

ENGINE OPERATION IN EXTREME COLD (CONTINUED)

3. Execute cold weather start; make after-start checks.
4. Driver: Check MASTER WARNING LIGHT - OFF.
5. Gunner: Check hydraulic pressure gage. With turret power on, pressure should be steady and show 1500 to 1750 psi. If pressure reads 1750 to 2000 psi, continue mission but notify unit maintenance as soon as possible.
6. In extreme cold weather (between 0°F, -18°C and -65°F, -54°C), HYDRAULIC SYSTEM MALFUNCTION light may activate after engine is started and stay on for up to 20 minutes until fluid warms up. If pressure is OK, and HYDRAULIC SYSTEM MALFUNCTION light goes off within 20 minutes, do not notify unit maintenance.
7. If HYDRAULIC SYSTEM MALFUNCTION light goes off, then comes back on, shut down engine and troubleshoot.
8. After extended shutdown in temperatures lower than +30°F (-1°C) with grade 30 oil, allow transmission oil to warm up for 10 minutes in neutral at 900 rpm to 1200 rpm with parking brake applied. Drive tank slowly about 100 yards (91m) before moving out. This will permit oil in drive train and suspension to warm up.

BATTERY MAINTENANCE IN EXTREME COLD

1. Tank storage batteries' available energy decreases sharply when temperatures fall. Unless storage batteries are warmed to about 35°F, they do not begin to receive an adequate charge from the generator.
2. In constant cold weather batteries should be tested for state of charge every three days. Electrolyte may freeze and battery cases will crack if specific gravity is not maintained at 1.1250 or greater. Top off electrolyte as needed.

BATTERY MAINTENANCE IN EXTREME COLD (continued)

3. For more information on operations and maintenance of lead-acid storage batteries, refer to TM 9-6140-200-14.

OPTIC MAINTENANCE S IN EXTREME COLD

1. Inspect fire sensor lenses for frost/condensation frequently.
2. Keep optics clear of frost/condensation.
3. Keep ballistic doors closed on fire control optics during inactivity.

OTHER COLD WEATHER OPERATION PMCS

1. If operating with hatches closed, turn main NBC system on for about 5 minutes every hour to prevent carbon monoxide buildup.
2. Fuel filters should be drained before topping off tanks. Keep tanks as full as possible during extreme cold operations. Condensation can freeze and block lines.
3. Tank should be equipped with air intake and exhaust grille covers. If operation is required in extreme cold, it is necessary to start the engine every few hours. If grille covers are not available, use tarpaulins to cover grille.
4. Keep close eye on air cleaner indicator or filter clogged light. Wet filters may freeze and starve engine.
5. If tank is equipped with EAPU, make sure unit has been prepared as described in FM 9-207. Become familiar with FM 31-70, FM 31-71, and FM 90-6 before extreme cold weather operation.
6. Check pressure on fixed Halon extinguishers. At 30°F (-1°C) minimum pressure is 550 psi. At 0°F (-18°C) minimum pressure is 470 psi. At -50°F (-45°C) minimum pressure is 360 psi.

TURRETOTHER COLD WEATHER OPERATION PMCS (continued)

7. At -40°F (-40°C) track slack should be 50% greater than that specified for normal operating climate.

OPERATION IN EXTREME COLD

1. During extreme cold weather (between 0°F, -18°C and -65°F, -54°C) follow warm-up procedure before operating fire control system in normal mode.
2. Ammunition brought in from outside should be allowed to warm up inside turret before use (if tactically possible).
3. Frost will form inside barrel chamber at extreme cold temperatures. Frost may become thick enough to insulate firing circuit from round. Inspect and clean chamber with artillery chamber brush when needed.
4. Exercise gun regularly during long periods of extreme cold. Elevate and depress main gun 20 times and then traverse right or left through 5 revolutions.
5. Check for smooth operation of CWS.
6. Check Gunner's Auxiliary sight for condensation/frost.

GTA # 43-01-110

M1A1 TANK COLD WEATHER OPERATIONS

This abbreviated checklist is not to be used as a Replacement for the -10 series Tech Manuals or any Other PMCS guide.

FM 9-207/TO 36-1-40 contains general guidance for operations and maintenance of material in cold weather.

TM 9-2350-264-10-1 & 2 contains detailed PMCS instructions for proper cold weather maintenance and operation.

Note: The tank must be especially prepared for operating in extreme cold temperatures (0°F, -18°C to -65°F, -54°C). In extreme cold, the fluid in the washer, even with antifreeze added, can freeze; electrolyte can freeze and batteries cases can crack; oil can get so thick it won't pour; grease gets as stiff as cold butter; and rubber gets so hard it will crack or break easily.

ENGINE OPERATION IN EXTREME COLD

1. Watch panels closely. If any unusual readings occur, stop tank and engine. Check immediately if tactically possible.
2. Perform hydraulic zero pressure check.

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Distributor: U.S Training Support Center
June 2006