



# Inspection and Testing of Water-Based Systems

## Standard Model/Computer-Based Testing

### Level I Content Outline

*The candidate for NICET certification at Level I in the Inspection and Testing of Water-Based Systems should have the knowledge and experience to:*

Under direct supervision, identify components of wet and dry pipe sprinkler systems and inspect those components, except for sprinklers, for visible evidence of damage or reduced functionality; identify components of standpipe systems; and record observations.

**There are two exams listed at Level I; both are required for certification at Level I.**

*Note: For each exam, the skills and knowledge listed under each task are suggestive of those involved in that task, but are not intended to constitute an exhaustive listing.*

## Test # 10017: Level I Inspection and Testing Fundamentals

### 1.1 Inspection

*(Questions related to these tasks makeup 85- 89% of the exam)*

#### 1.1.1 Identify the components of wet and dry pipe sprinkler systems & standpipe systems; identify their functions; and determine the numbers of various components in a particular system. (e.g.: valves, pumps, risers, switches, etc.)

##### **Knowledge:**

NFPA 25:3.5 and 3.6

Function and purpose of differential dry pipe valves in a system

Visual characteristics/appearance of each of the types of components of a sprinkler system

Visual characteristics/appearance of each of the types of components of a standpipe system

##### **Skills:**

Identify various types of valves and their roles in a system.

Identify types of fire pumps.

Identify system risers, mains, branch lines, and all other system components.

Identify sprinkler heads, but not types of sprinklers.

Locate and read gauges.

#### 1.1.2 Visually inspect for external damage and visually apparent operational deficiencies, wet and dry pipe system components (except for sprinklers), including gauges, control valves, pipe and fittings, alarm devices, hangers and

**braces, fire department connections, backflow assemblies, wet alarm valves, dry pipe valves, check valves, quick-opening devices (QODs), and main drains.**

##### **Knowledge:**

NFPA 25: 5.2 (except sprinklers)

External characteristics of various components of wet and dry pipe sprinkler systems

External indicators of damage or deficiency

Units of pressure

##### **Skills:**

Use NFPA 25: Table 5.1.1.2 to determine inspection frequencies.

Read pressure gauges on risers and note whether readings are within the expected range.

Check gauges for damage.

Visually inspect pipes and fittings for leaks or damage.

Visually inspect sprinklers for obvious physical damage.

Identify alarm devices, and verify that they are connected.

Visually inspect hangers and braces for damage or deficiencies.

Visually inspect fire department connections for damage or deficiencies.

Perform a visual external inspection of backflow assemblies for damage or deficiencies.

Perform a visual external inspection of wet alarm valves, dry pipe valves, and check valves for damage or deficiencies.

Perform a visual external inspection of quick opening devices for damage or deficiencies.



Perform a visual external inspection of a main drain for damage or deficiencies.  
Report findings to a Level II or III inspector.

### 1.1.3 Visually inspect control valves, other than post indicator valves.

**Knowledge:**

NFPA 25: 13.3.1, 13.3.1.1, 13.3.1.3, 13.3.1.4, 13.3.2  
Internal functioning of control valves, including OS&Y, Butterfly, and Wall Post Indicator  
External operation of control valves  
Methods of valve identification  
Signs indicating function  
Supervisory methods

**Skills:**

Visually confirm that the valve is in the correct position (open or closed)  
Identify any signs of leakage or valve damage.  
Verify that the parts necessary to operate the valve are present and functional.  
Verify that supervision is in place.  
Verify clear access to valves

### 1.1.4 Inspect signage for proper mounting and legibility.

**Knowledge:**

NFPA 25: 4.1.8, 4.1.9, 5.2.8, and 13.3.1

**Skills:**

Verify that existing signage is properly attached and legible.

## 1.2 Testing

*(Questions related to these tasks makeup 11- 15% of the exam)*

### 1.2.1 Retrieve equipment, upon request, for various testing functions.

**Knowledge:**

Names, appearances, and functions of standard test equipment for water-based systems

**Skills:**

Identify, by name and by function, standard pieces of test equipment.

## Test # 10018: Level I Work Practices

### 1.3 Documentation

*(Questions related to these tasks makeup 18- 22% of the exam)*

#### 1.3.1 Make a preliminary record of the number and locations of devices personally inspected.

**Knowledge:**

Sprinkler system terminology  
Terminology related to building spaces and structural elements

**Skills:**

Categorize and record the numbers of various types of components in an existing sprinkler system.  
Record any deficiencies and/or impairments.  
Record sizes, makes, and models of deficient or impaired components.

#### 1.3.2 Make a preliminary record of inspection and test results as dictated by Level II and III personnel.

**Knowledge:**

NFPA 25: 4.3, 4.4, 4.5

Terminology and units of measure used in inspection and testing

Type of data that must be collected during inspection and testing activities covered under NFPA 25

**Skills:**

Use fire protection terminology.

Make an informal record of inspection and testing activities and results on appropriate NFPA 25-based forms.

Communicate clearly, both verbally and in writing, to describe and document conditions and problems.



## 1.4 Safety

*(Questions related to these tasks makeup 38-42% of the exam)*

### 1.4.1 Identify worksite safety hazards.

**Knowledge:**

Requirements for safety training per OSHA 29 CFR, 1910  
Hazards associated with ladders per OSHA 29 CFR, 1910.27  
Hazards associated with worksite activities, equipment, materials, or environment  
Sources of information about any hazardous chemicals at a worksite  
Spaces considered confined spaces as defined by OSHA 29 CFR, 1910.146  
Situations requiring fall protection per OSHA

**Skills:**

Identify hazards that may be encountered at a worksite.  
Identify situations in which fall protection should be used.  
Identify a confined space at a worksite.  
Consult with owner about hazardous conditions (e.g. electrical, chemical, radioactive, etc).  
Recognize and locate MSDS sheets.  
Properly use ladders and lifts.

### 1.4.2 Properly use personal protective equipment.

**Knowledge:**

Requirements for safety training per OSHA 29 CFR, 1910  
Work site hazard protections offered by hardhats, safety shoes, gloves, eye protection, ear protection, and respirators  
Defects that impair the effectiveness of personal protective equipment

**Skills:**

Properly use PPE under various work site conditions.

### 1.4.3 Identify and respond properly to locked-out/tagged-out devices.

**Knowledge:**

Reasons for, and restrictions imposed by, lock-out/tag-out  
OSHA 29 CFR, 1910.147 (a)(1)(i)

**Skills:**

Recognize the devices and methods used for locking out control valves, electrical switches/circuit breakers, and other jobsite equipment.

## 1.5 Work Management

*(Questions related to these tasks makeup 38-42% of the exam)*

### 1.5.1 Utilize codes and standards, communicate about inspection and testing work, and identify the responsibilities of various roles related to inspection and testing.

**Knowledge:**

Terminology as used in NFPA standards  
Scope of NFPA 25  
Inspection terminology  
NFPA 25: Chapter 4  
Responsibilities of the inspector, tester, contractor, owner, and AHJ  
Sources of, and the relationship between, codes and standards

**Skills:**

Locate inspection and testing information in NFPA 25.  
Identify the responsibilities of inspectors, testers, contractors, owners, and AHJs.

### 1.5.2 Determine the location of components and identify accessibility problems.

**Knowledge:**

Devices and components associated with various systems  
Accessibility requirements for inspection procedures

**Skills:**

Identify the systems that devices or components may be a part of.  
Identify and recommend solutions for accessibility issues.  
Identify the number and types of different systems at the facility.