



**NATIONAL INSTITUTE FOR CERTIFICATION
IN ENGINEERING TECHNOLOGIES®**

Providing Certification Programs Since 1961



**Testimony for the
Senate and House Veterans Affairs & Emergency Preparedness Committee
September 24, 2018**

**Chip Hollis
Communications Director
National Institute for Certification in Engineering Technologies**

**Location:
Pennsylvania State Senate
Senate Veterans & Emergency Preparedness Committee Room
Harrisburg, PA 17120**

www.nicet.org

Good morning Chairman Vulakovich, Vice-Chair Mensch, Senators, Representatives and distinguished guests. I am Chip Hollis, Communications Director of the National Institute for Certification in Engineering Technologies; more commonly known as NICET. [Exhibit 1] I want to start by thanking the Chairman, Vice-Chair and committee members for this opportunity to speak with you today regarding NICET's work and Senate Bill 1178, which would provide for licensure of fire equipment service companies and technicians.

First, a bit about NICET. Founded in 1961, NICET is a global leader in providing recognition of qualified technology professionals who can reliably apply requisite principles and practices for the benefit and safety of the public. Its mission is to provide an independent evaluation of technical knowledge and experience among those working in the fields of engineering technology; define and support career paths for engineering technologists and related disciplines; and ensure recognition and continued professional development of certified individuals. Since its founding, over 148,000 technicians and technologists have met NICET's rigorous certification criteria, and that number continues to grow as more employers and state and local governments rely on NICET certification to measure the qualifications of their workforce.

Certification is a term that is sometimes used interchangeably with other credentials. Here are a few to ensure an understanding of NICET's role in the marketplace.

- Certificate Programs and Training
 - Intended to teach students job-related skills and knowledge, and could include a test. Good training is vital to developing a qualified workforce.
- Diploma
 - Awarded for successfully completing coursework (high school, college, etc.)
 - Earning a diploma shows commitment, demonstrates a capacity to learn, and indicates knowledge in the subject area.
- License
 - An authorization to practice awarded by a government agency. Licensing typically assigns a level of legal responsibility. Licensing requirements can include, training, diplomas, examinations, experience, and continuing education.
- Accreditation
 - A business entity, program, location, school, contractor, facility, or certification body meeting a minimum quality standard. Requirements vary by industry and can include documentation, training, quality improvement, testing, professional certification.
- Professional Certification
 - Measures knowledge and skill for individuals and distinguishes the qualified from the not-yet qualified. Sometimes used for licensing requirements.

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The key features that distinguish NICET as professional certification include:

- Third-party independence
 - Individual certification decisions are not influenced by membership bodies, industry associations, manufacturers, contractors, or government agencies.
- Multi-faceted requirements
 - Knowledge is achieved by passing an exam or exams.
 - Experience documentation is compared to an industry-set minimum standard.
 - Candidates must demonstrate an ability to meet a set of industry determined Performance Measures.
 - Levels III and IV require a personal recommendation from a qualified individual who can attest to the technical quality, responsibility, and ethics demonstrated by the candidate.
 - Level IV requires the candidate to submit a write-up that describes their lead role in a project demonstrating senior-level engineering technician capabilities and responsibilities.
- Recertification
 - Certified individuals must recertify every three years by accumulating a minimum of 90 Continuing Professional Development (CPD) points. Points can be accumulated in the following categories: Active Practitioner (max 72), Additional Education (max 72), Advance Profession (max 45), NICET certification activity (max 90), certification exam (max 45).
- Career Track
 - NICET's career track features up to four levels of progression in knowledge experience and performance. Candidates and employers use the levels to map career paths and incentives. Agencies and specifiers use the levels to ensure proper qualifications for defined roles.
- Code of Ethics [Exhibit 2]
 - All candidates must agree to abide by the NICET code of ethics.
- Suspension and Revocation
 - NICET can and does suspend and revoke certification for code of ethics and other violations after a due process.
- Vendor Neutral
 - NICET certifications are not based on any particular manufacturer's equipment or tools.
- Consensus Program Development
 - Exams, work experience, and performance requirements are developed by working technicians, engineers, and related functions from a variety of organizational and work environments.
- Training and Education
 - Training and education is vital to developing a qualified workforce. Training can come from a variety of sources from on-the-job to formal degree programs.

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Any training that teaches industry best practices will help candidates prepare for NICET certification. NICET intentionally does not provide training to avoid any implication that we “teach to the test.”

NICET’s Fire Protection Engineering Technology certification programs were designed for engineering technicians working in the fire protection industry who engage in one or a combination of the following activities related to fire alarm systems, water-based suppression systems and special hazards suppression systems: layout (design), equipment selection, installation, acceptance testing, system trouble-shooting, system maintenance and servicing, inspections and testing, and technical sales. Complete program-specific details are provided as [Exhibit 3].

Our exams are administered on computers at Pearson Vue Testing Centers, which has hundreds of locations across the United States. Candidates may schedule as early as next day, have flexible dates and appointment times, and receive results immediately after completing the exam. Successful certification candidates receive a certificate, wallet card and approval letter by mail. The NICET website provides a lookup feature to verify active certification holders.

NICET certification programs are developed in accordance with industry standards [Exhibit 4]. Our efforts incorporate the overarching concepts of fairness (no bias), validity (covers the right material), reliability (gets the same results on multiple attempts), and legal defensibility. To give you a brief overview, there are ten phases of NICET’s program development process: practice analysis, industry validation, test design, item (question) writing, item editing and SME review, form development, cut score setting, development of work experience requirements, publishing of the finalized exam, and ongoing review. Each phase is carried out by teams of industry experts, to ensure that content is comprehensive and that certified individuals meet an industry-accepted measure of knowledge, experience and performance for the benefit of public health, safety and welfare.

Rigorous standards for NICET certification, and NICET’s long, positive track record of successful certification are why we welcome NICET certification’s inclusion in Senate Bill 1178.

Thank you for your time today, and I look forward to answering any questions you may have.

www.nicet.org



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CHARLES E. HOLLIS, Jr.

Charles “Chip” Hollis is the Director of Communications for NSPE’s National Institute for Certification in Engineering Technologies (NICET). At NICET, he is responsible for all internal and external communications. Mr. Hollis is instrumental in developing online capabilities and electronic communications including online access to records and online applications. He regularly presents the role and value of NICET certification at local, state and national events. He is a valued member of NICET’s Management Team, NSPE’s Content Strategy group, Technology Council, and Management Council. Prior to joining NICET in 2006, most of his career was in various marketing roles in the non-profit sector, and a three-year period as a consultant providing financial analysis for telecommunications clients.

Mr. Hollis holds a B.S. degree in Business Administration: Marketing from California State University, Long Beach.

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Code of Ethics

NICET-certified engineering technicians and technologists recognize that the services they render have a significant impact on the quality of life for everyone. As they perform their duties and responsibilities on behalf of the public, employers, and clients, they shall demonstrate personal integrity and competence. Accordingly, certificants shall:

1. Have due regard for the physical environment and for public safety, health, and well being. If their judgment is overruled under circumstances where the safety, health, property, or welfare of the public may be endangered, they shall notify their employer, client, and such other authority as may be appropriate. An employee shall initially express those concerns to the employer.
2. Undertake only those assignments for which they are competent by way of their education, training, and experience.
3. Perform their duties in an efficient and competent manner with fidelity and honesty.
4. Admit and accept their own errors when proven wrong and never distort nor alter the facts in an attempt to justify their decisions.
5. Avoid conflicts of interest whenever possible. When unavoidable, they shall disclose to their employer or client, in writing, any action that might create the appearance of a conflict of interest.
6. Avoid receiving and granting bribery in all its forms.
7. Strive to maintain their proficiency by updating their technical knowledge and skills in engineering technology.
8. Not misrepresent or permit misrepresentation of their own or their associate's academic or professional qualifications nor exaggerate their degree of responsibility for any work.
9. Not reveal facts, data, or information obtained in connection with services rendered without prior consent of the client or employer except as authorized by law.

Fire Alarm System Program Information

Technician Profile

Application Package (fees, certification requirements, experience forms, performance measures, and Level IV major project guidelines)

Exam Content Outlines

References Material used during program development

Exam Information (number of questions, time allotted)

Fees (application, recertification)

Fire Alarm Systems (FAS) Technician Profile

This certification program was designed for engineering technicians working in the fire alarm industry who engage in a combination of the following fire alarm systems activities: system layout (plan preparation), system equipment selection, system installation, system acceptance testing, system trouble-shooting, system servicing, and system technical sales. Technical areas covered include applicable codes and standards, types of detectors and signaling systems, supervision requirements, power requirements, building/space structure and occupancy considerations, and basic electricity and electronics.

Level I

Trainees and entry-level technicians who perform limited job tasks under supervision. They are learning, much like apprentices. They learn about FAS components, installation methods, basic tools, worksite safety, testing and inspecting. They have at least 3 months of experience in FAS.

Level II

Perform routine tasks under limited supervision. Level II Technicians have the ability to review drawings, specifications, codes and standards. They may conduct basic installation activities, perform basic troubleshooting, or prepare technical or sales documents. Level II Technicians have at least 2 years of experience in FAS.

Level III

Have the ability to work independently without supervision. Level III Technicians interpret codes, standards, and specifications to produce fire alarm shop drawings. Level III Technicians perform fire alarm layout activities, supervise Technicians at Levels I and II, and provide submittal packets. They interact with AHJs. Level III Technicians have at least 5 years of experience in FAS.

Level IV

Senior-level technicians whose work includes complex and specialized systems. Level IV Technicians manage multiple projects at once and serve as liaison between AHJs, owners, engineers, contractors. They interpret codes, supervise Levels I-III Technicians, and take ownership of programs and training. Level IV Technicians have at least 10 years of experience in FAS.



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Fire Alarm Systems



Basic Instructions

Certification candidates must submit the entire Certification Application Package, including the Test Application and the Experience Application. After a candidate passes a written exam requirement, his or her work experience will be evaluated by NICET.

At minimum, a candidate must submit the Test Application in order to schedule and sit for an exam. However, to prevent delays in certification, candidates are recommended to submit their completed Experience Application at the time they apply for the exam.

Each NICET Standard Model program has a specialized Certification Application Package, which can be found on NICET's website. Each Certification Application Package is comprised of the following parts:

Requirements for Certification

Test Application

Section I: Candidate Information

Section II: Payment Form

Experience Application

Part I: Work History

Part II: Verifier Data

Part III: Performance Verification

Part IV: Personal Recommendation (required at Levels III and IV)

Part V: Major Project Write-Up (required at Level IV)

Mail your application with payment to:

NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

If you paid online or are submitting supplemental documentation that does not require payment send to:

NICET Evaluation, 1420 King Street, Alexandria, VA 22314

REMEMBER!

- **Ensure that you are submitting the correct application materials and fee payment. Access the current certification criteria and fee information at www.nicet.org.**
- **Make a copy of the entire application and keep it with your testing/certification records.**
- **Include name and identification number on every page of every part of the application.**



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Fire Alarm Systems



Requirements for Fire Alarm Systems Certification

Level I	Level II	Level III	Level IV
Examination – Pass the:			
Level I exam	Levels I and II exams	Levels I, II, and III exams	Levels I, II, III, and IV exams
Performance Verification – Obtain supervisor verification of:			
All Level I Performance Measures	All Levels I and II Performance Measures	All Levels I, II, and III Performance Measures	All Levels I, II, III, and IV Performance Measures
Work History – Provide complete, detailed position descriptions and time allocations showing¹:			
A minimum of 3 months of technical experience with fire detection and signaling systems.	<p>A minimum of 2 years of fire detection and signaling systems experience, which MUST include:</p> <p>At least 12 months of fire alarm systems experience, including alarm and detection, notification, sprinkler monitoring, and interfaces and controls for agent releasing suppression systems (either agent or water-based systems) in any of the following roles/functions: installation, inspection, testing, commissioning, technical system estimating and sales, plans preparation, or maintenance.</p> <p>The 2 years MAY include up to 12 months of related experience².</p>	<p>The minimum required for Level II, PLUS 3 additional years (for a total of 5 years) of fire detection and signaling systems experience, which MUST include:</p> <p>At least 33 months of fire alarm systems experience, including installation, maintenance, inspection, testing, commissioning, technical system estimating and sales, plan preparation, code compliance review, project management, and/or technical business management. The three years must include field experience, team leadership, and at least one year in a fire alarm systems technical management role.</p> <p>The 3 years MAY include up to 3 months of related experience².</p>	<p>The minimum required for Level III, PLUS 5 additional years (for a total of 10 years) of fire detection and signaling systems experience, which MUST include:</p> <p>At least 45 months of fire alarm systems experience, including technical business management and/or or a management role in installation, maintenance, inspection, testing, commissioning, technical system estimating and sales, plan preparation, and/or code compliance review. The five years must include at least two years of overseeing fire alarm systems project management.</p> <p>The 5 years MAY include up to 15 months of related experience².</p>
Personal Recommendation – Obtain recommendation ratings showing a capacity for:			
(not required)	(not required)	Independent engineering technician responsibilities	Senior engineering technician responsibilities
Major Project – Provide a detailed description of a major project and your role in it showing:			
(not required)	(not required)	(not required)	Senior responsibility for a fire alarm system project of substantial complexity

¹ Time periods are full time equivalent.

² Related experience may include involvement in fire alarm or other code-driven and/or life safety electrical building systems work beyond the scope of the core experience defined above for this Level, including, but not limited to, low voltage systems, building electrical power or control systems, special hazards systems, or smoke control systems in the role/function of installation, inspection, testing, commissioning, maintenance, technical system estimating and sales, plans preparation, code compliance review, project management, or technical business management. It may also include providing full-time technical support or training to fire alarm systems technicians.



National Institute for Certification in Engineering Technologies®

A division of the National Society of Professional Engineers
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NICET ENGINEERING TECHNICIAN CERTIFICATION Test Application - Section 1: Candidate Information

(Please print clearly or type)

ID Number

Name: ☐ Mr. ☐ Ms. _____
Last Name First Name Middle Initial

Name Change? If your name has changed since your last application, enter your previous name here: _____

Note: At your test site, you will be required to present a government-issued photo ID; the name on your ID must be identical to the name that you provide above. This name will also appear on all correspondence and any certification documents issued to you by NICET.

Indicate your status below. You must write your ID number in the space provided at the top right corner of each page of the application.

- ☐ I have a NICET ID my number is: _____. Note: If you have achieved NICET certification, your NICET ID number is NOT the same as the certification number that appears on your certificate and wallet card. Your NICET ID number can be found on most of your personal NICET records. If you do not know your NICET ID number, please call NICET at 888-476-4238.

- ☐ This is my first application.

First-time applicants must provide ONE of the government ID numbers requested below. In the Test Application Package and the Experience Application package, when a space is provided in the top right corner for a NICET ID number, please write your Government ID number. Once NICET has processed your test application, you will be issued a permanent NICET ID number.

- ☐ Social Security Number: _____
- ☐ Driver's License No.: _____ State: _____ Expiration date: _____
- ☐ Government-issued photo ID no.: _____ Issue date: _____ Expiration date: _____
- Issuing agency: _____
- ☐ Passport No.: _____ Issuing country: _____ Issue date: _____

NICET reserves the right to require a photocopy of this ID to confirm the submitted information (name, ID number, address, signature).

Address Information

Home Address:

Street Apt. _____
City State Zip Code +4 _____

Present Employer:

Company Name _____
Business Address: _____
Street _____

When receiving items by mail, which address do you prefer?

Business ☐ Home ☐

City State Zip Code +4 _____
Present Position Title: _____

Electronic Contact Information and Preferences

Phone Numbers Business: _____ Home: _____
Mobile/cell: _____ Fax: _____

Email Addresses Business: _____
(Please print carefully) Home: _____

May we contact you about NICET business by:

- Email? ☐ yes ☐ no If yes, preferred email address? ☐ Business ☐ Home
If you permit NICET to contact you by email, then your testing authorization notice and other correspondence about your upcoming exam will be delivered via email. Please ensure that your e-mail filter can accept messages from the domain @nicet.org
- Fax? ☐ yes ☐ no

Applicant's Statement of Understanding

I certify that the information given on this page is accurate and current, that NICET may use the information as indicated to identify me and to send me information, and that it is my responsibility to notify NICET should any of the information provided on this page change. I have read, understood, and accept the NICET Conditions of Application. I have read, understood, and agree to abide by the NICET Code of Ethics.

