

DEEP FREEZE PM

DON'T LET OLD MAN WINTER PUT THE **FREEZE** ON PM.

DRESS FOR THE JOB!

I K-K-CAN'T BE-BUH-BELIEVE HOW K-K-COLD IT IS TODAY!

MAN, YOU GOTTA **DRESS** FOR PM **SUCCESS!**



When the mercury plummets and Old Man Winter drops snow, ice and wind, you still need to fly high with aircraft PM.

Mechanics know that PM in cold, sub-zero temperatures is critical to readiness and to keeping aircraft flying high.

When winter starts to unleash its biting cold, the best action is to move your aircraft inside to perform maintenance. If you can't and you're faced with some extended time outside, use a maintenance shelter or you could rig a temporary shelter out of tentage or salvaged cargo parachute canopy. Extra care must be taken when using parachute or canvas because they can become a safety hazard in a slight breeze. Warm the shelter area with a portable duct type ground heater and observe all heater safety regulations to prevent a fire.

A WARM, VENTILATED WORK AREA WILL LET YOU GET THAT PM DONE WITHOUT THE NUISANCE OF BULKY CLOTHING AND HEAVY GLOVES.

HERE ARE SOME OTHER COLD WEATHER TIPS TO CONCENTRATE ON...



COLD FUEL - Water in fuel can form ice that blocks fuel lines. So keep fuel tanks topped off. The gap between the top of the tank and the fuel is full of cold, moist air. When that air condenses, water drips into your fuel. When you take fuel samples, drain enough fuel to get rid of all the water. Drain the sumps daily.

If you refuel an aircraft outside in freezing temperatures, always check the fuel level before moving it inside. An aircraft with a full fuel tank should not be moved into a hanger. Aircraft fuel expands with higher temperatures and opening the filler cap could give you a fuel spill to clean up.

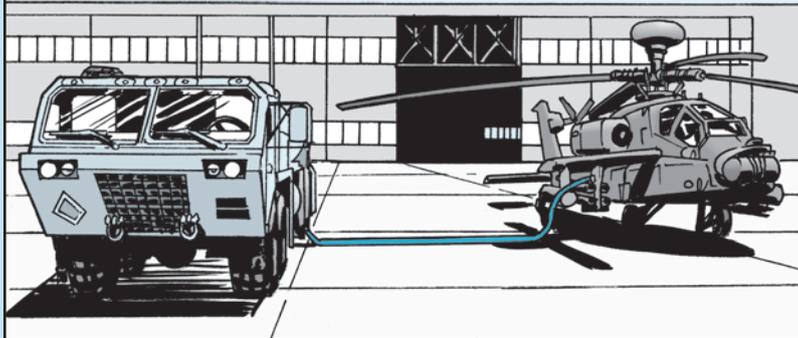
Static electricity can fire up your winter real fast, so be extremely careful during refueling. The hazards of static electricity increase as temperature and humidity drop.

Static can build up on ungrounded aircraft as frost or snow are swept from the aircraft. Fuel flowing through the filler neck can also generate a spark that ignites fuel.

PS MORE

So make sure your aircraft has three good separate grounds: (1) aircraft to ground, (2) aircraft to fuel tanker and (3) the aircraft to fuel nozzle before removing the cap. If you're freezing while refueling a bird, you might be tempted to neglect a ground. **Don't!** You must follow grounding procedures without taking any shortcuts.

Be sure nozzle, aircraft and tanker are bonded



Always ground aircraft before opening the fuel cap. Then always install the fuel cap before un-grounding. That's because sparks can shoot between the grounding cable and the aircraft.

If you're not using a closed-circuit fueling nozzle, put the regular nozzle in all the way. That keeps the danger of static down and reduces the chance for a fuel spill.

