

**Special Hazards Systems****Level II Content Outline****Associate Engineering Technician**

The candidates for NICET certification at Level II in Special Hazards Systems should have the knowledge, experience and basic skills needed to work in the industry. Under limited supervision of a qualified technician, they inspect, maintain, repair, install, perform functional tests on, commission, and apply basic specifications and standards to the placement and configuration of components in gaseous, dry, and wet agent systems. Level II technicians have at least 2 years of experience in special hazards systems.

2.1 Inspection, Testing, and Maintenance

(Questions related to these tasks make up 22-28% of the exam.)

- 2.1.1 Verify integrity of detection and control system circuits. 3, 4, 13
- 2.1.2 Conduct a smoke detector sensitivity test. 3
- 2.1.3 Test notification devices for audibility. 1, 3
- 2.1.4 Install firmware upgrades on system devices. 3
- 2.1.5 Arm and disarm systems. 1, 3, 4, 11
- 2.1.6 Visually inspect foam systems for damage or conditions that could limit proper functioning. 9, 10
- 2.1.7 Check storage tank liquid level and collect foam concentrate sample for lab analysis. 9
- 2.1.8 Conduct a room integrity test. 4
- 2.1.9 Perform a sequence-of-operations test. 3, 4
- 2.1.10 Verify whether container's agent quantity and/or pressure is within the allowable range. 1, 4, 11
- 2.1.11 Test a system's emergency standby battery power supply. 3

2.2 Repair and Recharge

(Questions related to these tasks make up 10-16% of the exam.)

- 2.2.1 Troubleshoot electrical circuitry. 3, 4, 13
- 2.2.2 Conduct testing (e.g., leak, hydrostatic, visual requalification) of cylinders and hoses. 1, 4, 11, 12
- 2.2.3 Recharge clean agent cylinders. 4, 5
- 2.2.4 Recharge foam system tanks. 9
- 2.2.5 Conduct foam bladder integrity tests. 9
- 2.2.6 Replace damaged electrical system components (e.g., smoke detectors, batteries, notification appliances, optical flame detectors). 3, 4, 13

2.3 Installation

(Questions related to these tasks make up 32-38% of the exam.)

- 2.3.1 Terminate wiring at panels and devices. 3
- 2.3.2 Test the integrity of installed wire for ground faults and adequate insulation. 13
- 2.3.3 Install piping for a special hazards system. 4
- 2.3.4 Address field devices (e.g., smoke detectors, relays, monitor modules, control modules, initiating devices, notification devices). 3
- 2.3.5 Program detection devices for sensitivity. 3
- 2.3.6 Set flame detector viewing angles according to system plans and site conditions. 1, 4
- 2.3.7 Actuate and verify operation of electrical detection and control devices during pretesting and commissioning. 4, 10
- 2.3.8 Actuate and verify operation of mechanical devices during pretesting and commissioning. 1, 4, 11, 12, 14, 15
- 2.3.9 Install foam system control valves and proportioning equipment. 10
- 2.3.10 Conduct pipe-puff and pressure tests. 4



- 2.3.11 Verify air transport times and suction pressures of an air-aspirating high-sensitivity smoke detection system. ³
- 2.3.12 Perform a sequence-of operations test at commissioning. ^{1, 3, 4, 10}
- 2.3.13 Perform a final acceptance test (other than concentration) for an AHJ. ^{1, 3, 4, 11}
- 2.3.14 Install wiring for a special hazard system. ^{3, 4, 13}
- 2.3.15 Confirm installation of room integrity products (e.g., door sweeps, door closers, weather stripping, fire bags, firestopping). ⁴

2.4 System Design and Configuration

(Questions related to these tasks make up 11-17% of the exam.)

- 2.4.1 Determine wiring and protection requirements for fire protection circuits. ^{4, 13}
- 2.4.2 Conduct a site survey. ^{1, 4, 11, 14}
- 2.4.3 Determine spacing and placement requirements for a site's fire protection system components. ^{1, 4}
- 2.4.4 Select and lay out piping and restraints. ^{1, 4, 7}

2.5 Work Management

(Questions related to these tasks make up 2-8% of the exam.)

- 2.5.1 Prepare requests for information. ⁶
- 2.5.2 Compile submittal documents. ^{4, 6}
- 2.5.3 Obtain permits. ^{5, 8}
- 2.5.4 Coordinate system installation work with other trades on-site. ^{4, 6}
- 2.5.5 Prepare for work tasks. ⁴
- 2.5.6 Prepare project close-out documentation. ⁴

2.6 Safety

(Questions related to these tasks make up 5-11% of the exam.)

- 2.6.1 Recognize dangers associated with specific special hazard system types. ^{1, 4}
- 2.6.2 Practice special safety precautions for CO₂ discharge testing and inert agent discharge testing. ⁶

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footnote number is linked to a reference on the Selected General References listing