Signature

Date

Conditions of Application for Technicians

1. **NICET has established policies, procedures, and fees** that govern certification decisions, the uses of certification, and interactions with applicants and certificants. These policies, procedures, and fees may be changed by NICET at any time without prior notification. These policies, procedures, and fees are freely available on NICET's website (www.nicet.org). Each person who signs any NICET application accepts and agrees to follow these policies and procedures in all dealings with NICET.
2. **Each NICET certification may have multiple criteria** that must be met by a candidate in order for the certification to be conferred. These criteria may be changed by NICET at any time without prior notification. Current criteria, along with general information about NICET and its certification programs, are available from NICET's website (www.nicet.org). Individuals who are not resident in, or working in, the United States or its territories may not be eligible for certification. These individuals must contact NICET before applying and may be required to follow additional procedures, with additional fees, to demonstrate that they meet the criteria.
3. All applicants, candidates, and certificants **must comply with the NICET Code of Ethics** (see previous page) and follow generally accepted ethical practices at all times. For example, acquiring and/or providing specific knowledge of test questions prior to testing, or acquiring or providing assistance during an examination; intentionally providing information to NICET that is incomplete, or inaccurate; or knowingly providing technical services in an unsafe, inaccurate, or unprofessional manner may subject the offender to any number of sanctions, including legal prosecution.
4. NICET reserves the right to **deny, suspend, or revoke any certification** (pending or awarded) should the Institute determine that an applicant, candidate, or certificant has misrepresented information, violated a NICET policy or procedure, or violated the NICET Code of Ethics.
5. Maintenance of **current accurate contact information** is the responsibility of the applicant. NICET requires accurate contact information to communicate to the applicant important information related to testing, certification, and recertification.
6. **The NICET name, logo, and certification mark are the property of NICET and may not be used without the expressed written permission of the Institute.**
7. **NICET approval letters, wallet cards, and certificates** are issued to certificants for their use but remain NICET property at all times and may be recalled by the Institute at any time without prior notification.
8. **NICET test questions and examinations** are the copyrighted property of NICET. Any copying, sharing, or distribution of the content of those test questions and/or examinations constitutes copyright infringement and is a violation of U. S. federal law. Violators will be subject to suspension or revocation of NICET status and/or prosecution to the full extent of the law.
9. Each person who signs a NICET application grants NICET the **right to contact individuals** named in application materials or other communications with NICET to confirm the accuracy of information provided by the applicant.
10. **NICET certification must be used, represented, and displayed** in accordance with NICET policies. NICET certification does not constitute a license to practice engineering.
11. Each person who signs a NICET application grants NICET the **right to publish their name, address, and certification** information in its certification directories and to provide that information to others in response to bonafide inquiries. Test scores will be given to the test-taker only, unless the test-taker submits a release form authorizing NICET to give the scores to another specified individual.
12. The applicant's **Social Security number or government-issued ID number** is required for identification purposes. It will be used for NICET internal use ONLY and will not be given to anyone else without legitimate legal reason.
13. **An applicant's test records will be purged** for an individual certification area after five years if no further testing is completed in that certification area and the individual is not certified in that area. If the applicant has active certifications or is actively testing in other certification areas, the records for those other certification areas will not be affected.
14. **An applicant with a disability** as defined in Title III of the Americans with Disabilities Act who may be placed at a disadvantage when taking a NICET certification examination must advise NICET, in writing, of their needs by including a letter or other appropriate documentation with their application. NICET will respond by telephone or other means to make appropriate accommodations.
15. **All certifications expire** three years after an individual's initial certification is awarded and every third year thereafter. Recertification will be based on the certificant's activities during that three-year period. Requirements and fees may be found in NICET's Continuing Professional Development Policy (See www.nicet.org). Several months before expiration, a recertification application will be sent to the last postal or email address provided by the certificant. If the application with payment is not received by NICET prior to the expiration date, the certificate will expire. Reinstatement to Active Status will involve an additional fee. If reinstatement has not occurred three years after the expiration date, all certifications and all testing records will be purged. Payment of new testing and/or application fees does not substitute for payment of the full recertification fee when due. Additionally, obtaining a higher-level NICET certification does not alter or "reset" the originally established three-year certification period.

NICET Code of Ethics

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1. Have due regard for the physical environment and for public safety, health, and well being. If their judgment is overruled under circumstances where the safety, health, property, or welfare of the public may be endangered, they shall notify their employer, client, and such other authority as may be appropriate. An employee shall initially express those concerns to the employer.
2. Undertake only those assignments for which they are competent by way of their education, training, and experience.
3. Perform their duties in an efficient and competent manner with fidelity and honesty.
4. Admit and accept their own errors when proven wrong and never distort nor alter the facts in an attempt to justify their decisions.
5. Avoid conflicts of interest whenever possible. When unavoidable, they shall disclose to their employer or client, in writing, any action that might create the appearance of a conflict of interest.
6. Avoid receiving and granting bribery in all its forms.
7. Strive to maintain their proficiency by updating their technical knowledge and skills in engineering technology.
8. Not misrepresent or permit misrepresentation of their own or their associate's academic or professional qualifications nor exaggerate their degree of responsibility for any work.
9. Not reveal facts, data, or information obtained in connection with services rendered without prior consent of the client or employer except as authorized by law.



Candidate Name: _____

NICET ID No.: _____



**NICET ENGINEERING TECHNICIAN CERTIFICATION
Test Application - Section 2:
PAYMENT FORM**

Examination Selection

For each exam selected, indicate the Window ID number of your preferred 3-month testing window (not to be more than six months from the postmark date on this application) from the Eligibility Schedule to the right. The fee includes an experience evaluation if the candidate passes the written exam.

	Window ID	Fee
Electrical Power Testing		
<input type="checkbox"/> Level I Exam (10027)		\$225
<input type="checkbox"/> Level II Exam (10028)		\$290
<input type="checkbox"/> Level III Exam (10029)		\$345
<input type="checkbox"/> Level IV Exam (10030)		\$400
Inspection and Testing of Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10035)		\$225
<input type="checkbox"/> Level II Exam (10036)		\$290
Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10007)		\$225
<input type="checkbox"/> Level II Exam (10008)		\$290
<input type="checkbox"/> Level III Exam (10009)		\$345
<input type="checkbox"/> Level IV Exam (10010)		\$400
Inspection and Testing of Water-Based Systems		
<input type="checkbox"/> Level I Inspection & Testing Fundamentals (10017)		\$170
<input type="checkbox"/> Level I Work Practices Exam (10018)		\$170
<input type="checkbox"/> Level II Inspection Exam (10019)		\$180
<input type="checkbox"/> Level II Testing Exam (10020)		\$180
<input type="checkbox"/> Level II Work Practices Exam (10021)		\$180
<input type="checkbox"/> Level III Inspection & Responsibilities Exam (10022)		\$225
<input type="checkbox"/> Level III Advanced Testing Exam (10023)		\$225
Water-Based (formerly Automatic Sprinkler) Systems Layout		
<input type="checkbox"/> Level I Exam (10011)		\$225
<input type="checkbox"/> Level II Exam (10012)		\$290
<input type="checkbox"/> Level III General Plan Preparation Exam (10013)		\$285
<input type="checkbox"/> Level III Hydraulics & Water Supply Exam (10014)		\$285
<input type="checkbox"/> Level IV Exam (10016)		\$400
Special Hazards Systems		
<input type="checkbox"/> Level I Exam (10031)		\$225
<input type="checkbox"/> Level II Exam (10032)		\$290
<input type="checkbox"/> Level III Exam (10033)		\$345
<input type="checkbox"/> Level IV Exam (10034)		\$400
Video Security Systems Technician		
<input type="checkbox"/> Level I Exam (10001)		\$225
<input type="checkbox"/> Level II Exam (10002)		\$290
<input type="checkbox"/> Level III Exam (10003)		\$345
<input type="checkbox"/> Level IV Exam (10004)		\$400
Video Security Systems Designer		
<input type="checkbox"/> Level I Exam (10005)		\$290
<input type="checkbox"/> Level II Exam (10006)		\$345
Total:		\$0

Eligibility Schedule

Window ID	Window Period	Window ID	Window Period
1	January/February/March	7	July/August/September
2	Feb/March/Apr	8	August/September/October
3	March/April/May	9	September/October/November
4	April/May/June	10	October/November/December
5	May/June/July	11	November/December/January
6	June/July/August	12	December/January/February

You can apply for your test online.

You can submit payment for this application at NICET's website. Visit www.nicet.org, and login to your account. From there, you can submit/update your contact information, select your test, and pay with a credit card.

Payment and mailing information

Payment of the total Examination fee in the form of a check or money order made payable to NICET, must accompany this application form.

Any Certification Application that includes a check or money order must be sent to NICET at:

Via U.S. Postal Service:
NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

Via FedEx, UPS:
NICET
c/o Bank of America Lockbox Services
Lockbox 418651
MA5-527-02-07
2 Morrissey Blvd.
Dorchester, MA 02125

Any Certification Application forms that do not include a payment must be sent to:

Evaluations
NICET
1420 King Street
Alexandria, VA 22314

Don't forget to:

- Sign and Date the Applicant's Statement of Understanding in Section 1.
- Enclose your payment.
- Keep a copy of this application for your records.
- Mail all sections of this application together.

Express Evaluation (optional)

To speed up your experience evaluation, please contact NICET at 888-476-4238, Option 4, to ask for Express Evaluation instructions and arrange for electronic payment of the Express Evaluation fee of \$295 per subfield per Level. Express evaluations will be completed within 10 business days of the receipt of payment.

NICET OFFICE USE ONLY

Employer ID	Postmark Date	Spec. Cont.	ADA	App #	Lockbox #1	Amt. Paid



Experience Application Part 1: Work History Sections 1, 2, and 3



INSTRUCTIONS and CHECKLIST

First-time applicants (and those specifically directed by NICET):

For the span of your entire career, complete one form **consisting of at least sections 1, 2, and 3** for each position held at each employer **and for any period within a given position in which your responsibilities changed significantly.**

Returning applicants

Follow the instructions above solely for the period of time from the end date of your last work history submittal to the date you submit a new application.

Section 1 – Position Identification

Section 2 – Time Allocation

Break out your experience into all applicable technical areas in which you worked while in the position listed in Section 1.

Section 3 – Detailed Description of Work Performed

For each Subfield / Technical Area (S/TA) into which you divided your work in Section 2 – Time Allocation, provide detailed descriptions, in your own words, of the work you performed.

- Detail the technical and supervisory nature of the work.
- Describe the types of tasks you performed and the types and scopes of projects on which you worked.
- Detail the types of materials, tools, machinery, systems, and system components with which you worked.

For all gaps in your work histories (e.g., unemployment periods, winter breaks, and so on.

In Section 2, line item “Other”, write “Gap” and in Section 3 on page 2 of 3 provide the reason for the gap.

If you are submitting a work history amendment you must submit the following:

- a signed and dated letter of explanation for the changes you made to your account
- the amended work history forms countersigned by your verifier, who by so doing indicates his or her attestation to the accuracy and completeness of the amended account

Work History Form Checklist – Do:

- ☐ Submit Sections 1, 2 and 3 of the form of the form for each position held.
- ☐ Ensure that the forms are completely and accurately filled out for the period from one submittal to the next.
- ☐ Make sure to provide the “Dates Positions Held” including **month** and **year**.
- ☐ Provide in Section 3, corresponding detailed descriptions for each Subfield / Technical Area (S/TA) in which your experience was broken out in Section 2, using your own words.
- ☐ Sign and date each page as indicated. Unsigned documents will not be accepted.

Work History Form Checklist - Do Not:

- ☐ Submit official position descriptions, resumes, testimonials, and marketing materials in lieu of completing Section 3 to describe your responsibilities.
- ☐ Submit amended work experience accounts without a signed letter of explanation for the changes in your work history unless directed to do so by NICET.
- ☐ Have verifier countersign work history forms unless directed by NICET to do so.
- ☐ Submit forms of your own design.

All information provided in candidate’s application is cross-evaluated with documents on file to verify the following:

- consistency of work experience accounts
- appearance of signatures and initials
- appropriateness of verifier and recommender

and, as needed, through third-party entities including the following:

- licensing bodies and authorities having jurisdiction
- previous and current employers
- other sources of official documentation

Note: Work experience documents submitted with applications to test are placed in the queue for evaluation when a candidate meets the exam requirements for a given subfield and level. Work experience documents received in response to Conditional Decision Letters (CDLs) are placed in the queue for evaluation upon their receipt. In both cases the documents are evaluated in the order they are placed in their respective queues. (first-come, first-served)

Based on the present workload, it may take up to 90 days from the date a candidate meets an exam requirement for work experience documents to be evaluated and up to 60 days from date of receipt for CDL responses to be evaluated.



Candidate: _____ NICET ID No: _____

**Experience Application - Part I: Work History****Section 1 – Position Identification**

Employer:	Location of employer (city, state):	Name of supervisor (s):
Candidate's Position:	Dates position / responsibilities held:	Full-time <input type="checkbox"/> Part-time <input type="checkbox"/> Seasonal <input type="checkbox"/>
President / owner / co-owner	From: Month _____ Year _____ To: Month _____ Year _____	If part-time, hours per week: _____ If full-time seasonal, months worked per season _____

Section 2 – Time Allocation

Subfield / Technical Area (S/TA)	Description	Time devoted to S/TA (%)
Fire Alarm Systems (FA)	Fire alarm systems specific activities including project management, system layout (plan preparation), equipment selection, installation, troubleshooting, servicing, and technical sales.	%
Fire Alarm Systems Inspection / Testing (ITF)	Fire alarm systems work limited to performing, planning, and coordinating the inspection and testing of fire alarm systems.	%
Special Hazards Systems (SH)	Special hazards suppression systems specific activities including project management, system layout (plan preparation), equipment selection, installation, acceptance testing, troubleshooting, servicing, and sales.	%
Water-based Fire Protection Systems Layout (SP)	Water-based fire protection systems layout specific activities including project management, system layout (plan preparation), hydraulic calculations, site evaluation, equipment selection, plan approval, and sales.	%
Water-based Fire Protection Systems Inspection / Testing (ITS)	Specifically performing and managing the inspecting and testing of existing systems according to NFPA 25. Does not include work performed during installation and final testing / commissioning of new systems.	%
Water-based Fire Protection Systems Fitting / Fabrication (SF)	The performance and supervision of fitting, fabrication, maintenance, tests and inspections performed during installation and final testing / commissioning of new water-based fire protection systems or additions to systems.	%
Other Fire Protection Work (OFP)	This includes work with portable extinguishers, standpipe hoses and nozzles, municipal and private fire hydrants, fire-stopping, and firefighter duties.	%
Video Security System Technician (VST)	Video security systems specific activities including management, installation, preventative and corrective maintenance, tests and inspections, troubleshooting, and servicing.	%
Video Security System Designer (VSD)	Video security systems design and plan preparation specific activities including management, plan preparation, site evaluation, equipment selection, plan approval, and technical sales.	%
Industrial Instrumentation (I/I)	Industrial instrumentation work including management, design assistance, installation and maintenance of industrial measurement and control systems.	%
Audio Systems (AS)	Audio system specific activities including the layout, installation, and maintenance of audio systems for commercial, industrial, and large space applications.	%
Electrical Power Testing (EPT)	Specifically testing electrical power equipment, cabling, and systems operating in the range of 600 V and above. Does not include general wireman duties.	%
Other Low / Limited Voltage Systems (LV)	Work with non-fire alarm low/ limited voltage systems such as security, access control, nurse call, building control, computer networking, and emergency lighting.	%
Other Electrical Systems (GE)	General electrician work - residential and commercial wiring of loads including light machinery, lighting, HVAC components, and distribution panels and outlets.	%
Other	Specify: Gap:	%
The sum of all the values in this column cannot exceed 100%.		100%

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature _____

Date _____

Verifier's Signature
(Only if directed by NICET) _____

Sections 1, 2, and 3 must be filled out for each position held.

5/15

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed

NICET cannot accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations. If supplementary space is needed use additional pages of Section 3.

S/TA	*EXAMPLE*	Detailed Description of Technical Work Performed
SF		Supervised and performed the installation, corrective maintenance, under construction testing, and commissioning of new fire sprinkler systems and system additions. Systems installed included wet, dry, pre-action, deluge, and foam. Components installed and maintained included piping, pipe hangers, earthquake bracing, alarm check valves, various cutout valves, flow sensors, FD connections, standpipe hose connections, jockey and fire pumps, and backflow preventers. Installed systems of 25 – 600 heads in a variety of building types including residential and commercial high rise, mercantile, manufacturing, school, and military.
S/TA		Detailed Description of Technical Work Performed
S/TA		Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____

Candidate NICET ID No.: _____



**NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part II: Verifier Data**

(Please print legibly or type)

To be completed by the Verifier only

Name: _____ Title: _____

Current employer: _____

Daytime phone: _____ Email: _____

Professional licenses/certifications: _____

My observation of the candidate occurred during my employment at:

☐

Current employer

☐

Previous employer: _____

My observation of the candidate occurred as a part of my role as:

☐

Candidate's direct supervisor

☐

Candidate's indirect supervisor/manager responsible for the candidate's work results/outcomes

☐

Engineer on one of the candidate's projects

☐

Governmental authority: _____

☐

Contract supervisor for: _____ client, or _____ general contractor

☐

Other: _____

I have (Check all that apply):

☐

directly observed the candidate's work.

☐

directly observed the results of the candidate's work.

☐

received reliable reports from those who have directly observed the candidate's work.

☐

observed the candidate's ability to supervise others who are doing this work.

During what time period were you in the above-indicated relationship with the candidate?

From ____ / ____ to ____ / ____
Mo. Yr. Mo. Yr.

