if they are sufficient for operations in extreme cold environments.
- Unit leaders must ensure personnel and equipment can withstand the challenges of cold weather. Soldiers and their leaders must understand the effects of cold weather and adapt operations and maintenance to overcome environmental conditions. Operations in snow, ice, and extremely cold conditions require special training, personnel acclimation, and special operational techniques.
- At temperatures below -20 degrees Fahrenheit, maintenance tasks may take five times as long to complete.
- Maintenance units usually require additional personnel to offset the increased time necessary to complete maintenance tasks.

Maintenance Risks in Cold Environments:

- Personnel efficiency is reduced by bulky clothing worn in extremely cold environments.
- Losing the sense of touch (wearing gloves/mittens) further reduces the Soldier's efficiency.
- Complete winterization, diligent maintenance, and well-trained maintenance teams are crucial in reducing the adverse effects of cold weather and performing maintenance in a timely manner.
- Without some type of permanent or temporary shelter, even routine maintenance can become extremely difficult, if not impossible to perform.
- During certain times of the year, hours of daylight in a northern environment are short. Lighting equipment must be available and in sufficient quantity to furnish adequate illumination for maintenance services. Lights with ample cable extensions, attachment plugs, connectors, and spare bulbs are a necessity.

5 Questions

1. What ATP covers Army aviation maintenance?
2. Cold weather operations always require less maintenance personnel to perform a task? Yes/ No?
3. A unit doesn't have to train in cold weather to understand its effects on personnel and equipment? Yes/ No?
4. ATP 3-04.6 is the manual I can look in to find out about maintenance in a cold environment? True or False?
5. What areas should I inspect more often in cold weather environments?