

COLD WEATHER PROTECTION

1.0 SCOPE

This Performance Assessment Guide for Cold Weather Protection will be used to carry out the oversight responsibility of the U.S. Department of Energy (DOE) Brookhaven Group. This guide was prepared to assist in conducting performance-based assessments of both DOE prime contractors and subcontractors to ensure that their cold weather protection program identify, disposition, and take corrective action on issues that affect satisfactory facility performance. The goals are to ensure that laboratory employees and the public do not experience injuries and illness as a result of cold weather protection safety activities and that there is little or no economic loss to the Government.

Cold weather protection assessments will be directed at all prime contractors and subcontractors working at DOE sites. DOE line management must ensure that these contractors comply with DOE Orders and Federal and State regulations. Information developed from this assessment will determine the degree to which this is being done as well as the effectiveness of the laboratory's program.

2.0 ATTRIBUTES AND LINES OF INQUIRY

This section provides lines of inquiry to help assess whether the laboratory has implemented a program that ensures that cold weather protection requirements are incorporated into line activities. This section will be used to evaluate the laboratory's line organization.

2.1 The laboratory has effectively implemented a program to protect safety-related systems against extreme cold weather.

- Is there a documented process to identify and prioritize issues?
- Is there an effective process to develop and independently validate corrective action plans?
 - Does the process include long-term monitoring to ensure that the corrective action is effective?
 - Does the process have measures that ensure that corrective actions remain in force and effective?

- Are lessons learned from incidents communicated quickly and acted on?
- Is there any oversight of the dissemination and use of lessons learned?
- Are freeze-damage incidents reported in ORPS? What criteria are used for "reporting" under occurrences?

2.2 A cold weather checklist has been completed by the laboratory to ensure that exposed instrumentation and piping are adequately protected from seasonal and sudden cold weather.

2.3 Before and periodically during cold weather, the laboratory has calibrated and tested instrumentation associated with heat tracing, space heaters, and thermostats in accordance with the laboratory's Cold Weather Protection Program.

2.4 The laboratory has inspected systems susceptible to cold weather effects.

- Are heat tracing, space heaters, and/or insulation installed on susceptible systems?
- Are thermostats properly set?
- Have heating circuits been energized via electrical current flow indications rather than circuit energized (i.e., power available) indication?

2.5 The laboratory has determined, during periods of prolonged shutdown, that areas that are no longer kept warm by normal plant operations are adequately protected.

2.6 Cold weather protection nonconformances identified by outside inspections and from within the laboratory organizations during the previous year have been corrected before the start of cold weather.

- Are proposed modifications to correct or enhance freeze protection capabilities appropriately prioritized and scheduled before the start of cold weather?

2.7 The laboratory's freeze protection annunciator response procedures have sufficient immediate and supplementary actions to preclude freezing in the event of a failure of the freeze protection system.

- Have the effects of a failure of a single train of a nonsafety-related freeze protection system on safety-related systems been evaluated?

- If a safety-related system can be adversely affected, has the laboratory determined whether adequate compensatory measures are established for such a failure?

2.8 A freeze protection plan, as required by DOE 4330.4B, is provided for each facility. As a minimum, does it ensure that:

- Heating systems in all facilities are cleaned, serviced, and functionally tested?
- Antifreeze used in cooling systems is checked and replaced as necessary?
- Heating system power and temperature controls are protected against inadvertent deactivation by unauthorized personnel?
- Someone has specific responsibility, during on and off shifts (including weekends and holidays), for monitoring the temperatures in facilities?
- All air intakes, windows, doors, and other points of access that could provide abnormal inflows of cold air will be secured? Are automatically controlled systems of this type functionally tested?
- Plans exist for alerting personnel and providing increased surveillance in periods of extreme, unusual, or extended cold? Are personnel on call to respond to such events?
- Systems requiring or deserving special protection due to hazards or costs associated with freeze damage have temperature alarms or automatic backup heat sources or both?
- Site personnel have inspected, tested, and staged portable auxiliary heaters and have identified sources to obtain more, if needed? Are personnel trained in the safe operation of portable heaters?
- The main water supply shutoffs for each facility are identified, tested, and readily accessible to emergency personnel responding to a freeze/thaw accident?
- Outside storage pads and unheated storage areas are inspected to ensure that they contain no materials susceptible to freeze damage?
- Employees are aware of the need to identify and report any suspected problem with heating equipment or other cold weather protection equipment?
- Cold weather gear is available for emergency personnel?