Verifier's Statement:

I certify that:

- *I understand and have carefully considered each performance measure that I have verified or will verify.*
- *I have not verified, and will not verify, any performance measure that I have not either personally observed or received reliable and specific reports from one who has personally observed the performance.*
- *I have not signed, and will not sign, any verification statement on a form that does not have the candidate's name at the top.*
- *I have not asked nor will I ask anyone to sign my name in my stead.*

Signature _____ Date _____ Initials _____

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____ Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Fire Alarm Systems

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level I Performance Measures		
The candidate has repeatedly demonstrated:		Verifier's Initials
0303-1101	awareness of job site safety procedures.	
0303-1102	an ability to reliably identify common fire alarm systems equipment and related materials as directed.	
0303-1103	an ability to perform <u>at least one of the following</u> : <ul style="list-style-type: none">select the appropriate simple hand and power tools for a given task and use them safely; or,select the appropriate software or drafting tools for a given task and use them properly.	
0303-1104	an ability to perform <u>at least one of the following</u> : <ul style="list-style-type: none">proper installation techniques for conduit, wire, and junction boxes related to fire alarm systems; or,proper application of conduit, wire, and junction boxes related to fire alarm systems.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Level II Performance Measures		
The candidate has repeatedly demonstrated:		Verifier's Initials
0303-3101	ethical behavior on the job, consistent with the NICET Code of Ethics.	
0303-3102	an ability to give complete and accurate reports on his or her activity, progress, and problems encountered.	
0303-3103	an ability to train end users in the operation and basic maintenance of the installed fire alarm system.	
0303-3104	an ability to direct the work of another individual on a fire alarm system job.	
0303-3105	an ability to perform <u>at least one of the following</u> : <ul style="list-style-type: none">mount control equipment, peripheral devices, and related hardware in conformance with manufacturers' specifications; or,document the correct placement of control equipment, peripheral devices, and related hardware in conformance with manufacturers' specifications.	
0303-3106	an ability to perform <u>at least one of the following</u> : <ul style="list-style-type: none">connect test equipment such as voltage, current, and resistance meters in order to test and diagnose system problems; or,identify the appropriate calculations, codes and standards, and testing lab ratings required to prepare plans in accordance with project specifications.	
0303-3107	an ability to perform <u>at least one of the following</u> : <ul style="list-style-type: none">routine installations of basic fire alarm systems following the project plans or shop drawings without immediate supervision; or,prepare basic documentation such as drawings and submittals, quotations, inspection reports, and record of completion reports in conformance with project specifications and applicable codes and standards.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Each verifier must submit a "Verifier Data" form for this candidate.
Performance verification may be provided by a single verifier or a combination of verifiers.

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Candidate: _____ Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Fire Alarm Systems

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level III Performance Measures		
The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0303-5101	prepare or review bid or layout packages to meet the specifications and requirements of clients, design professionals, and AHJs.	
0303-5102	identify site conditions relevant to fire alarm system layout, and correctly identify the occupancy types and codes and standards involved.	
0303-5103	create or review fire alarm system shop drawings (including power supply) to meet device requirements, job specifications, and codes and standards.	
0303-5104	communicate, in writing, technical information that is clear and accurate.	
0303-5105	identify and implement contractual obligations.	
0303-5106	develop and implement an installation strategy, including resolution of on-site scheduling conflicts and issues with other trades and project stakeholders.	
0303-5107	identify fire stopping requirements that meet applicable codes and standards.	
0303-5108	plan and oversee a complete and successful system commissioning, including documentation of test completion and creation of as-built drawings.	
0303-5109	select and correctly use computer applications for programming a fire alarm system.	
0303-5110	determine whether a specific device will meet codes, standards, and project specifications.	
0303-5111	identify appropriate test procedures to effectively troubleshoot and repair system faults.	
0303-5112	recognize a skill deficiency and recommend appropriate training.	
0303-5113	directly manage two or more simultaneous fire alarm system activities, meeting time, budget, and technical requirements.	
0303-5114	monitor work practices to maintain safety and comply with environmental codes.	
0303-5115	engage in work practices that consistently comply with the NICET Code of Ethics.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Each verifier must submit a "Verifier Data" form for this candidate.
Performance verification may be provided by a single verifier or a combination of verifiers.

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Candidate: _____ Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Fire Alarm Systems

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level IV Performance Measures		
The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0303-7101	prepare a complete, accurate, and realistic response to an RFP/RFQ.	
0303-7102	develop contractual criteria for fire alarm system projects that meet legal and AHJ requirements.	
0303-7103	evaluate the requirements for a new or existing fire alarm system and its components, and to provide a clear rationale, based on functionality, codes and standards, and cost, for either replacement or repair of any deficiencies.	
0303-7104	develop and accurately document project budgets that meet the client's needs, contractual obligations, codes and standards, and the company's resource constraints.	
0303-7105	coordinate multiple project plans and schedules to meet project objectives, minimize conflict with other trades, and optimize use of company resources.	
0303-7106	communicate with design professionals and AHJs while maintaining a professional bearing and demonstrating subject matter expertise.	
0303-7107	review shop drawings for technical accuracy, including, but not limited to, power and battery calculations and component compatibility.	
0303-7108	establish clear and correct guidelines for the selection of system components that will meet applicable criteria*.	
0303-7109	recognize and mitigate potential threats to a fire alarm system's functionality or reliability from severe environments, nuisance alarms, or other sources.	
0303-7110	accurately evaluate the completion of a fire alarm system installation project to assure that applicable criteria* have been met.	
0303-7111	coordinate and oversee multiple project teams, assuring that each meets budget, schedule, and other contractual requirements, as well as applicable code requirements.	
0303-7112	monitor the general and job-specific capabilities of staff, to assure that they have received adequate training on technical, safety, and communication issues.	
0303-7113	accurately report technical information and standards interpretations, both verbally and in writing.	
0303-7114	engage in work practices that consistently comply with the NICET Code of Ethics.	
*“applicable criteria” may include codes and standards, AHJ requirements, contractual obligations, project specifications, or client needs, as appropriate.		

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Each verifier must submit a “Verifier Data” form for this candidate.
Performance verification may be provided by a single verifier or a combination of verifiers.

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Candidate: _____

Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part IV: Personal Recommendation
(Please print legibly or type)

Section 1 – Recommender's Personal Information

This form must be completed by a professional who is familiar with the technical capabilities and background of the applicant and can attest to the technical quality, responsibility, and ethics demonstrated in the applicant's work experience. NICET prefers recommendations from licensed professional engineers, registered land surveyors, or NICET-certified engineering technologists and senior engineering technicians, but will also accept recommendations from other professionals such as graduate engineers, scientists, senior level technicians and technologists, fire marshals, code officials, or officials of other authorities having jurisdiction.

Name: _____ Phone Number: (____) ____ - ____

Position Title: _____

Company Name: _____

My highest degree is: ____ in: _____ field from: _____ school

I am (registered, certified, licensed) as: _____ by: _____

Registration/Certification/License Number: _____ Date granted: _____

Describe your technical background: _____

The person who completes this recommendation form cannot also provide Performance Measure verifications for this candidate. NICET will not accept recommendation forms that are completed by relatives or subordinates of the applicant.

Section 2 – Recommender's Relationship with the Candidate

Familiarity with the candidate's character, abilities, and accomplishments:

- ☐ Unfamiliar – little relevant interaction
☐ Somewhat familiar – occasional interaction
☐ Reasonably familiar – regular interaction
☐ Very familiar – frequent interaction

Length of time that you have known the candidate: _____ years and _____ months

Nature of your relationship with the candidate:

- | | |
|----------------------------------------------------------------------|---------------------------------------------------------------------|
| <input type="checkbox"/> association within the company | <input type="checkbox"/> association through contracting activities |
| <input type="checkbox"/> association through professional activities | <input type="checkbox"/> other: _____ |

Describe your professional relationship with the applicant: _____



Candidate: _____

Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION Experience Application, Part IV: Personal Recommendation

Section 3 – Recommender's Evaluation of the Candidate

Role of the Engineering Technician:

Apply well-defined and proven procedures, methods, and practices, derived from established or real-time engineering guidance, to specific technical assignments, and do so in an ethical and responsible manner.

Regarding the role described in the box above:

- ☐ I do not recommend this candidate for this role.
- ☐ I recommend this candidate for this role because he/she has (check all that apply):
- ☐ made substantial progress toward independent capability in this role.
 - ☐ fulfilled this role, demonstrating good, Independent technical judgment and self-management.
 - ☐ fulfilled this role, demonstrating a capability to resolve complex technical issues and lead a team of technicians.

Please indicate by placing a mark in the one most appropriate box to the right of each statement, whether, and to what degree, the candidate demonstrates each of the following attributes.

	Never	Some- times	Mostly	Always	Don't know
The candidate consistently works hard to achieve the objectives of his/her job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate is attentive to his/her own work and to the work of others that impacts his/her own responsibilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate shows initiative and equanimity in dealing with new jobs, changed circumstances, or problems, and accepts responsibility for outcomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate organizes and directs the activities of work teams to achieve their objectives in a timely and cost-effective manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate develops and maintains cordial and goal-oriented relationships with work team members and with clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate encourages, uses, and appreciates the ideas and initiative of others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate communicates clearly and effectively with work team members and clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate's actions are ethical and his/her statements are truthful and do not conceal or hold back relevant information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments or observations on the candidate's capabilities, responsibility, and achievements:

Section 4 – Recommender's Statement

I attest that all information I have provided is, to the best of my knowledge, true. I understand that falsifying information on this form can affect my right to serve as a recommender or a verifier for other NICET certification candidates and can result in my own NICET certification(s) being revoked.

Name of Recommender (please print) _____

Signature of Recommender _____

Date _____

Incomplete recommendation forms will not be accepted by NICET.

This form expires one year after being signed by the recommender.

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NICET ENGINEERING TECHNICIAN CERTIFICATION Experience Application, Part V: Major Project Fire Alarm Systems

Each candidate for certification at Level IV in Fire Alarm Systems must submit a write-up (in narrative/essay format) of their role in a large and technically complex fire alarm system project demonstrating senior-level engineering technician capabilities and responsibilities.

General Guidelines

The Major Project Write-up must be a concise, detailed, 2 to 3 page written description of the candidate's role in one* major fire alarm system project.

The major project write-up must be type-written, identified by the candidate's name and NICET ID number, and on separate pages from other application documents. (The write-up is not a part of the work history in Part I of the application.)

The write-up must specifically identify the project and your role/title in it.

The candidate must be the sole author of the major project write-up. (Official job or project descriptions or testimonials from others will not be accepted.)

The project must be recent (within the last 4 years) and must have been completed.

Your involvement in the project must include a range of fire alarm systems activities*.

The candidate's involvement in the project must demonstrate independent, senior-level engineering technician work, including delegation of responsibilities and duties.

The write-up must reflect senior-level understanding of the nature and importance of the various aspects of the system and the project, and the roles of the various people involved in the completion and acceptance of the project.

Guidelines for Description of the Project

The write-up should address each of the following in a detailed narrative:

- The location of the project, the type of facility, and the purpose or objective of the project
- Size of the project (square footage, number of stories, installation time, etc.)
- Time period (start/stop dates, dates of candidate's involvement, amount of time candidate spent on project)
- Scope of fire alarm system project (risers, circuits, interconnections, spacing of components, etc.)

Guidelines for Description of the Candidate's Role

The write-up should address each of the following in a detailed narrative:

- Supervisory or oversight responsibilities (number of people, the tasks they performed, and your relationship to them)
- Range/scope of activities and role in each activity (hazard analysis, design calculations, approvals, proposals, system installation, check-out and final approval test, etc.)

**Note: If all of these activities cannot be documented for a single project, they may be accumulated via several more narrowly focused projects.*

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Fire Alarm Systems Certification

Level I Content Outline

Technician Trainee

The candidates for NICET certification at Level I in Fire Alarm Systems should have the knowledge, experience and basic skills needed to work in the industry. Under direct supervision, they perform limited job tasks. They are learning, (much like an apprentice) about fire alarm system components, installation methods, basic tools, worksite safety, and testing and inspecting. Level I technicians have at least 6 months of experience in fire alarm systems.

1.1 Installation

(Questions related to these tasks make up 44-54% of the exam.)

1.1.1 Mount and terminate peripherals (e.g., initiating and notification devices). 1, 2, 5, 7, 8, 11

1.1.2 Install cabling and associated infrastructure. 1, 2, 11

1.1.3 Comply with job site safety requirements. 2, 3, 4, 6, 9, 10, 11

1.2 Maintenance

(Questions related to these tasks make up 37-47% of the exam.)

1.2.1 Perform periodic testing of systems and devices. 2

1.2.2 Repair/replace impaired/deficient devices. 2

1.2.3 Clean devices. 2, 5

1.3 Submittal Preparation and System Layout

(Questions related to these tasks make up 4-14% of the exam.)

1.3.1 Assist with preparation of technical documents. 1, 2, 11

October 1, 2018

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

**Fire Alarm Systems Certification****Level II Content Outline****Associate Engineering Technician**

The candidates for NICET certification at Level II in Fire Alarm Systems should have the knowledge, experience and basic skills needed to work in the industry. Under limited supervision, they perform routine job tasks. They can review drawings, specifications, codes, and standards. They may conduct basic installation activities, perform basic troubleshooting, or prepare technical or sales documents. Level II technicians have at least 2 years of experience in fire alarm systems.

2.1 Installation

(Questions related to these tasks make up 36-46% of the exam.)

- 2.1.1 Develop work plans based upon field conditions. 1, 2, 5, 23, 24, 26
- 2.1.2 Install fire alarm infrastructures. 1, 2, 3, 12, 19, 28
- 2.1.3 Install fire alarm components. 1, 2, 7, 10, 11, 18
- 2.1.4 Perform system commissioning. 1, 8, 28

2.2 Maintenance

(Questions related to these tasks make up 21-31% of the exam.)

- 2.2.1 Perform periodic testing. 2
- 2.2.2 Correct impairments/deficiencies. 1, 2, 9, 11, 15, 28, 29
- 2.2.3 Maintain documentation. 2

2.3 Submittal Preparation and System Layout

(Questions related to these tasks make up 13-23% of the exam.)

- 2.3.1 Assemble project information for shop drawings. 2, 3, 5, 11, 14, 20, 30
- 2.3.2 Survey site conditions to verify that they support the requirements of the fire alarm system design and layout. 1, 2, 3, 8, 16
- 2.3.3 Prepare basic technical drawings. 2, 15, 28
- 2.3.4 Determine power supply and loading requirements for fire alarm systems. 2, 24

2.4 Management and Supervision

(Questions related to these tasks make up 10-20% of the exam.)

- 2.4.1 Coordinate work activities. 1, 2, 4, 5, 6, 8, 13, 17, 21, 22, 23, 24, 25, 27

October 1, 2018

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



Fire Alarm Systems Certification

Level III Content Outline

Engineering Technician

The candidates for NICET certification at Level III in Fire Alarm Systems should have the knowledge, experience and basic skills needed to work in the industry. Working independently without supervision, they can interpret codes, standards, and specifications to produce fire alarm system shop drawings. They perform fire alarm system layout activities, supervise Level I and II technicians, provide submittal packages, and interact with AHJs. Level III technicians have at least 5 years of experience in fire alarm systems.

3.1 Installation

(Questions related to these tasks make up 23-33% of the exam.)

- 3.1.1 Supervise projects. 1, 2, 3, 4, 5, 8, 12, 14, 15
- 3.1.2 Compile as-builts and other documents. 2, 4, 7
- 3.1.3 Oversee system commissioning. 2, 4

3.2 Maintenance

(Questions related to these tasks make up 18-28% of the exam.)

- 3.2.1 Manage periodic testing. 2
- 3.2.2 Resolve impairments/deficiencies. 1, 2, 4, 7
- 3.2.3 Prepare documentation and records. 2, 4

3.3 Submittal Preparation and System Layout

(Questions related to these tasks make up 25-35% of the exam.)

- 3.3.1 Prepare and approve shop drawings. 1, 2, 3, 4, 5, 7, 8, 14, 15

3.4 Management and Supervision

(Questions related to these tasks make up 14-24% of the exam.)

- 3.4.1 Supervise work activities. 1, 2, 4, 6, 9, 10, 11, 12, 13, 14
- 3.4.2 Supervise team members. 2, 8, 12

October 1, 2018

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



Level IV Content Outline

Senior Engineering Technician

The candidates for NICET certification at Level IV in Fire Alarm Systems should have the knowledge, experience and skills needed to work in the industry. They perform job tasks on complex and specialized systems. They manage multiple projects at once and serve as a liaison between AHJs, owners, engineers, and contractors. They can interpret codes and standards, supervise Level I, II, and III technicians, and take ownership of programs and training. Level IV technicians have at least 10 years of experience in fire alarm systems.

4.1 Installation, Planning, and Maintenance

(Questions related to these tasks make up 28-38% of the exam.)

- 4.1.1 Manage at department level (e.g., design, sales, operations, service).
- 4.1.2 Oversee as-builts and other documents.
- 4.1.3 Manage system commissioning process.
- 4.1.4 Budget project resources.

4.2 Submittal Preparation and System Layout

(Questions related to these tasks make up 26-36% of the exam.)

- 4.2.1 Oversee preparations and approve shop drawings.

4.3 Complex Fire Alarm System Operations

(Questions related to these tasks make up 31-41% of the exam.)

- 4.3.1 Resolve complex detection scenarios.
- 4.3.2 Resolve complex notification scenarios.
- 4.3.3 Specify specialty installation materials and methods.
- 4.3.4 Develop fire alarm systems training programs.
- 4.3.5 Manage industry relations.

