SEASONAL MAINTENANCE

COLD WEATHER MAINTENANCE

Cold weather and freezing temperatures normally occur each year in most of North America and much of the rest of the world. In some areas, however, cold weather is usually not considered a matter of concern. Temperatures in these areas seldom reach freezing, and, when they do, they remain there for a relatively short period of time, usually no more than a few hours.

Such lack of concern may not be justified. Loss experience illustrates that shifts in the jet stream can cause bitterly cold arctic air masses to press deeply into the warmer climes, sustaining freezing temperatures for periods of several days. At the same time, these unusual arctic air masses may cause temperatures in normally cold areas to drop far below freezing for periods of up to three weeks.

Facilities located in all but tropical areas (latitude less than 23.5°) must carefully consider precautions to be taken before the cold-weather season each year. Unless proper precautions are taken, cold weather can cause problems. Building roof and structural systems may be loaded beyond their design by snow and ice accumulations. Sprinkler piping and fire mains may freeze, leaving major portions of a facility without fire protection. Pipes can burst and cause liquid damage. Boiler feed and condensate systems can freeze, rendering the major heat source inoperative and perhaps even causing it to be damaged by dry firing or freezing.

Prior to and during cold weather, take the following precautions:

- General
  - Plan ways and obtain equipment to remove snow from flat roofs or other structures which might collapse.
  - Make all doors, windows, skylights, ventilators, and other openings weather tight so they will not admit cold air that could cause water piping, radiators or sprinkler systems to freeze.
  - Install antifreeze, heat or steam tracing, or simple and effective means for draining all exposed service, process and fire protection lines and vessels such as air conditioning or compressor cooling jackets or heat exchangers which may contain water, condensate or solutions subject to freezing. Equipment in penthouses and other out-of-the-way areas needs particular attention.
  - Water can accumulate in service and instrument air and process-gas line low points. Such accumulations might not rupture the piping when they freeze, but they will block or reduce flow. Locate and eliminate, drain, or freeze-protect these low points.
  - Boiler, pressure vessel, and tank vent and safety or relief valve discharge lines often terminate outside of buildings or at least outside heated spaces. Pitch these lines so that they gravity drain to the warm area if possible, otherwise, provide antifreeze or auxiliary heating.
- Heating Systems
  - Examine all systems and correct any deficiencies to ensure the systems are in proper operating condition. Clean and service burners, boilers, and flues. Remove any obstructions from pipes, radiators, and unit heaters. Test heating equipment controls for proper operation.
  - Where possible, keep an adequate reserve supply of fuel on hand at all times. Investigate safe alternative energy sources.

- Maintain temperatures above 40°F (4°C) at all times in buildings equipped with wet pipe sprinkler systems, domestic water, or any other water-filled systems; in all dry pipe, pre-action, and deluge valve closets; and in all pump houses.
- Maintain clearances between heating system components and combustible floors, walls, partitions, platforms, and stock.

- Fire Protection Systems

NOTE: Some of the following maintenance procedures involve valve operation or other activities that will impair fire protection systems. Proper procedures should be followed in all such cases (see PRC.1.1.0).

- Plans to clear snow promptly from access ways, control valves, hydrants, hose cabinets, and other essential equipment to permit effective operations during an emergency.
- Convert wet pipe sprinkler systems in areas which are inadequately heated to dry pipe or pre-action systems.
- Remove any condensation that collects in low points in the dry pipe or pre-action sprinkler piping. Also remove any excessive priming water.
- Test solutions in all antifreeze sprinkler systems and add antifreeze as necessary.
- Convert any “shut-in-winter” systems to either a dry pipe or a pre-action system.
- Shut off, drain, and tag all wet standpipe systems that have piping located in areas subject to freezing.
- Properly drain water motor gongs, piping, and fire department pumper connections.
- Repair leaking gravity tanks.
- Flush tank heating systems and place them in good working order.
- Drain hydrants and fire pump hose headers. Leave outlet hose valves half open to prevent freeze damage.
- Properly drain hose.
- Check post indicator valves for leaky packings and repair them where necessary.
- Ensure valve and meter pits are dry and frost proof.
- Properly service automotive fire apparatus for winter.

- Freeze Protection System Maintenance
  - Inspect heat tracing equipment. Replace any cracked or deteriorated heating tape. Service traps in steam tracing systems.
  - Review all work packages in the backlog to ensure that any out-of-service protective equipment is promptly restored.
  - If any equipment is to be shut down during the cold season, plan in advance and provide any needed extra freeze protection.

WARM WEATHER MAINTENANCE

During more temperate periods of the year, there are a number of preventive maintenance steps that should be taken:

- General
  - Remove grass and brush from around such hazards as combustible gas or liquid storage tanks or metering stations, transformers, and switchgear.
  - Clean obstructions from roof drains.
  - Inspect and, where necessary, repair roof coverings and flashings.
  - Inspect and service lightning protection systems (see NFPA 780) and electrical grounds.

- Inspect screens and fences and otherwise survey outdoor transformers and switchgear for indications of animal entry.
- Inspect and service seasonal cooling water, air conditioning and refrigeration systems well in advance of anticipated use.
- Clean and service boilers; arrange for certificate inspections where applicable.

- Fire Protection Systems

NOTE: Some of the following maintenance procedures require valve operation or other activities that will impair fire protection systems. Follow proper procedures in all such cases (see PRC.1.1.0).

- Lubricate, close, and reopen all fire protection valves.
- Flush out private hydrants and check them for proper drainage. Lubricate each operating mechanism.
- Check dry pipe valve system piping for obstruction in accordance with NFPA 25. If the quantity of debris is excessive, flushing is required.
- Examine internally at five-year intervals check valves, backflow preventers, meters, and pressure regulators, and clean as necessary. The health department having jurisdiction might also require tightness testing for backflow preventers and double check valve installations.
- Cut high grass around all outside fire protection equipment.
- Paint gravity and suction tank interiors and exteriors if inspections indicate this is needed. Inspect cathodic protection systems and repair them as needed. If tanks are filled from a raw water source, clean them to remove collected residue from the tank bottom riser.
- Clean open reservoirs and suction cribs.