- Procedures have been developed for implementation and suspension of cold weather protection measures to ensure proper approval and review of the Under Secretary Memo on Freeze Protection dated 25 October 1991?
- Provisions are made to remove cold weather protection features after the freezing period is over, including appropriate verification of removal?
- Wet pipe sprinkler systems have been reviewed for areas susceptible to freezing, and appropriate actions have been planned (such as provision of auxiliary heat, training and posting a fire watch)?
- Contingency plans have been prepared for temporarily curtailing operations in those facilities that are likely to sustain freeze damage when unusually severe weather is expected?

2.9 Records are kept to reflect the historical performance of the cold weather protection program.

- How many instances were there during the previous winter in which equipment (of any type, any dollar amount) did not operate as intended or was damaged due to freezing?
- Were there any instances in which freeze protection equipment caused an incident through either poor design, improper use, or unexpected interference with some other system?
- Were any of the incidents repeat occurrences?
- Did site performance last winter indicate that the site's cold weather protection program is effective?

2.10 The site cold weather protection program is properly documented.

- Is there a formal (written and approved) sitewide cold weather protection program?
- Does the program include detailed procedures containing directions, requirements, duties, and responsibilities?
- Are the procedures known to the workforce and used?
- Do procedures cover normal operating conditions and off-normal conditions such as loss of power?
- Do procedures identify special actions based on adverse extended weather forecasts?

2.11 There is accountability for the cold weather protection program.

- Are the individuals responsible for freeze protection for every building, system, and piece of equipment at the site specified by name, in writing, and is the list maintained current?
- Are these people aware of their responsibility and are they held accountable?
- Are responsible individuals able to recognize problems and take necessary corrective actions to correct deficiencies?
- Are there compensatory provisions for backshifts and holiday periods when normally manned stations are not manned?
- Is there any independent oversight of the cold weather protection program?
- Do responsible site managers and personnel physically inspect all systems susceptible to freezing?

2.12 There is engineering awareness of the cold weather protection program.

- Are cognizant engineers aware of the heat tracing status of their systems?
- Are freeze protection requirements included in all new designs and in modifications to existing systems?
- Are freeze protection designs reviewed to ensure that they will not interfere with other operations?
- Are existing systems periodically reviewed to determine the adequacy of freeze protection?
- Is there a cold weather "design" temperature for the site?
- Is there any special review of systems that have been subject to change or modification during the past year to determine if cold weather protective measures have been reestablished?

2.13 There is a maintenance program for freeze protection systems.

- Are freeze protection systems included in preventive maintenance programs?

- Are protection systems activated, inspected, serviced, and tested before the cold weather season?
- Are protection systems inspected, serviced, and deactivated after the cold weather season?
- Is this work assigned as a safety priority, firmly scheduled, and tracked?

3.0 STANDARDS AND REQUIREMENTS

3.1 Specific DOE Orders and Standards.

- DOE O 200.1, "Information Management Program."
- DOE O 232.1A, "Occurrence Reporting and Processing of Operations Information."
- DOE 2300.1B, "Audit Resolution and Followup."
- DOE 2321.1B, "Auditing of Programs and Operations."
- DOE 4330.4B, "Maintenance Management Program."

3.2 Other Resources.

- *Nuclear Regulatory Commission Inspection Manual*, Inspection Procedure 71714.
- Under Secretary Freeze Protection Memorandum dated October 25, 1991.

4.0 GUIDANCE TO ASSESSOR

This assessment guide is intended to assist in conducting a performance assessment of cold weather protection. It is not to be considered as all-inclusive, inflexible, or limiting reasonable assessment concentration when lines of inquiry responses dictate that an area must be more thoroughly probed.