TBD, 2018

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



Fire Alarm Systems

Level I Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
1NFPA 70	2014
2NFPA 72	2016

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page (example provided on the main program page). They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a fire alarm systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

- 3Construction Industry Digest. (2002) Occupational Safety and Health Administration (OSHA)
- 4Electrical Safety (Student Manual) (April 2009) Department of Health and Human Services
- 5Fire Alarm Signaling Systems. (Third Edition) Richard W. Bukowski, National Fire Protection Association (NFPA)
- 6First Aid/CPR/AED Participant's Manual. American Red Cross, StayWell Health & Safety Solutions
- 7NFPA 101 (2015): Life Safety Code, National Fire Protection Association (NFPA)
- 8NFPA 170 (2015): Fire Safety and Emergency Symbols, National Fire Protection Association (NFPA)
- 9OSHA 29 CFR 1910: Occupational Safety and Health Standards, Occupational Safety and Health Administration (OSHA)
- 10OSHA 29 CFR 1926: Safety and Health Regulations for Construction, Occupational Safety and Health Administration (OSHA)
- 11Ugly's Electrical References. (2014) George V. Hart, Burleson Distributing Group

➤ This listing is not intended to be complete or representative.

October 1, 2018



Fire Alarm Systems

Level II Selected General References

Candidates are permitted to bring only the following references into the test center:

Title	Edition*
¹ NFPA 70	2014
² NFPA 72	2016
³ IBC	2015

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page (example provided on the main program page). They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a fire alarm systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

- ⁴AIA Document A201: General Conditions of the Contract for Construction, (2007) The American Institute of Architects
- ⁵The Building Professional's Guide to Contract Documents, (2000), Waller S. Poage, Construction Publishers and Consultants
- ⁶Construction Management Jumpstart: The Best Step Toward a Career in Construction Management, (Second Edition) Barbara J. Jackson, Sybex
- ⁷CSI MasterFormat, (2004) The Construction Specifications Institute, Construction Specifications Canada
- ⁸Designer's Guide to Fire Alarm Systems, (2003) Robert M. Gagnon and Ronald H. Kirby, National Fire Protection Association (NFPA)
- ⁹Electrical Safety-Related Work Practices, (Second Edition) (2009), Jones and Bartlett Publisher
- ¹⁰Engineering Drawing and Design, (Third Edition) (2002), Delmar Thomson Learning
- ¹¹Fire Alarm Signaling Systems, (Third Edition), Richard W. Bukowski, National Fire Protection Association (NFPA)
- ¹²Fire Protection Handbook, (20th Edition) (2008), Ed Arthur E. Cote, P.E., National Fire Protection Association (NFPA)
- ¹³Improving Workforce Basic Skills: The Foundation for Quality, (1992) Larry Moore, Quality Resources
- ¹⁴International Fire Code (2015), International Code Council (ICC)
- ¹⁵Low Voltage Wiring, (2008), Terry Kennedy, McGraw-Hill Professional
- ¹⁶NFPA 20 (2016): Standard for the Installation of Stationary Pumps for Fire Protection, National Fire Protection Association (NFPA)
- ¹⁷NFPA 70E (2012): Standard for Electrical Safety in the Workplace, National Fire Protection Association (NFPA)



- 18NFPA 90A (2015): Standard for the Installation of Air-Conditioning and Ventilating Systems, National Fire Protection Association (NFPA)
- 19NFPA 101 (2015): Life Safety Code, National Fire Protection Association (NFPA)
- 20NFPA 170 (2015): Standard for Fire Safety and Emergency Symbols, National Fire Protection Association (NFPA)
- 21NFPA 704 (2012): Standard System for the Identification of the Hazards of Materials for Emergency Response, National Fire Protection Association (NFPA)
- 22OSHA 29 CFR 1904: Recording and Reporting Occupational Injuries and Illness, Occupational Safety and Health Administration (OSHA)
- 23OSHA 29 CFR 1910: Occupational Safety and Health Standards, Occupational Safety and Health Administration (OSHA)
- 24OSHA 29 CFR 1926: Safety and Health Regulations for Construction, Occupational Safety and Health Administration (OSHA)
- 25Project Management. (2003), Michael S. Dobson, Adams Media Corporation
- 26Safety and Health for Engineers. (Third Edition) (2016), Roger I. Brauer, Wiley
- 27Total Construction Project Management. (Second Edition), George J. Ritz, McGraw-Hill
- 28Ugly's Electrical References. (2014), George V. Hart, Burleson Distributing Group
- 29Understanding and Servicing Alarm Systems. (Third Edition), H. William Trimmer, Butterworth-Heinemann
- 30UL 864 (2003): Control Units and Accessories for Fire Alarm Systems, Underwriters Laboratories

➤ This listing is not intended to be complete or representative.

October 1, 2018



Fire Alarm Systems

Level III Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
1NFPA 70	2014
2NFPA 72	2016
3NFPA 101	2015
4IBC	2015

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page (example provided on the main program page). They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a fire alarm systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

- 5The Building Professional's Guide to Contract Documents. (2000), Waller S. Poage, Construction Publishers and Consultants
- 6Computerized Management of Multiple Small Projects. (1992), Richard E. Westney, M. Dekker
- 7Fire Alarm Signaling Systems. (Fourth Edition), Richard W. Bukowski, National Fire Protection Association (NFPA)
- 8NASCLA Contractor's Guide to Business, Law, and Project Management. (Basic Eleventh Edition), National Association of State Contractors Licensing Agencies (NASCLA)
- 9OSHA 29 CFR 1904: Recording and Reporting Occupational Injuries and Illness, Occupational Safety and Health Administration (OSHA)
- 10OSHA 29 CFR 1910: Occupational Safety and Health Standards, Occupational Safety and Health Administration (OSHA)
- 11OSHA 29 CFR 1926: Safety and Health Regulations for Construction, Occupational Safety and Health Administration (OSHA)
- 12Project Management: A Systems Approach to Planning, Scheduling, and Controlling. (11th Edition) (2013), Harold Kerzner, Wiley & Sons
- 13Project Management Toolbox: Tools and Techniques for the Practicing Project Manager. (2016), Russ J. Martinelli, Wiley
- 14Total Construction Project Management. (Second Edition), George J. Ritz, McGraw-Hill
- 15Ugly's Electrical References. (2014), George V. Hart, Burleson Distributing Group

➤ This listing is not intended to be complete or representative.
October 1, 2018



Fire Alarm Systems

Level IV Selected General References

Candidates are permitted to bring only the following three references into the test center:

<u>Title</u>	<u>Edition*</u>
NFPA 72	2013
NFPA 101	2012
IBC	2012

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a fire alarm systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

29 CFR 1910: Occupational Safety and Health Standards.

29 CFR 1926: Safety and Health Regulations for Construction.

Active Training. Mel Silberman, Jossey-Bass.

AIA Contract Documents, American Institute of Architects.

Construction Contracting. Richard H. Clough, Wiley-Interscience.

Construction Management – Jumpstart. Barbara J. Jackson, Sybex.

Fire Alarm Signaling Systems. Richard W. Bukowski, National Fire Protection Association.

Guide to Contract Documents. Waller S. Poage, Construction Publishers and Consultants.

NFPA 70 (2011): National Electrical Code. National Fire Protection Association.

Project Management. Harold Kerzner, Wiley.

Project Management. Michael S. Dobson, Adams Media Corporation.

Safety Training Methods. Jack B. ReVelle, Wiley-Interscience.

UL 864 (2003): Control Units and Accessories for Fire Alarm Systems, Underwriters Laboratories.

➤ This listing is not intended to be complete or representative.

April 29, 2014

Exam Information

Fire Alarm Systems Exams	
Level I Exam	75 questions, 110 min.
Level II Exam	99 questions, 150 min.
Level III Exam	102 questions, 150 min
Level IV Exam	105 questions, 185 min.

Fees

Standard Model/CBT Application

Level I	\$225
Level II	\$290
Level III	\$345
Level IV	\$400

Base Recertification Fee (includes one subfield) \$200

Incremental Fee (each additional subfield) \$50

Inspection and Testing of Fire Alarm Systems Program Information

Technician Profile

Application Package (fees, certification requirements, experience forms, performance measures, and Level IV major project guidelines)

Exam Content Outlines

References Material used during program development

Exam Information (number of questions, time allotted)

Fees (application, recertification)

Inspection and Testing of Fire Alarm Systems (I&TFAS) Technician Profile

This certification program is for engineering technicians engaged in the performance, documentation, planning, and coordination of periodic inspection and testing of existing fire alarm systems and their components. General areas covered include inspection and testing procedures, periodicity, documentation, safety, and work management. Technical areas covered include types of fire alarm systems and their respective components, device and circuit specific test procedures for initiating devices, notification appliances, supervisory signal-initiating devices, primary and secondary power supplies, emergency communications equipment, interface with other systems, and on/off premises monitoring.

Level I I&TFAS Technicians

Level I I&TFAS technicians are trainees and entry-level technicians who perform limited job tasks under supervision. They perform periodic inspections and tests of basic fire alarm systems and prepare related records and reports. Basic fire alarm systems do NOT include the following: suppression interfaces, networked control units, smoke control interface, aspirating systems, multi-zone voice evacuation systems, high-rise applications, and job planning; but MAY include elements such as door releases, elevator recall, local duct detectors, local air handler shutdown, single-zone voice evacuation, etc. They have at least 6 months of experience in I&TFAS.

Level II I&TFAS Technicians

Level II I&TFAS technicians perform routine tasks under limited supervision. Level II Technicians can plan, perform, and coordinate periodic inspections and tests of complex fire alarm systems and prepare related records and reports. Complex systems may include, but are not limited to, one or more of the following: suppression interfaces, networked control units, smoke control interfaces, air sampling systems, multi-zone voice evacuation systems, and/or high-rise applications. Level II Technicians have at least 18 months of experience in I&TFAS.



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Standard Model Programs

Basic Instructions

Certification candidates must submit the entire Certification Application Package, including the Test Application and the Experience Application. After a candidate passes a written exam requirement, his or her work experience will be evaluated by NICET.

At minimum, a candidate must submit the Test Application in order to schedule and sit for an exam. However, to prevent delays in certification, candidates are recommended to submit their completed Experience Application at the time they apply for the exam.

Each NICET Standard Model program has a specialized Certification Application Package, which can be found on NICET's website. Each Certification Application Package is comprised of the following parts:

Test Application

Section I: Candidate Information

Section II: Payment Form

Experience Application

Part I: Work History

Part II: Verifier Data

Part III: Performance Verification

Mail this application, with payment, to:

NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

To send by expedited mail (e.g. – FedEx, UPS):

NICET
c/o Bank of America Lockbox Services
Lockbox 418651
MA5-527-02-07
2 Morrissey Blvd.
Dorchester, MA 02125

Send applications/documentation without payment to:

NICET
1420 King Street
Alexandria, VA 22314

REMEMBER!

- **Ensure that you are submitting the correct application materials and fee payment. Access the current certification criteria and fee information at www.nicet.org.**
- **Make a copy of the entire application and keep it with your testing/certification records.**
- **Include name and identification number on every page of every part of the application.**

Did you remember to:

- Sign and Date the Applicant's Statement of Understanding in Section 1?
- Enclose your payment?
- Keep a copy of this application for your records?
- Mail all sections of this application together?



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
 Inspection and Testing of Fire Alarm Systems



Requirements for Inspection and Testing of Fire Alarm Systems Certification

Level I Scope:

Perform periodic inspections and tests of basic* fire alarm systems and prepare related records and reports.

*Basic fire alarm systems do not include the following: suppression interfaces, networked control units, smoke control interfaces, aspirating systems, multi-zone voice evacuation systems, high-rise applications, and job planning.

Level II Scope:

Plan, perform, and coordinate periodic inspections and tests of complex* fire alarm systems, and prepare related records and reports.

*Complex fire alarm systems may include, but are not limited to, one or more of the following: suppression interfaces, networked control units, smoke control interfaces, air sampling systems, multi-zone voice evacuation systems, or high-rise applications.

Level I	Level II
Examination – Pass the:	
Level I exam	Levels I and II exams
Performance Verification – Obtain supervisor verification of:	
All Level I Performance Measures	All Levels I and II Performance Measures
Work History – Provide complete, detailed position descriptions and time allocations showing¹:	
<p>A minimum of 6 months of experience in the inspection and testing of fire alarm and suppression systems. Of this 6 months:</p> <ul style="list-style-type: none"> • A <u>minimum</u> of 2 months <u>must</u> be periodic/maintenance inspection and testing of fire alarm systems. • A <u>maximum</u> of 4 months <u>may</u> be acceptance testing of fire alarm systems. • A <u>maximum</u> of 2 months <u>may</u> be inspection and testing—for either acceptance or maintenance—of sprinkler or special hazards fire suppression systems. 	<p>The minimum required for Level I, <u>plus</u> a minimum of 12 additional months of experience in the inspection and testing of fire alarm and suppression systems. Of this additional 12 months:</p> <ul style="list-style-type: none"> • A <u>minimum</u> of 4 months <u>must</u> be periodic/maintenance inspection and testing of complex² fire alarm systems. • A <u>maximum</u> of 8 months <u>may</u> be acceptance testing of complex² fire alarm systems. • A <u>maximum</u> of 3 months <u>may</u> be inspection and testing—for either acceptance or maintenance—of sprinkler or special hazards fire suppression systems.
Personal Recommendation – Obtain recommendation	
(not required)	(not required)
Major Project – Provide a detailed description of a	
(not required)	(not required)
¹ Time periods are full time equivalent. ² "Complex" as defined in the Level II Scope and Content Outline.	



National Institute for Certification in Engineering Technologies®

A division of the National Society of Professional Engineers
www.nicet.org



NICET ENGINEERING TECHNICIAN CERTIFICATION Test Application - Section 1: Candidate Information

(Please print clearly or type)

ID Number

☐ Mr.

Name: ☐ Ms.

Last Name

First Name

Middle Initial

Name Change? If your name has changed since your last application, enter your previous name here: _____

Note: At your test site, you will be required to present a government-issued photo ID; the name on your ID must be identical to the name that you provide above. This name will also appear on all correspondence and any certification documents issued to you by NICET.

Indicate your status below. You must write your ID number in the space provided at the top right corner of each page of the application.

☐ I have a NICET ID my number is: _____. **Note:** If you have achieved NICET certification, your NICET ID number is NOT the same as the certification number that appears on your certificate and wallet card. Your NICET ID number can be found on most of your personal NICET records. If you do not know your NICET ID number, please call NICET at 888-476-4238.

☐ This is my first application.

First-time applicants must provide ONE of the government ID numbers requested below. In the Test Application Package and the Experience Application package, when a space is provided in the top right corner for a NICET ID number, please write your Government ID number. Once NICET has processed your test application, you will be issued a permanent NICET ID number.

☐ Social Security Number: _____

☐ Driver's License No.: _____ State: _____ Expiration date: _____

☐ Government-issued photo ID no.: _____ Issue date: _____ Expiration date: _____

Issuing agency: _____

☐ Passport No.: _____ Issuing country: _____ Issue date: _____

NICET reserves the right to require a photocopy of this ID to confirm the submitted information (name, ID number, address, signature).

Address Information

Home Address:

Street Apt.

City State Zip Code +4

Present Employer:

Company Name
Business Address:

Street

City State Zip Code +4

When receiving items by mail, which address do you prefer?

Business ☐ Home ☐

Present Position Title: _____

Electronic Contact Information and Preferences

Phone Numbers Business: _____ Home: _____
Mobile/cell: _____ Fax: _____

Email Addresses Business: _____
(Please print carefully) Home: _____

May we contact you about NICET business by:

• **Email?** ☐ yes ☒ no **If yes, preferred email address?** ☒ Business ☐ Home

If you permit NICET to contact you by email, then your testing authorization notice and other correspondence about your upcoming exam will be delivered via email. Please ensure that your e-mail filter can accept messages from the domain @nicet.org

• **Fax?** ☐ yes ☐ no

Applicant's Statement of Understanding

I certify that the information given on this page is accurate and current, that NICET may use the information as indicated to identify me and to send me information, and that it is my responsibility to notify NICET should any of the information provided on this page change. I have read, understood, and accept the NICET Conditions of Application. I have read, understood, and agree to abide by the NICET Code of Ethics.