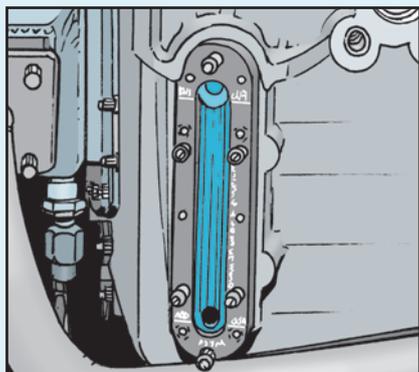
Use extra care if you have to take fuel out of an aircraft. Fuel spilled on bare skin can cause instant frostbite.

COLD OIL AND GREASE

- Fuel is not the only fluid affected by cold temperatures. As temperatures dip, oil thickens, fuel gets harder to ignite and grease gels. So you must use the right fuel and lube for cold conditions. The lube order in your TMs list the right fuel, oil and grease to use.

When you service oil systems on a stone-cold aircraft, never fill it to the brim. Otherwise, when the oil heats up, the tank will overflow.

Oil leaks are a chronic problem in winter weather. So check connections, joints and seals regularly.



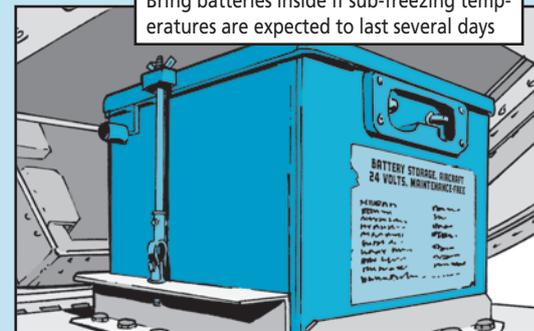
Never fill to the brim, but just below full

COLD SEALS - Cold weather is hard on seals and gaskets. When they contract due to the cold, that opens the door for leaks. Moisture can seep in around seals and freeze, and that ice can cut the seals. Make a list of your aircraft's potential seal and gasket trouble spots. Post that list next to these tips on your bulletin board.

COLD BATTERIES - Unless you're in the deep freeze for a long time, your nickel cadmium batteries will do their job without much extra effort on your part. But cold starts will shorten battery life.

So when possible, bring your batteries in from the cold if the weather prognosticator predicts several days of sub-freezing temperatures. If that's not possible, turn on the landing lights, searchlight or other components for 30 seconds before an engine start.

Bring batteries inside if sub-freezing temperatures are expected to last several days



That load will warm up the battery a bit. Always use an auxiliary ground power unit (AGPU) on the first start of the day. It prevents a lot of drain on cold batteries.



Sealed lead-acid batteries (SLAB) should be kept warm. Cold weather saps their charge much faster than it does a nickel-cadmium battery. If you bring your batteries inside, never store nickel-cadmium and lead-acid batteries in the same area. Fumes from a lead-acid battery can cause a nickel-cadmium battery to discharge.

Store the batteries on a shelf or on dunnage, because bare floors can drain batteries.



COLD TIRES - Cold reduces tire air pressure, so check your helicopter's tire pressure often like your TM says.

Tires can freeze to the ground but you can free them with liquid deicer. Move the aircraft immediately because deicer will form slush and eventually re-freeze.

Avoid parking aircraft in wet or slushy areas. Use boards, dunnage or a similar platform surface beneath tires to keep them off snow or ice. Remember, when parking on frozen earth and frozen mud, these unimproved surfaces may thaw during the day and your bird may sink. Then when the earth or mud re-freezes at night, your bird will be frozen in place.



Use dunnage to prevent tires from freezing to ground

Check your landing gear often. Use a clean rag dampened with hydraulic fluid to remove ice, dirt and grit from struts and pistons.

Service pressurized systems according to your specific aircraft maintenance manual. Remember that any moisture can freeze into ice crystals and damage seals.

Do not bend rubber hoses or rubber-coated wires while they're ice cold. Rubber gets brittle and stiff and could crack.

COLD WEATHER GUIDES

- For more information on winter maintenance operations, check out the good words in each aircraft TM. Also refer to FM 31-70, *Basic Cold Weather Manual* (Apr 68) and FM 31-71, *Northern Operations* (Jun 71).



REMEMBER: WINTER
FM KEEPS YOUR
AIRCRAFT FLYING IN
THE **COLD!**