Signature

Date



Conditions of Application for Technicians

1. **NICET has established policies, procedures, and fees** that govern certification decisions, the uses of certification, and interactions with applicants and certificants. These policies, procedures, and fees may be changed by NICET at any time without prior notification. These policies, procedures, and fees are freely available on NICET's website (www.nicet.org). Each person who signs any NICET application accepts and agrees to follow these policies and procedures in all dealings with NICET.
2. **Each NICET certification may have multiple criteria** that must be met by a candidate in order for the certification to be conferred. These criteria may be changed by NICET at any time without prior notification. Current criteria, along with general information about NICET and its certification programs, are available from NICET's website (www.nicet.org). Individuals who are not resident in, or working in, the United States or its territories may not be eligible for certification. These individuals must contact NICET before applying and may be required to follow additional procedures, with additional fees, to demonstrate that they meet the criteria.
3. All applicants, candidates, and certificants **must comply with the NICET Code of Ethics** (see previous page) and follow generally accepted ethical practices at all times. For example, acquiring and/or providing specific knowledge of test questions prior to testing, or acquiring or providing assistance during an examination; intentionally providing information to NICET that is incomplete, or inaccurate; or knowingly providing technical services in an unsafe, inaccurate, or unprofessional manner may subject the offender to any number of sanctions, including legal prosecution.
4. NICET reserves the right to **deny, suspend, or revoke any certification** (pending or awarded) should the Institute determine that an applicant, candidate, or certificant has misrepresented information, violated a NICET policy or procedure, or violated the NICET Code of Ethics.
5. Maintenance of **current accurate contact information** is the responsibility of the applicant. NICET requires accurate contact information to communicate to the applicant important information related to testing, certification, and recertification.
6. **The NICET name, logo, and certification mark are the property of NICET and may not be used without the expressed written permission of the Institute.**
7. **NICET approval letters, wallet cards, and certificates** are issued to certificants for their use but remain NICET property at all times and may be recalled by the Institute at any time without prior notification.
8. **NICET test questions and examinations** are the copyrighted property of NICET. Any copying, sharing, or distribution of the content of those test questions and/or examinations constitutes copyright infringement and is a violation of U. S. federal law. Violators will be subject to suspension or revocation of NICET status and/or prosecution to the full extent of the law.
9. Each person who signs a NICET application grants NICET the **right to contact individuals** named in application materials or other communications with NICET to confirm the accuracy of information provided by the applicant.
10. **NICET certification must be used, represented, and displayed** in accordance with NICET policies. NICET certification does not constitute a license to practice engineering.
11. Each person who signs a NICET application grants NICET the **right to publish their name, address, and certification** information in its certification directories and to provide that information to others in response to bonafide inquiries. Test scores will be given to the test-taker only, unless the test-taker submits a release form authorizing NICET to give the scores to another specified individual.
12. The applicant's **Social Security number or government-issued ID number** is required for identification purposes. It will be used for NICET internal use ONLY and will not be given to anyone else without legitimate legal reason.
13. **An applicant's test records will be purged** for an individual certification area after five years if no further testing is completed in that certification area and the individual is not certified in that area. If the applicant has active certifications or is actively testing in other certification areas, the records for those other certification areas will not be affected.
14. **An applicant with a disability** as defined in Title III of the Americans with Disabilities Act who may be placed at a disadvantage when taking a NICET certification examination must advise NICET, in writing, of their needs by including a letter or other appropriate documentation with their application. NICET will respond by telephone or other means to make appropriate accommodations.
15. **All certifications expire** three years after an individual's initial certification is awarded and every third year thereafter. Recertification will be based on the certificant's activities during that three-year period. Requirements and fees may be found in NICET's Continuing Professional Development Policy (See www.nicet.org). Several months before expiration, a recertification application will be sent to the last postal or email address provided by the certificant. If the application with payment is not received by NICET prior to the expiration date, the certificate will expire. Reinstatement to Active Status will involve an additional fee. If reinstatement has not occurred three years after the expiration date, all certifications and all testing records will be purged. Payment of new testing and/or application fees does not substitute for payment of the full recertification fee when due. Additionally, obtaining a higher-level NICET certification does not alter or "reset" the originally established three-year certification period.

NICET Code of Ethics

NICET-certified engineering technicians and technologists recognize that the services they render have a significant impact on the quality of life for everyone. As they perform their duties and responsibilities on behalf of the public, employers, and clients, they shall demonstrate personal integrity and competence. Accordingly, certificants shall:

1. Have due regard for the physical environment and for public safety, health, and well being. If their judgment is overruled under circumstances where the safety, health, property, or welfare of the public may be endangered, they shall notify their employer, client, and such other authority as may be appropriate. An employee shall initially express those concerns to the employer.
2. Undertake only those assignments for which they are competent by way of their education, training, and experience.
3. Perform their duties in an efficient and competent manner with fidelity and honesty.
4. Admit and accept their own errors when proven wrong and never distort nor alter the facts in an attempt to justify their decisions.
5. Avoid conflicts of interest whenever possible. When unavoidable, they shall disclose to their employer or client, in writing, any action that might create the appearance of a conflict of interest.
6. Avoid receiving and granting bribery in all its forms.
7. Strive to maintain their proficiency by updating their technical knowledge and skills in engineering technology.
8. Not misrepresent or permit misrepresentation of their own or their associate's academic or professional qualifications nor exaggerate their degree of responsibility for any work.
9. Not reveal facts, data, or information obtained in connection with services rendered without prior consent of the client or employer except as authorized by law.



Candidate Name: _____

NICET ID No.: _____



**NICET ENGINEERING TECHNICIAN CERTIFICATION
Test Application - Section 2:
PAYMENT FORM**

Examination Selection

For each exam selected, indicate the Window ID number of your preferred 3-month testing window (not to be more than six months from the postmark date on this application) from the Eligibility Schedule to the right. The fee includes an experience evaluation if the candidate passes the written exam.

	Window ID	Fee
Electrical Power Testing		
<input type="checkbox"/> Level I Exam (10027)		\$225
<input type="checkbox"/> Level II Exam (10028)		\$290
<input type="checkbox"/> Level III Exam (10029)		\$345
<input type="checkbox"/> Level IV Exam (10030)		\$400
Inspection and Testing of Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10035)		\$225
<input type="checkbox"/> Level II Exam (10036)		\$290
Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10007)		\$225
<input type="checkbox"/> Level II Exam (10008)		\$290
<input type="checkbox"/> Level III Exam (10009)		\$345
<input type="checkbox"/> Level IV Exam (10010)		\$400
Inspection and Testing of Water-Based Systems		
<input type="checkbox"/> Level I Inspection & Testing Fundamentals (10017)		\$170
<input type="checkbox"/> Level I Work Practices Exam (10018)		\$170
<input type="checkbox"/> Level II Inspection Exam (10019)		\$180
<input type="checkbox"/> Level II Testing Exam (10020)		\$180
<input type="checkbox"/> Level II Work Practices Exam (10021)		\$180
<input type="checkbox"/> Level III Inspection & Responsibilities Exam (10022)		\$225
<input type="checkbox"/> Level III Advanced Testing Exam (10023)		\$225
Water-Based (formerly Automatic Sprinkler) Systems Layout		
<input type="checkbox"/> Level I Exam (10011)		\$225
<input type="checkbox"/> Level II Exam (10012)		\$290
<input type="checkbox"/> Level III General Plan Preparation Exam (10013)		\$285
<input type="checkbox"/> Level III Hydraulics & Water Supply Exam (10014)		\$285
<input type="checkbox"/> Level IV Exam (10016)		\$400
Special Hazards Systems		
<input type="checkbox"/> Level I Exam (10031)		\$225
<input type="checkbox"/> Level II Exam (10032)		\$290
<input type="checkbox"/> Level III Exam (10033)		\$345
<input type="checkbox"/> Level IV Exam (10034)		\$400
Video Security Systems Technician		
<input type="checkbox"/> Level I Exam (10001)		\$225
<input type="checkbox"/> Level II Exam (10002)		\$290
<input type="checkbox"/> Level III Exam (10003)		\$345
<input type="checkbox"/> Level IV Exam (10004)		\$400
Video Security Systems Designer		
<input type="checkbox"/> Level I Exam (10005)		\$290
<input type="checkbox"/> Level II Exam (10006)		\$345
Total:		\$0

Eligibility Schedule

Window ID	Window Period	Window ID	Window Period
1	January/February/March	7	July/August/September
2	Feb/March/Apr	8	August/September/October
3	March/April/May	9	September/October/November
4	April/May/June	10	October/November/December
5	May/June/July	11	November/December/January
6	June/July/August	12	December/January/February

You can apply for your test online.

You can submit payment for this application at NICET's website. Visit www.nicet.org, and login to your account. From there, you can submit/update your contact information, select your test, and pay with a credit card.

Payment and mailing information

Payment of the total Examination fee in the form of a check or money order made payable to NICET, must accompany this application form.

Any Certification Application that includes a check or money order must be sent to NICET at:

Via U.S. Postal Service:
NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

Via FedEx, UPS:
NICET
c/o Bank of America Lockbox Services
Lockbox 418651
MA5-527-02-07
2 Morrissey Blvd.
Dorchester, MA 02125

Any Certification Application forms that do not include a payment must be sent to:

Evaluations
NICET
1420 King Street
Alexandria, VA 22314

Don't forget to:

- Sign and Date the Applicant's Statement of Understanding in Section 1.
- Enclose your payment.
- Keep a copy of this application for your records.
- Mail all sections of this application together.

Express Evaluation (optional)

To speed up your experience evaluation, please contact NICET at 888-476-4238, Option 4, to ask for Express Evaluation instructions and arrange for electronic payment of the Express Evaluation fee of \$295 per subfield per Level. Express evaluations will be completed within 10 business days of the receipt of payment.

NICET OFFICE USE ONLY

Employer ID	Postmark Date	Spec. Cont.	ADA	App #	Lockbox #1	Amt. Paid



Experience Application Part 1: Work History Sections 1, 2, and 3



INSTRUCTIONS and CHECKLIST

First-time applicants (and those specifically directed by NICET):

For the span of your entire career, complete one form **consisting of at least sections 1, 2, and 3** for each position held at each employer **and for any period within a given position in which your responsibilities changed significantly.**

Returning applicants

Follow the instructions above solely for the period of time from the end date of your last work history submittal to the date you submit a new application.

Section 1 – Position Identification

Section 2 – Time Allocation

Break out your experience into all applicable technical areas in which you worked while in the position listed in Section 1.

Section 3 – Detailed Description of Work Performed

For each Subfield / Technical Area (S/TA) into which you divided your work in Section 2 – Time Allocation, provide detailed descriptions, in your own words, of the work you performed.

- Detail the technical and supervisory nature of the work.
- Describe the types of tasks you performed and the types and scopes of projects on which you worked.
- Detail the types of materials, tools, machinery, systems, and system components with which you worked.

For all gaps in your work histories (e.g., unemployment periods, winter breaks, and so on.

In Section 2, line item “Other”, write “Gap” and in Section 3 on page 2 of 3 provide the reason for the gap.

If you are submitting a work history amendment you must submit the following:

- a signed and dated letter of explanation for the changes you made to your account
- the amended work history forms countersigned by your verifier, who by so doing indicates his or her attestation to the accuracy and completeness of the amended account

Work History Form Checklist – Do:

- ☐ Submit Sections 1, 2 and 3 of the form of the form for each position held.
- ☐ Ensure that the forms are completely and accurately filled out for the period from one submittal to the next.
- ☐ Make sure to provide the “Dates Positions Held” including **month** and **year**.
- ☐ Provide in Section 3, corresponding detailed descriptions for each Subfield / Technical Area (S/TA) in which your experience was broken out in Section 2, using your own words.
- ☐ Sign and date each page as indicated. Unsigned documents will not be accepted.

Work History Form Checklist - Do Not:

- ☐ Submit official position descriptions, resumes, testimonials, and marketing materials in lieu of completing Section 3 to describe your responsibilities.
- ☐ Submit amended work experience accounts without a signed letter of explanation for the changes in your work history unless directed to do so by NICET.
- ☐ Have verifier countersign work history forms unless directed by NICET to do so.
- ☐ Submit forms of your own design.

All information provided in candidate’s application is cross-evaluated with documents on file to verify the following:

- consistency of work experience accounts
- appearance of signatures and initials
- appropriateness of verifier and recommender

and, as needed, through third-party entities including the following:

- licensing bodies and authorities having jurisdiction
- previous and current employers
- other sources of official documentation

Note: Work experience documents submitted with applications to test are placed in the queue for evaluation when a candidate meets the exam requirements for a given subfield and level. Work experience documents received in response to Conditional Decision Letters (CDLs) are placed in the queue for evaluation upon their receipt. In both cases the documents are evaluated in the order they are placed in their respective queues. (first-come, first-served)

Based on the present workload, it may take up to 90 days from the date a candidate meets an exam requirement for work experience documents to be evaluated and up to 60 days from date of receipt for CDL responses to be evaluated.



Candidate: _____

NICET ID No: _____

**Experience Application - Part I: Work History****Section 1 – Position Identification**

Employer:	Location of employer (city, state):	Name of supervisor (s):
Candidate's Position:	Dates position / responsibilities held:	Full-time <input type="checkbox"/> Part-time <input type="checkbox"/> Seasonal <input type="checkbox"/>
President / owner / co-owner	From: Month _____ Year _____ To: Month _____ Year _____	If part-time, hours per week: _____ If full-time seasonal, months worked per season _____

Section 2 – Time Allocation

Subfield / Technical Area (S/TA)	Description	Time devoted to S/TA (%)
Fire Alarm Systems (FA)	Fire alarm systems specific activities including project management, system layout (plan preparation), equipment selection, installation, troubleshooting, servicing, and technical sales.	%
Fire Alarm Systems Inspection / Testing (ITF)	Fire alarm systems work limited to performing, planning, and coordinating the inspection and testing of fire alarm systems.	%
Special Hazards Systems (SH)	Special hazards suppression systems specific activities including project management, system layout (plan preparation), equipment selection, installation, acceptance testing, troubleshooting, servicing, and sales.	%
Water-based Fire Protection Systems Layout (SP)	Water-based fire protection systems layout specific activities including project management, system layout (plan preparation), hydraulic calculations, site evaluation, equipment selection, plan approval, and sales.	%
Water-based Fire Protection Systems Inspection / Testing (ITS)	Specifically performing and managing the inspecting and testing of existing systems according to NFPA 25. Does not include work performed during installation and final testing / commissioning of new systems.	%
Water-based Fire Protection Systems Fitting / Fabrication (SF)	The performance and supervision of fitting, fabrication, maintenance, tests and inspections performed during installation and final testing / commissioning of new water-based fire protection systems or additions to systems.	%
Other Fire Protection Work (OFP)	This includes work with portable extinguishers, standpipe hoses and nozzles, municipal and private fire hydrants, fire-stopping, and firefighter duties.	%
Video Security System Technician (VST)	Video security systems specific activities including management, installation, preventative and corrective maintenance, tests and inspections, troubleshooting, and servicing.	%
Video Security System Designer (VSD)	Video security systems design and plan preparation specific activities including management, plan preparation, site evaluation, equipment selection, plan approval, and technical sales.	%
Industrial Instrumentation (I/I)	Industrial instrumentation work including management, design assistance, installation and maintenance of industrial measurement and control systems.	%
Audio Systems (AS)	Audio system specific activities including the layout, installation, and maintenance of audio systems for commercial, industrial, and large space applications.	%
Electrical Power Testing (EPT)	Specifically testing electrical power equipment, cabling, and systems operating in the range of 600 V and above. Does not include general wireman duties.	%
Other Low / Limited Voltage Systems (LV)	Work with non-fire alarm low/ limited voltage systems such as security, access control, nurse call, building control, computer networking, and emergency lighting.	%
Other Electrical Systems (GE)	General electrician work - residential and commercial wiring of loads including light machinery, lighting, HVAC components, and distribution panels and outlets.	%
Other	Specify: Gap:	%
The sum of all the values in this column cannot exceed 100%.		100%

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature _____

Date _____

Verifier's Signature
(Only if directed by NICET) _____

Sections 1, 2, and 3 must be filled out for each position held.

5/15

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____

NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed

NICET cannot accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations. If supplementary space is needed use additional pages of Section 3.

S/TA	*EXAMPLE*	Detailed Description of Technical Work Performed
SF		Supervised and performed the installation, corrective maintenance, under construction testing, and commissioning of new fire sprinkler systems and system additions. Systems installed included wet, dry, pre-action, deluge, and foam. Components installed and maintained included piping, pipe hangers, earthquake bracing, alarm check valves, various cutout valves, flow sensors, FD connections, standpipe hose connections, jockey and fire pumps, and backflow preventers. Installed systems of 25 – 600 heads in a variety of building types including residential and commercial high rise, mercantile, manufacturing, school, and military.
S/TA		Detailed Description of Technical Work Performed
S/TA		Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature_____
Date_____
Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____

Candidate NICET ID No.: _____

**NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part II: Verifier Data**

(Please print legibly or type)

To be completed by the Verifier only

Name: _____ Title: _____

Current employer: _____

Daytime phone: _____ Email: _____

Professional licenses/certifications: _____

My observation of the candidate occurred during my employment at:

☐ Current employer☐ Previous employer: _____

My observation of the candidate occurred as a part of my role as:

☐ Candidate's direct supervisor☐ Candidate's indirect supervisor/manager responsible for the candidate's work results/outcomes☐ Engineer on one of the candidate's projects☐ Governmental authority: _____☐ Contract supervisor for: _____ client, or _____ general contractor☐ Other: _____

I have (Check all that apply):

☐ directly observed the candidate's work.☐ directly observed the results of the candidate's work.☐ received reliable reports from those who have directly observed the candidate's work.☐ observed the candidate's ability to supervise others who are doing this work.

During what time period were you in the above-indicated relationship with the candidate?

From _____ / _____ to _____ / _____
Mo. Yr. Mo. Yr.**Verifier's Statement:**

I certify that:

- I understand and have carefully considered each performance measure that I have verified or will verify.
- I have not verified, and will not verify, any performance measure that I have not either personally observed or received reliable and specific reports from one who has personally observed the performance.
- I have not signed, and will not sign, any verification statement on a form that does not have the candidate's name at the top.
- I have not asked nor will I ask anyone to sign my name in my stead.

Signature _____ Date _____ Initials _____

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____

Verifier: _____



NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Inspection and Testing of Fire Alarm Systems

Instructions to the Verifier: For each performance measure listed, please write your initials in the appropriate column to indicate whether you have witnessed that capability in the candidate's performance of his/her job.

Level I Performance Measures

<i>The candidate has repeatedly demonstrated:</i>		Verifier's Initials
0306-1101	Maintain person safety on the job site.	
0306-1102	Select and use the proper tools, materials, and instruments for Level I tasks.	
0306-1103	Identify and test control units, power supplies, and off-premises communication equipment.	
0306-1104	Identify and test common notification and initiating devices.	
0306-1105	Identify and apply the inspection and testing methods as defined in NFPA 72.	
0306-1106	Prepare documentation of inspection and testing activities in accordance with NFPA 72 requirements.	
0306-1107	Read and interpret system plans to locate fire alarm system devices.	
0306-1108	Locate and identify fire alarm system interfaces with other systems.	
0306-1109	Recognize and report either external signs of obstruction or damage to fire alarm system devices.	
0306-1110	While performing inspections, communicate with the facility owner, occupants, and AHJ to exchange needed information about inspection and testing activities and alarm coordination.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____

Date: _____

Level II Performance Measures

<i>The candidate has repeatedly demonstrated an ability to:</i>		Verifier's Initials
0306-3101	Identify the major components of specialized systems and their functions.	
0306-3102	Identify the fire alarm system interfaces with suppression and pre-action systems, as well as their components, wiring, and functions.	
0306-3103	Read and apply manufacturers' information to correctly inspect and test interfaces with specialized equipment, such as flame detectors, radiant heat detectors, mass notification systems, smoke control equipment, and so forth.	
0306-3104	Recognize and report external signs of damage or obstructions to the proper operation of specialized equipment, such as flame detectors, radiant heat detectors, mass notification systems, smoke control equipment, and so forth.	
0306-3105	Determine signal paths and interactions from system plans.	
0306-3106	Predict the fire alarm system response to a signal or activity generated by an interfaced suppression or pre-action system and vice versa.	
0306-3107	Identify and apply inspection and testing frequencies and methods, as defined in NFPA 72.	
0306-3108	Properly document testing activities and findings in accordance with the relevant standards and authorities.	

Level II Performance Measures continued

<i>The candidate has repeatedly demonstrated an ability to:</i>		Verifier's Initials
0306-3109	Plan the inspection and testing of a large, complex fire alarm system, including coordination with the owner and with other trades, specialties, and authorities.	
0306-3110	Coordinate the activities of a team of inspectors on a large, complex inspection and testing job effectively to ensure a full and accurate accounting of the condition and status of the system and satisfaction of the requirements of the applicable standards and authorities.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Inspection and Testing of Fire Alarm Systems Certification

Level I Content Outline

The candidate for NICET certification at Level I in Inspection and Testing of Fire Alarm Systems should have the knowledge and experience to:

Perform periodic inspections and tests of basic* fire alarm systems and prepare related records and reports.

**Basic fire alarm systems do NOT include the following: suppression interfaces, networked control units, smoke control interface, aspirating systems, multi-zone voice evacuation systems, high-rise applications, and job planning; but MAY include elements such as door releases, elevator recall, local duct detectors, local air handler shutdown, single-zone voice evacuation, etc.*

1.1 Plan and Coordinate Work

(Questions related to these tasks make up 24-34% of the exam.)

- 1.1.1 Determine the number, type, and location of devices to be inspected and/or tested.
- 1.1.2 Coordinate with the owner/building manager during inspection and testing.
- 1.1.3 Identify and apply the appropriate inspection and testing requirements for the job.
- 1.1.4 Issue notifications of testing as needed.
- 1.1.5 Identify impairments and issue appropriate notifications.
- 1.1.6 Restore the system.
- 1.1.7 File documentation and reports.

1.2 Inspect Equipment

(Questions related to these tasks make up 24-34% of the exam.)

- 1.2.1 Inspect system control units.
- 1.2.2 Inspect system power supplies, wiring, and connections.
- 1.2.3 Inspect initiating devices.
- 1.2.4 Inspect notification appliances.
- 1.2.5 Inspect equipment for off-premises signaling.
- 1.2.6 Inspect signal wiring and connections.

1.3 Test Functionality

(Questions related to these tasks make up 34-44% of the exam.)

- 1.3.1 Test functionality of system control units.
- 1.3.2 Test functionality of power supplies.
- 1.3.3 Test functionality of initiating devices and circuits.
- 1.3.4 Test functionality of notification appliances and circuits.
- 1.3.5 Test functionality of equipment and circuits for off-premises signaling.
- 1.3.6 Test functionality of basic interfaces.
- 1.3.7 Manually measure sensitivity of detectors (without accessing site-specific programming).

1.4 Maintain Devices

(Questions related to these tasks make up 5-13% of the exam.)

- 1.4.1 Replace batteries as needed.
- 1.4.2 Replace devices as needed.
- 1.4.3 Clean devices as needed.

Approved January 7, 2015



Inspection and Testing of Fire Alarm Systems Certification

Level II Content Outline

The candidate for NICET certification at Level II in Inspection and Testing of Fire Alarm Systems should have the knowledge and experience to:

Plan, perform, and coordinate periodic inspections and tests of complex* fire alarm systems and prepare related records and reports.

**Complex systems may include, but are not limited to, one or more of the following: suppression interfaces, networked control units, smoke control interfaces, air sampling systems, multi-zone voice evacuation systems, and/or high-rise applications.*

2.1 Plan and Coordinate Work

(Questions related to these tasks make up 20-30% of the exam.)

- 2.1.1 Determine the scope of an inspection assignment involving interfaces with other systems.
- 2.1.2 Survey a system to identify types of devices, fire alarm system interfaces, potential problems, and existing documentation.
- 2.1.3 Determine the presence of other fire protection and building systems, and device locations.
- 2.1.4 Coordinate inspection and testing with the owner prior to and during the inspection.
- 2.1.5 Coordinate testing with other trades and specialties as needed.
- 2.1.6 Identify, read, and interpret the appropriate codes and standards for the inspection assignment.
- 2.1.7 Issue testing notifications as needed.
- 2.1.8 Restore the system.
- 2.1.9 Identify and file system-appropriate documentation and reports.

2.2 Inspect Interfaces and Specialized Equipment

(Questions related to these tasks make up 28-38% of the exam.)

- 2.2.1 Inspect elevator shutdown interfaces.
- 2.2.2 Inspect smoke control system interfaces.
- 2.2.3 Inspect interfaces with suppression and pre-action systems.
- 2.2.4 Inspect emergency communication systems equipment.
- 2.2.5 Inspect specialized detection equipment.
- 2.2.6 Inspect networked control equipment.

2.3 Test Functionality of Specialized and Interfaced Equipment and Circuits

(Questions related to these tasks make up 37-47% of the exam.)

- 2.3.1 Test elevator shutdown activation.
- 2.3.2 Test smoke control system interfaces.
- 2.3.3 Test interfaces with suppression and pre-action systems.
- 2.3.4 Test emergency communication systems equipment.
- 2.3.5 Test specialized detection equipment.
- 2.3.6 Test networked control equipment.



Inspection and Testing of Fire Alarm Systems

Level I Selected General References

Candidates are permitted to bring only the following reference into the test center.

<u>Title</u>	<u>Edition*</u>
NFPA 72	2013

This standard will also be available on-screen during the exam. Candidates may refer to their hardcopy and/or the on-screen copy.

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the reference listed above, the following publications can provide some of the job knowledge required by an inspection and testing technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

29 CFR 1910: Occupational Safety and Health Standards.

29 CFR 1926: Safety and Health Regulations for Construction.

NFPA 70: National Electric Code. National Fire Protection Association.

NFPA 70E: Electrical Safety in the Workplace. National Fire Protection Association.

➤ This listing is not intended to be complete or representative.

Effective May 1, 2015



Inspection and Testing of Fire Alarm Systems

Level II Selected General References

Candidates are permitted to bring only the following reference into the test center.

<u>Title</u>	<u>Edition*</u>
NFPA 72	2013

This standard will also be available on-screen during the exam. Candidates may refer to their hardcopy and/or the on-screen copy.

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

During the exam, the following titles will be available to candidates **on-screen only**:

<u>Title</u>	<u>Edition*</u>
NFPA 92	2012

*The test questions are based on the edition listed above. This edition will be available to candidates during the exam in PDF format.

In addition to the references listed above, the following publications can provide some of the job knowledge required by an inspection and testing technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

29 CFR 1910: Occupational Safety and Health Standards.

29 CFR 1926: Safety and Health Regulations for Construction.

NFPA 13 (2013): Standard for the Installation of Sprinkler Systems. National Fire Protection Association.

NFPA 70: National Electric Code. National Fire Protection Association.

NFPA 70E: Electrical Safety in the Workplace. National Fire Protection Association.

➤ This listing is not intended to be complete or representative.

Effective June 1, 2015

Exam Information

Inspection and Testing of Water-Based Systems Exam	
Level I Exam	77 questions, 110 min.
Level II Exam	69 questions, 110 min.

Fees

Inspection & Testing of Fire Alarms Systems Standard Model/CBT Application

Level I	\$225
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Level II	\$290
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Base Recertification Fee (includes one subfield)	\$200
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Incremental Fee (each additional subfield)	\$50
--------------------------------------------	------

Water-Based Systems Layout Program Information

Technician Profile

Application Package (fees, certification requirements, experience forms, performance measures, and Level IV major project guidelines)

Exam Content Outlines

References Material used during program development

Exam Information (number of questions, time allotted)

Fees (application, recertification)

Water-Based Systems Layout (WBSL) Technician Profile

This certification program is for engineering technicians engaged in the layout and detailing of water-based fire protection systems that must meet code and statutory requirements. Areas covered include plan and submittal preparation, applications of various types of water-based systems, equipment selection and application, and technical management of layout projects. Technical areas covered include types of water-based systems and their components; water supply requirements; hydraulics; building features, hazards, and occupancy considerations; system installation, inspection, and maintenance requirements; applicable codes and standards; and contract administration.

Level 1 WBSL Technicians

Level I WBSL technicians are trainees and entry-level technicians who perform limited job tasks under frequent supervision. They are students who are learning, similar to apprentices. They learn about flow tests and field checks, coordination, and data entry. Level I Technicians clean up drawings and plans. Level I Technicians have at least 6 months of experience in WBSL.

Level II WBSL Technicians

Level II WBSL technicians perform routine tasks under supervision. They work on small projects, do simple calculations, and set up remote areas. They set up risers, prepare close out documents, and train in project management. Level II Technicians have at least 2 years of experience in WBSL.

Level III WBSL Technicians

Level III WBSL technicians work independently with standards, plans, and specifications to produce complete submittals for all types of systems. Level III technicians oversee Levels I and II; and they design projects start to finish. Level III Technicians have at least 5 years of WBSL experience.

Level IV WBSL Technicians

Level IV WBSL technicians are senior-level technicians whose work includes complex or specialized systems. They supervise other Technicians. Level IV Technicians have a comprehensive understanding of codes and standards. Level IV Technicians have at least 10 years of WBSL experience.



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Water-Based Systems Layout



Basic Instructions

Certification candidates must submit the entire Certification Application Package, including the Test Application and the Experience Application. After a candidate passes a written exam requirement, his or her work experience will be evaluated by NICET.

At minimum, a candidate must submit the Test Application in order to schedule and sit for an exam. However, to prevent delays in certification, candidates are recommended to submit their completed Experience Application at the time they apply for the exam.

Each NICET Standard Model program has a specialized Certification Application Package, which can be found on NICET's website. Each Certification Application Package is comprised of the following parts:

Requirements for Certification

Test Application

Section I: Candidate Information

Section II: Payment Form

Experience Application

Part I: Work History

Part II: Verifier Data

Part III: Performance Verification

Part IV: Personal Recommendation (required at Levels III and IV)

Part V: Major Project Write-Up (required at Level IV)

Mail your application with payment to:

NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

If you're submitting a form that supplements a previously-paid experience evaluation, then send to:

NICET Evaluation, 1420 King Street, Alexandria, VA 22314

REMEMBER!

- **Ensure that you are submitting the correct application materials and fee payment. Access the current certification criteria and fee information at www.nicet.org.**
- **Make a copy of the entire application and keep it with your testing/certification records.**
- **Include name and identification number on every page of every part of the application.**



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Water-Based Systems Layout



Requirements for Water-Based Systems Layout Certification

Level I	Level II	Level III	Level IV
Examination¹ – Pass the:			
Level I exam	Level I exam Level II exam	Level I exam Level II exam Level III General exam Level III Hydraulics exam	Level I exam Level II exam Level III General exam Level III Hydraulics exam Level IV exam
Performance Verification – Obtain Supervisor Verification of all Performance Measures for:			
Level I	Levels I and II	Levels I, II, and III	Levels I, II, III, and IV
Work Experience – Provide complete, detailed position descriptions and time allocations showing:			
<p>A minimum of 6 months of technical experience with aspects of plan preparation for water-based fire protection systems, including preparation and compiling of CAD drawings, including layout of sprinklers, and assisting in field surveys.</p> <p><i>*Note: All time requirements are full-time equivalent.</i></p>	<p>2 years of water-based fire protection systems layout core and related work experience. This must include at least 12 months of core water-based fire protection systems layout experience, including the complete layout of NFPA 13D, 13R, and/or 13 sprinkler systems, application of design specifications to NFPA 13 sprinkler and/or standpipe systems, field surveys for NFPA 13D, 13R, and/or 13 systems and standpipe systems, and detailing for other types of systems.</p> <p>The two years may include up to 12 months of related work experience, as defined below.</p> <p>1 year of related experience credit may be granted for 5 years' experience in any one or any combination of the following:</p> <ul style="list-style-type: none"> • Special hazards suppression systems installation • Special hazards systems layout • Inspection and testing of water-based systems • Sprinkler system installation <p>6 months of related experience credit may be granted for 3 years of experience in any one or two of the above work areas.</p> <p><i>*Note: All time requirements are full-time equivalent.</i></p>	<p>Minimum experience required for Level II PLUS an additional 3 years of water-based fire protection systems layout, involving the complete layout of sprinkler and standpipe systems, including hydraulic calculations, for a variety of applications, and which may include management of water-based system layout projects and/or code compliance.</p> <p><i>*Note: All time requirements are full-time equivalent.</i></p>	<p>The minimum required for Level III, plus 5 years of full-time involvement with layout of water-based systems*, which must include management of multiple layout projects involving multiple work teams, coordination with installers, and responsible interactions with clients, engineers, and AHJs. The 5 years may include up to one year's credit for 50% of the time involved as an AHJ in reviewing water-based system layouts for code compliance, up to a maximum of one year.</p> <p><i>*Note: Systems must include wet-pipe, dry-pipe, antifreeze, deluge, and pre-action, and may include foam and fixed water-spray.</i></p> <p><i>*Note: All time requirements are full-time equivalent.</i></p>
Personal Recommendation – Obtain recommendation ratings showing a capacity for:			
(not required)	(not required)	Independent engineering technician responsibilities	Senior engineering technician responsibilities
Major Project – Provide a detailed description of a major project and your role in it showing:			
(not required)	(not required)	(not required)	Senior responsibility for a water-based system layout project of substantial complexity

¹ If you are currently certified at a particular Level in this program, you do NOT need to take any test listed for that Level or lower. For example, if you want to test for Level III and are certified in this program at Level II through previous work element testing, then you must pass the Level III General and the Level III Hydraulics exams, but do not need to take the Level I or Level II exams.



National Institute for Certification in Engineering Technologies®

A division of the National Society of Professional Engineers
www.nicet.org



NICET ENGINEERING TECHNICIAN CERTIFICATION Test Application - Section 1: Candidate Information

(Please print clearly or type)

ID Number

Name: ☐ Mr. ☐ Ms. _____
Last Name First Name Middle Initial

Name Change? If your name has changed since your last application, enter your previous name here: _____

Note: At your test site, you will be required to present a government-issued photo ID; the name on your ID must be identical to the name that you provide above. This name will also appear on all correspondence and any certification documents issued to you by NICET.

Indicate your status below. You must write your ID number in the space provided at the top right corner of each page of the application.

- ☐ I have a NICET ID my number is: _____. Note: If you have achieved NICET certification, your NICET ID number is NOT the same as the certification number that appears on your certificate and wallet card. Your NICET ID number can be found on most of your personal NICET records. If you do not know your NICET ID number, please call NICET at 888-476-4238.

- ☐ This is my first application.

First-time applicants must provide ONE of the government ID numbers requested below. In the Test Application Package and the Experience Application package, when a space is provided in the top right corner for a NICET ID number, please write your Government ID number. Once NICET has processed your test application, you will be issued a permanent NICET ID number.

- ☐ Social Security Number: _____
- ☐ Driver's License No.: _____ State: _____ Expiration date: _____
- ☐ Government-issued photo ID no.: _____ Issue date: _____ Expiration date: _____
- Issuing agency: _____
- ☐ Passport No.: _____ Issuing country: _____ Issue date: _____

NICET reserves the right to require a photocopy of this ID to confirm the submitted information (name, ID number, address, signature).

Address Information

Home Address:

Street Apt.

City State Zip Code +4

Present Employer:

Business Address: Company Name

Street

City State Zip Code +4

When receiving items by mail, which address do you prefer?

Business ☐ Home ☐

Present Position Title: _____

Electronic Contact Information and Preferences

Phone Numbers Business: _____ Home: _____
Mobile/cell: _____ Fax: _____

Email Addresses Business: _____
(Please print carefully) Home: _____

May we contact you about NICET business by:

- Email? ☐ yes ☐ no If yes, preferred email address? ☐ Business ☐ Home
If you permit NICET to contact you by email, then your testing authorization notice and other correspondence about your upcoming exam will be delivered via email. Please ensure that your e-mail filter can accept messages from the domain @nicet.org
- Fax? ☐ yes ☐ no

Applicant's Statement of Understanding

I certify that the information given on this page is accurate and current, that NICET may use the information as indicated to identify me and to send me information, and that it is my responsibility to notify NICET should any of the information provided on this page change. I have read, understood, and accept the NICET Conditions of Application. I have read, understood, and agree to abide by the NICET Code of Ethics.

Signature

Date



Conditions of Application for Technicians

1. **NICET has established policies, procedures, and fees** that govern certification decisions, the uses of certification, and interactions with applicants and certificants. These policies, procedures, and fees may be changed by NICET at any time without prior notification. These policies, procedures, and fees are freely available on NICET's website (www.nicet.org). Each person who signs any NICET application accepts and agrees to follow these policies and procedures in all dealings with NICET.
2. **Each NICET certification may have multiple criteria** that must be met by a candidate in order for the certification to be conferred. These criteria may be changed by NICET at any time without prior notification. Current criteria, along with general information about NICET and its certification programs, are available from NICET's website (www.nicet.org). Individuals who are not resident in, or working in, the United States or its territories may not be eligible for certification. These individuals must contact NICET before applying and may be required to follow additional procedures, with additional fees, to demonstrate that they meet the criteria.
3. All applicants, candidates, and certificants **must comply with the NICET Code of Ethics** (see previous page) and follow generally accepted ethical practices at all times. For example, acquiring and/or providing specific knowledge of test questions prior to testing, or acquiring or providing assistance during an examination; intentionally providing information to NICET that is incomplete, or inaccurate; or knowingly providing technical services in an unsafe, inaccurate, or unprofessional manner may subject the offender to any number of sanctions, including legal prosecution.
4. NICET reserves the right to **deny, suspend, or revoke any certification** (pending or awarded) should the Institute determine that an applicant, candidate, or certificant has misrepresented information, violated a NICET policy or procedure, or violated the NICET Code of Ethics.
5. Maintenance of **current accurate contact information** is the responsibility of the applicant. NICET requires accurate contact information to communicate to the applicant important information related to testing, certification, and recertification.
6. **The NICET name, logo, and certification mark are the property of NICET and may not be used without the expressed written permission of the Institute.**
7. **NICET approval letters, wallet cards, and certificates** are issued to certificants for their use but remain NICET property at all times and may be recalled by the Institute at any time without prior notification.
8. **NICET test questions and examinations** are the copyrighted property of NICET. Any copying, sharing, or distribution of the content of those test questions and/or examinations constitutes copyright infringement and is a violation of U. S. federal law. Violators will be subject to suspension or revocation of NICET status and/or prosecution to the full extent of the law.
9. Each person who signs a NICET application grants NICET the **right to contact individuals** named in application materials or other communications with NICET to confirm the accuracy of information provided by the applicant.
10. **NICET certification must be used, represented, and displayed** in accordance with NICET policies. NICET certification does not constitute a license to practice engineering.
11. Each person who signs a NICET application grants NICET the **right to publish their name, address, and certification** information in its certification directories and to provide that information to others in response to bonafide inquiries. Test scores will be given to the test-taker only, unless the test-taker submits a release form authorizing NICET to give the scores to another specified individual.
12. The applicant's **Social Security number or government-issued ID number** is required for identification purposes. It will be used for NICET internal use ONLY and will not be given to anyone else without legitimate legal reason.
13. **An applicant's test records will be purged** for an individual certification area after five years if no further testing is completed in that certification area and the individual is not certified in that area. If the applicant has active certifications or is actively testing in other certification areas, the records for those other certification areas will not be affected.
14. **An applicant with a disability** as defined in Title III of the Americans with Disabilities Act who may be placed at a disadvantage when taking a NICET certification examination must advise NICET, in writing, of their needs by including a letter or other appropriate documentation with their application. NICET will respond by telephone or other means to make appropriate accommodations.
15. **All certifications expire** three years after an individual's initial certification is awarded and every third year thereafter. Recertification will be based on the certificant's activities during that three-year period. Requirements and fees may be found in NICET's Continuing Professional Development Policy (See www.nicet.org). Several months before expiration, a recertification application will be sent to the last postal or email address provided by the certificant. If the application with payment is not received by NICET prior to the expiration date, the certificate will expire. Reinstatement to Active Status will involve an additional fee. If reinstatement has not occurred three years after the expiration date, all certifications and all testing records will be purged. Payment of new testing and/or application fees does not substitute for payment of the full recertification fee when due. Additionally, obtaining a higher-level NICET certification does not alter or "reset" the originally established three-year certification period.

NICET Code of Ethics

NICET-certified engineering technicians and technologists recognize that the services they render have a significant impact on the quality of life for everyone. As they perform their duties and responsibilities on behalf of the public, employers, and clients, they shall demonstrate personal integrity and competence. Accordingly, certificants shall:

1. Have due regard for the physical environment and for public safety, health, and well being. If their judgment is overruled under circumstances where the safety, health, property, or welfare of the public may be endangered, they shall notify their employer, client, and such other authority as may be appropriate. An employee shall initially express those concerns to the employer.
2. Undertake only those assignments for which they are competent by way of their education, training, and experience.
3. Perform their duties in an efficient and competent manner with fidelity and honesty.
4. Admit and accept their own errors when proven wrong and never distort nor alter the facts in an attempt to justify their decisions.
5. Avoid conflicts of interest whenever possible. When unavoidable, they shall disclose to their employer or client, in writing, any action that might create the appearance of a conflict of interest.
6. Avoid receiving and granting bribery in all its forms.
7. Strive to maintain their proficiency by updating their technical knowledge and skills in engineering technology.
8. Not misrepresent or permit misrepresentation of their own or their associate's academic or professional qualifications nor exaggerate their degree of responsibility for any work.
9. Not reveal facts, data, or information obtained in connection with services rendered without prior consent of the client or employer except as authorized by law.



Candidate Name: _____

NICET ID No.: _____



**NICET ENGINEERING TECHNICIAN CERTIFICATION
Test Application - Section 2:
PAYMENT FORM**

Examination Selection

For each exam selected, indicate the Window ID number of your preferred 3-month testing window (not to be more than six months from the postmark date on this application) from the Eligibility Schedule to the right. The fee includes an experience evaluation if the candidate passes the written exam.

	Window ID	Fee
Electrical Power Testing		
<input type="checkbox"/> Level I Exam (10027)		\$225
<input type="checkbox"/> Level II Exam (10028)		\$290
<input type="checkbox"/> Level III Exam (10029)		\$345
<input type="checkbox"/> Level IV Exam (10030)		\$400
Inspection and Testing of Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10035)		\$225
<input type="checkbox"/> Level II Exam (10036)		\$290
Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10007)		\$225
<input type="checkbox"/> Level II Exam (10008)		\$290
<input type="checkbox"/> Level III Exam (10009)		\$345
<input type="checkbox"/> Level IV Exam (10010)		\$400
Inspection and Testing of Water-Based Systems		
<input type="checkbox"/> Level I Inspection & Testing Fundamentals (10017)		\$170
<input type="checkbox"/> Level I Work Practices Exam (10018)		\$170
<input type="checkbox"/> Level II Inspection Exam (10019)		\$180
<input type="checkbox"/> Level II Testing Exam (10020)		\$180
<input type="checkbox"/> Level II Work Practices Exam (10021)		\$180
<input type="checkbox"/> Level III Inspection & Responsibilities Exam (10022)		\$225
<input type="checkbox"/> Level III Advanced Testing Exam (10023)		\$225
Water-Based (formerly Automatic Sprinkler) Systems Layout		
<input type="checkbox"/> Level I Exam (10011)		\$225
<input type="checkbox"/> Level II Exam (10012)		\$290
<input type="checkbox"/> Level III General Plan Preparation Exam (10013)		\$285
<input type="checkbox"/> Level III Hydraulics & Water Supply Exam (10014)		\$285
<input type="checkbox"/> Level IV Exam (10016)		\$400
Special Hazards Systems		
<input type="checkbox"/> Level I Exam (10031)		\$225
<input type="checkbox"/> Level II Exam (10032)		\$290
<input type="checkbox"/> Level III Exam (10033)		\$345
<input type="checkbox"/> Level IV Exam (10034)		\$400
Video Security Systems Technician		
<input type="checkbox"/> Level I Exam (10001)		\$225
<input type="checkbox"/> Level II Exam (10002)		\$290
<input type="checkbox"/> Level III Exam (10003)		\$345
<input type="checkbox"/> Level IV Exam (10004)		\$400
Video Security Systems Designer		
<input type="checkbox"/> Level I Exam (10005)		\$290
<input type="checkbox"/> Level II Exam (10006)		\$345
Total:		\$0

Eligibility Schedule

Window ID	Window Period	Window ID	Window Period
1	January/February/March	7	July/August/September
2	Feb/March/Apr	8	August/September/October
3	March/April/May	9	September/October/November
4	April/May/June	10	October/November/December
5	May/June/July	11	November/December/January
6	June/July/August	12	December/January/February

You can apply for your test online.

You can submit payment for this application at NICET's website. Visit www.nicet.org, and login to your account. From there, you can submit/update your contact information, select your test, and pay with a credit card.

Payment and mailing information

Payment of the total Examination fee in the form of a check or money order made payable to NICET, must accompany this application form.

Any Certification Application that includes a check or money order must be sent to NICET at:

Via U.S. Postal Service:
NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

Via FedEx, UPS:
NICET
c/o Bank of America Lockbox Services
Lockbox 418651
MA5-527-02-07
2 Morrissey Blvd.
Dorchester, MA 02125

Any Certification Application forms that do not include a payment must be sent to:

Evaluations
NICET
1420 King Street
Alexandria, VA 22314

Don't forget to:

- Sign and Date the Applicant's Statement of Understanding in Section 1.
- Enclose your payment.
- Keep a copy of this application for your records.
- Mail all sections of this application together.

Express Evaluation (optional)

To speed up your experience evaluation, please contact NICET at 888-476-4238, Option 4, to ask for Express Evaluation instructions and arrange for electronic payment of the Express Evaluation fee of \$295 per subfield per Level. Express evaluations will be completed within 10 business days of the receipt of payment.

NICET OFFICE USE ONLY

Employer ID	Postmark Date	Spec. Cont.	ADA	App #	Lockbox #1	Amt. Paid



Experience Application Part 1: Work History Sections 1, 2, and 3



INSTRUCTIONS and CHECKLIST

First-time applicants (and those specifically directed by NICET):

For the span of your entire career, complete one form **consisting of at least sections 1, 2, and 3** for each position held at each employer **and** for any period within a given position in which your responsibilities changed significantly.

Returning applicants

Follow the instructions above solely for the period of time from the end date of your last work history submittal to the date you submit a new application.

Section 1 – Position Identification

Section 2 – Time Allocation

Break out your experience into all applicable technical areas in which you worked while in the position listed in Section 1.

Section 3 – Detailed Description of Work Performed

For **each** Subfield / Technical Area (S/TA) into which you divided your work in Section 2 – Time Allocation, provide detailed descriptions, in your own words, of the work you performed.

- Detail the technical and supervisory nature of the work.
- Describe the types of tasks you performed and the types and scopes of projects on which you worked.
- Detail the types of materials, tools, machinery, systems, and system components with which you worked.

For all gaps in your work histories (e.g., unemployment periods, winter breaks, and so on).

In Section 2, line item "Other", write "Gap" and in Section 3 on page 2 of 3 provide the reason for the gap.

If you are submitting a work history amendment you must submit the following:

- a signed and dated letter of explanation for the changes you made to your account
- the amended work history forms countersigned by your verifier, who by so doing indicates his or her attestation to the accuracy and completeness of the amended account

Work History Form Checklist – Do:

- ☐ Submit Sections 1, 2 and 3 of the form of the form for each position held.
- ☐ Ensure that the forms are completely and accurately filled out for the period from one submittal to the next.
- ☐ Make sure to provide the "Dates Positions Held" including **month** and **year**.
- ☐ Provide in Section 3, corresponding detailed descriptions for each Subfield / Technical Area (S/TA) in which your experience was broken out in Section 2, using your own words.
- ☐ Sign and date each page as indicated. Unsigned documents will not be accepted.

Work History Form Checklist - Do Not:

- ☐ Submit official position descriptions, resumes, testimonials, and marketing materials in lieu of completing Section 3 to describe your responsibilities.
- ☐ Submit amended work experience accounts without a signed letter of explanation for the changes in your work history unless **directed** to do so by NICET.
- ☐ Have verifier countersign work history forms unless directed by NICET to do so.
- ☐ Submit forms of your own design.

All information provided in candidate's application is cross-evaluated with documents on file to verify the following:

- consistency of work experience accounts
- appearance of signatures and initials
- appropriateness of verifier and recommender

and, as needed, through third-party entities including the following:

- licensing bodies and authorities having jurisdiction
- previous and current employers
- other sources of official documentation

Note: Work experience documents submitted with applications to test are placed in the queue for evaluation when a candidate meets the exam requirements for a given subfield and level. Work experience documents received in response to Conditional Decision Letters (CDLs) are placed in the queue for evaluation upon their receipt. In both cases the documents are evaluated in the **order** they are placed in their respective queues. (first-come, first-served)

Based on the present workload, it may take up to 90 days from the date a candidate meets an exam requirement for work experience documents to be evaluated and up to 60 days from date of receipt for CDL responses to be evaluated.



Candidate: _____ NICET ID No: _____

**Experience Application - Part I: Work History****Section 1 – Position Identification**

Employer:	Location of employer (city, state):	Name of supervisor (s):
Candidate's Position:	Dates position / responsibilities held:	Full-time <input type="checkbox"/> Part-time <input type="checkbox"/> Seasonal <input type="checkbox"/>
President / owner / co-owner	From: Month _____ Year _____ To: Month _____ Year _____	If part-time, hours per week: _____ If full-time seasonal, months worked per season ____

Section 2 – Time Allocation

Subfield / Technical Area (S/TA)	Description	Time devoted to S/TA (%)
Fire Alarm Systems (FA)	Fire alarm systems specific activities including project management, system layout (plan preparation), equipment selection, installation, troubleshooting, servicing, and technical sales.	%
Fire Alarm Systems Inspection / Testing (ITF)	Fire alarm systems work limited to performing, planning, and coordinating the inspection and testing of fire alarm systems.	%
Special Hazards Systems (SH)	Special hazards suppression systems specific activities including project management, system layout (plan preparation), equipment selection, installation, acceptance testing, troubleshooting, servicing, and sales.	%
Water-based Fire Protection Systems Layout (SP)	Water-based fire protection systems layout specific activities including project management, system layout (plan preparation), hydraulic calculations, site evaluation, equipment selection, plan approval, and sales.	%
Water-based Fire Protection Systems Inspection / Testing (ITS)	Specifically performing and managing the inspecting and testing of existing systems according to NFPA 25. Does not include work performed during installation and final testing / commissioning of new systems.	%
Water-based Fire Protection Systems Fitting / Fabrication (SF)	The performance and supervision of fitting, fabrication, maintenance, tests and inspections performed during installation and final testing / commissioning of new water-based fire protection systems or additions to systems.	%
Other Fire Protection Work (OFP)	This includes work with portable extinguishers, standpipe hoses and nozzles, municipal and private fire hydrants, fire-stopping, and firefighter duties.	%
Video Security System Technician (VST)	Video security systems specific activities including management, installation, preventative and corrective maintenance, tests and inspections, troubleshooting, and servicing.	%
Video Security System Designer (VSD)	Video security systems design and plan preparation specific activities including management, plan preparation, site evaluation, equipment selection, plan approval, and technical sales.	%
Industrial Instrumentation (I / I)	Industrial instrumentation work including management, design assistance, installation and maintenance of industrial measurement and control systems.	%
Audio Systems (AS)	Audio system specific activities including the layout, installation, and maintenance of audio systems for commercial, industrial, and large space applications.	%
Electrical Power Testing (EPT)	Specifically testing electrical power equipment, cabling, and systems operating in the range of 600 V and above. Does not include general wireman duties.	%
Other Low / Limited Voltage Systems (LV)	Work with non-fire alarm low/ limited voltage systems such as security, access control, nurse call, building control, computer networking, and emergency lighting.	%
Other Electrical Systems (GE)	General electrician work - residential and commercial wiring of loads including light machinery, lighting, HVAC components, and distribution panels and outlets.	%
Other	Specify: Gap:	%
The sum of all the values in this column cannot exceed 100%.		100%

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

 Verifier's Signature
 (Only if directed by NICET)

 Sections 1, 2, and 3 must
 be filled out for each
 position held.

5/15

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed

NICET cannot accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations. If supplementary space is needed use additional pages of Section 3.

S/TA	*EXAMPLE*	Detailed Description of Technical Work Performed
SF		Supervised and performed the installation, corrective maintenance, under construction testing, and commissioning of new fire sprinkler systems and system additions. Systems installed included wet, dry, pre-action, deluge, and foam. Components installed and maintained included piping, pipe hangers, earthquake bracing, alarm check valves, various cutout valves, flow sensors, FD connections, standpipe hose connections, jockey and fire pumps, and backflow preventers. Installed systems of 25 – 600 heads in a variety of building types including residential and commercial high rise, mercantile, manufacturing, school, and military.
S/TA		Detailed Description of Technical Work Performed
S/TA		Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____

Candidate NICET ID No.: _____

**NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part II: Verifier Data**

(Please print legibly or type)

To be completed by the Verifier only

Name: _____ Title: _____

Current employer: _____

Daytime phone: _____ Email: _____

Professional licenses/certifications: _____

My observation of the candidate occurred during my employment at:

☐ Current employer☐ Previous employer: _____

My observation of the candidate occurred as a part of my role as:

☐ Candidate's direct supervisor☐ Candidate's indirect supervisor/manager responsible for the candidate's work results/outcomes☐ Engineer on one of the candidate's projects☐ Governmental authority: _____☐ Contract supervisor for: _____ client, or _____ general contractor☐ Other: _____

I have (Check all that apply):

☐ directly observed the candidate's work.☐ directly observed the results of the candidate's work.☐ received reliable reports from those who have directly observed the candidate's work.☐ observed the candidate's ability to supervise others who are doing this work.

During what time period were you in the above-indicated relationship with the candidate?

From ____ / ____ to ____ / ____
Mo. Yr. Mo. Yr.**Verifier's Statement:***I certify that:*

- I understand and have carefully considered each performance measure that I have verified or will verify.
- I have not verified, and will not verify, any performance measure that I have not either personally observed or received reliable and specific reports from one who has personally observed the performance.
- I have not signed, and will not sign, any verification statement on a form that does not have the candidate's name at the top.
- I have not asked nor will I ask anyone to sign my name in my stead.

Signature _____ Date _____ Initials _____

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____ Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Water-Based Systems Layout

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level I Performance Measures		
The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0301-1101	maintain personal safety on the job site.	
0301-1102	reliably identify equipment and related materials commonly used in water-based fire protection systems.	
0301-1103	compile all necessary information about a building and its systems into one or more drawing(s) in preparation for sprinkler system layout.	
0301-1104	clean up layout drawings, add details, and prepare for supervisor review.	
0301-1105	compile submittal packages for supervisor review.	
0301-1106	follow verbal or written instructions, obtaining information when needed.	
0301-1107	prepare simple sprinkler system layouts, including basic piping configurations (e.g. tree, loop grid, etc.) and properly space sprinklers, to meet codes, standards, and specifications.	
0301-1108	perform the hydraulic calculations for a 13D system.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

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If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____ Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Water-Based Systems Layout

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level II Performance Measures		
The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0301-3101	survey buildings and existing systems to acquire accurate information about features that could impact a fire protection system design.	
0301-3102	identify types of existing water-based systems.	
0301-3103	evaluate water flow test results to determine the adequacy of the water supply.	
0301-3104	prepare complete layouts for wet pipe and dry pipe sprinkler systems that comply with codes, standards, and project specifications.	
0301-3105	Incorporate various devices in wet pipe (including antifreeze) and dry pipe sprinkler system layouts.	
0301-3106	apply design criteria related to various buildings, materials, occupancies, and hazards, to the layout of wet pipe (including antifreeze) and dry pipe sprinkler systems that meet codes, standards, and specifications.	
0301-3107	detail a fire pump system layout, including related equipment, to meet codes, standards, and specifications.	
0301-3108	incorporate different water supply types and their relation to system requirements.	
0301-3109	select, locate, and place on drawings hangers, bracings, and restraints to meet standards and system requirements.	
0301-3110	prepare a fabrication stocklist and a materials list for a system.	
0301-3111	communicate with AHJs and others in a professional manner.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

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Candidate: _____

Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Water-Based Systems Layout

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level III Performance Measures		
The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0301-5101	evaluate an existing water-based system, including water supply data, for compliance with applicable NFPA standards, identify deficiencies, and recommend corrective actions.	
0301-5102	identify project requirements in contract documents and apply them to the development of a system layout.	
0301-5103	identify applicable listing requirements and manufacturers' recommendations and apply them to component selection and system configuration to comply with codes, standards, and project specifications.	
0301-5104	select, size, and lay out fire pumps and accessories to meet system requirements.	
0301-5105	correctly perform the hydraulic calculations for NFPA 13, 13D, and 13R system layouts.	
0301-5106	prepare clear and accurate responses to comments from a plan reviewer, and discuss them in a coherent manner with concerned parties.	
0301-5107	generally obtain approval of his/her system plans upon first submittal to the AHJ (with the possible exception of minor corrections).	
0301-5108	complete layout projects from concept through plan approval.	
0301-5109	provide technical support to the installation team for his/her system plans.	
0301-5110	review system acceptance testing results, including those for fire pumps, for completeness and for indications of possible problems.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____

Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

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Candidate: _____ Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Water-Based Systems Layout

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level IV Performance Measures		
The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0301-7101	Evaluate contract documents for feasibility and potential liabilities.	
0301-7102	Evaluate the fire protection provided by existing systems to either: <ul style="list-style-type: none">• a high-rise building, or;• an industrial facility requiring unusual design criteria or applications of standards.	
0301-7103	Evaluate the fire protection currently provided to an area of an existing facility which has either: <ul style="list-style-type: none">• flammable liquid storage, or;• high-piled storage.	
0301-7104	Evaluate 2 of the following types of systems for the adequacy of fire protection provided to existing facilities: <ul style="list-style-type: none">• pre-action• foam-water• fire pump with variable-speed drivers.	
0301-7105	Evaluate the proposed water-based systems for a building in which there is complex hydraulic requirements resulting from multiple occupancies, hazard classifications, and/or water supplies.	
0301-7106	During design, anticipate problems and proactively deal with them.	
0301-7107	Interpret project concept and specifications for the design team.	
0301-7108	Identify the costs and benefits of system design options.	
0301-7109	Review hydraulic design to optimize system efficiency, identify errors in calculations, and suggest corrections.	
0301-7110	Manage a project layout team from concept through plan approval.	
0301-7111	Negotiate a compromise among project stakeholders who have conflicting requirements for fire protection systems.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

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Candidate: _____ Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part IV: Personal Recommendation
(Please print legibly or type)

Section 1 – Recommender's Personal Information

This form must be completed by a professional who is familiar with the technical capabilities and background of the applicant and can attest to the technical quality, responsibility, and ethics demonstrated in the applicant's work experience. NICET prefers recommendations from licensed professional engineers, registered land surveyors, or NICET-certified engineering technologists and senior engineering technicians, but will also accept recommendations from other professionals such as graduate engineers, scientists, senior level technicians and technologists, fire marshals, code officials, or officials of other authorities having jurisdiction.

Name: _____ Phone Number: (____) ____ - ____

Position Title: _____

Company Name: _____

My highest degree is: _____ in: _____ field from: _____ school

I am (registered, certified, licensed) as: _____ by: _____

Registration/Certification/License Number: _____ Date granted: _____

Describe your technical background: _____

The person who completes this recommendation form cannot also provide Performance Measure verifications for this candidate. NICET will not accept recommendation forms that are completed by relatives or subordinates of the applicant.

Section 2 – Recommender's Relationship with the Candidate

Familiarity with the candidate's character, abilities, and accomplishments:

- ☐ Unfamiliar – little relevant interaction
☐ Somewhat familiar – occasional interaction
☐ Reasonably familiar – regular interaction
☐ Very familiar – frequent interaction

Length of time that you have known the candidate: _____ years and _____ months

Nature of your relationship with the candidate:

- | | |
|----------------------------------------------------------------------|---------------------------------------------------------------------|
| <input type="checkbox"/> association within the company | <input type="checkbox"/> association through contracting activities |
| <input type="checkbox"/> association through professional activities | <input type="checkbox"/> other: _____ |

Describe your professional relationship with the applicant: _____



Candidate: _____

Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION Experience Application, Part IV: Personal Recommendation

Section 3 – Recommender's Evaluation of the Candidate

Role of the Engineering Technician:

Apply well-defined and proven procedures, methods, and practices, derived from established or real-time engineering guidance, to specific technical assignments, and do so in an ethical and responsible manner.

Regarding the role described in the box above:

- ☐ I do not recommend this candidate for this role.
- ☐ I recommend this candidate for this role because he/she has (check all that apply):
- ☐ made substantial progress toward independent capability in this role.
 - ☐ fulfilled this role, demonstrating good, Independent technical judgment and self-management.
 - ☐ fulfilled this role, demonstrating a capability to resolve complex technical issues and lead a team of technicians.

Please indicate by placing a mark in the one most appropriate box to the right of each statement, whether, and to what degree, the candidate demonstrates each of the following attributes.

	Never	Some- times	Mostly	Always	Don't know
The candidate consistently works hard to achieve the objectives of his/her job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate is attentive to his/her own work and to the work of others that impacts his/her own responsibilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate shows initiative and equanimity in dealing with new jobs, changed circumstances, or problems, and accepts responsibility for outcomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate organizes and directs the activities of work teams to achieve their objectives in a timely and cost-effective manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate develops and maintains cordial and goal-oriented relationships with work team members and with clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate encourages, uses, and appreciates the ideas and initiative of others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate communicates clearly and effectively with work team members and clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate's actions are ethical and his/her statements are truthful and do not conceal or hold back relevant information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments or observations on the candidate's capabilities, responsibility, and achievements:

Section 4 – Recommender's Statement

I attest that all information I have provided is, to the best of my knowledge, true. I understand that falsifying information on this form can affect my right to serve as a recommender or a verifier for other NICET certification candidates and can result in my own NICET certification(s) being revoked.

Name of Recommender (please print) _____

Signature of Recommender _____

Date _____

Incomplete recommendation forms will not be accepted by NICET.

This form expires one year after being signed by the recommender.

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NICET ENGINEERING TECHNICIAN CERTIFICATION Experience Application, Part V: Major Project Water-Based Systems Layout

Each candidate for certification at Level IV in Water-Based (formerly Automatic Sprinkler) Systems Layout must submit a write-up (in narrative/essay format) of their role in a large and technically complex water-based system layout project demonstrating senior-level engineering technician capabilities and responsibilities.

General Guidelines

The Major Project Write-up must be a concise, detailed, 2 to 3 page written description of the candidate's role in one* major water-based fire protection system layout project.

The candidate must be the sole author of the major project write-up. (Official job or project descriptions or testimonials from others will not be accepted.)

The candidate's involvement in the project must demonstrate independent, senior-level engineering technician work, including delegation of responsibilities and duties.

The write-up must reflect senior-level understanding of the nature and importance of the various aspects of the system and the project, and the roles of the various people involved in the completion and acceptance of the project.

Your involvement in the project must include a range of water-based systems layout activities*.

The project must be recent (within the last 4 years) and must have been completed.

The major project write-up must:

- be type-written
- be on separate pages from other application documents. (The write-up is not a part of the work history in Part I of the application.)
- be identified by the candidate's name and NICET ID number
- specifically identify the project and your role/title in it.

Guidelines for Description of the Project

The write-up should address each of the following in a detailed narrative:

- Location of the project and type of facility (factory, warehouse, shopping mall, theater, hotel, etc.)
- Size of the project (number of sprinkler heads, approximate layout and installation times, dates of candidate's involvement, etc.)
- Scope and complexity of the project (number and types of systems, water supply sources, occupancies, hazards, hydraulic issues, design complications encountered and resolved, etc.)

Guidelines for Description of the Candidate's Role

The write-up should address each of the following in a detailed narrative:

- Supervisory or oversight responsibilities (number of people, the tasks they performed, and your relationship to them)
- Range/scope of activities and role in each activity (hazard analysis, design calculations, approvals, proposals, system installation, check-out, final approval test, etc.)

**Note: If all of these activities cannot be documented for a single project, they may be accumulated via several more narrowly focused projects.*

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**Water-Based Systems Layout Certification****Level I Content Outline****Technician Trainee**

The candidates for NICET certification at Level I in Water-Based Systems Layout should have the knowledge, experience and basic skills needed to work in the industry. Under frequent supervision, they perform limited job tasks. They are students who are learning, like apprentices. They learn about flow tests, field checks, coordination, and data entry. They clean up drawings and plans. Level I technicians have at least 6 months of experience in water-based systems layout.

1.1 Safety

(Questions related to these tasks make up 1-7% of the exam.)

1.1.1 Obey jobsite safety requirements. 1, 12, 13, 14

1.2 Contract Documents

(Questions related to these tasks make up 5-15% of the exam.)

1.2.1 Gather information in plans and specifications. 1, 5, 7, 9

1.2.2 Learn scope of contracts (e.g., review bid documents with supervisor).

1.3 Survey Existing Conditions

(Questions related to these tasks make up 5-15% of the exam.)

1.3.1 Verify simple building plans via field surveys. 1

1.3.2 Obtain simple field data for existing fire protection systems. 1, 7

1.3.3 Identify elements of building construction (e.g., beam and column locations). 1, 11

1.4 Research Codes and Standards

(Questions related to these tasks make up 5-15% of the exam.)

1.4.1 Review code summary sheets. 1, 2, 3

1.4.2 Identify and document design standards. 1, 2, 3, 8

1.5 System Layout

(Questions related to these tasks make up 53-63% of the exam.)

1.5.1 Create a simple sprinkler system layout. 1, 6, 7

1.5.2 Perform basic hydraulic calculations. 1, 2, 3, 6, 7

1.5.3 Assist with flow tests. 1, 2, 4, 9, 10

1.5.4 Assist with surveys. 1, 10, 11

1.6 Assemble Submittal Packages

(Questions related to these tasks make up 1-9% of the exam.)

1.6.1 Assemble submittal packages. 1, 7

1.7 Project Correspondences

(Questions related to these tasks make up 1-9% of the exam.)

1.7.1 Document correspondences with AHJs. 1

1.7.2 Document project correspondences. 1

1.7.3 Assemble documents for closeout packages. 1, 10, 11

October 1, 2018

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

**Water-Based Systems Layout Certification****Level II Content Outline****Associate Engineering Technician**

The candidates for NICET certification at Level II in Water-Based Systems Layout should have the knowledge, experience and skills needed to work more independently than Level I technicians. Under supervision, they perform routine job tasks. They work on small projects, perform simple calculations, and set up remote areas. They set up risers, prepare close out documents, and are training in project management. Level II technicians have at least 2 years of experience in water-based systems layout.

2.1 Safety

(Questions related to these tasks make up 1-7% of the exam.)

- 2.1.1 Locate information in safety data sheets (SDS). 13

2.2 Contract Documents

(Questions related to these tasks make up 1-10% of the exam.)

- 2.2.1 Edit/apply project specifications. 1, 3, 5, 12
2.2.2 Interpret project plans. 1
2.2.3 Coordinate with other trades. 1, 11
2.2.4 Identify project scopes. 2, 3

2.3 Survey Existing Conditions

(Questions related to these tasks make up 1-10% of the exam.)

- 2.3.1 Identify conflicts between plans and existing conditions. 1
2.3.2 Identify occupancies and uses. 1
2.3.3 Obtain water supply information. 1, 4
2.3.4 Field-verify existing systems. 1

2.4 Codes and Standards

(Questions related to these tasks make up 4-14% of the exam.)

- 2.4.1 Determine applicable codes and standards. 1, 3, 4, 7, 8, 9, 12
2.4.2 Evaluate design options. 1, 9

2.5 Basic Sprinkler System Layout

(Questions related to these tasks make up 40-50% of the exam.)

- 2.5.1 Select system types (e.g., wet, dry, pre-action). 1, 2
2.5.2 Select system configurations (e.g., tree, loop, grid). 1, 9
2.5.3 Determine hazard classifications (e.g., non-storage). 1
2.5.4 Identify storage arrangements. 1
2.5.5 Identify storage commodity classifications (e.g., Class I, Class II). 1
2.5.6 Identify the impact of construction types on the selection and layout of sprinklers. 1, 8, 9
2.5.7 Determine the location and sizing of hangers, bracings, and restraints. 1
2.5.8 Prepare material and fabrication stocklists. 1, 3

2.6 Basic Standpipe System Layout

(Questions related to these tasks make up 4-14% of the exam.)

- 2.6.1 Select type and class of standpipe systems. 12
2.6.2 Layout valves and hose connections. 12

2.7 Basic Fire Pump System Layout

(Questions related to these tasks make up 3-13% of the exam.)

- 2.7.1 Configure fire pump layouts (e.g., basic valve and piping). 3, 10
2.7.2 Establish pipe and valve sizes (e.g., suction or test header sizes). 3



2.8 Hydraulic Calculations

(Questions related to these tasks make up 7-17% of the exam.)

- 2.8.1 Obtain water supply. 1, 4, 9
- 2.8.2 Determine hydraulically remote areas. 1
- 2.8.3 Hand-calculate basic branchlines. 1
- 2.8.4 Hand-calculate basic standpipe systems. 1, 2

2.9 Submittal and Approval Process

(Questions related to these tasks make up 1-7% of the exam.)

- 2.9.1 Prepare submittal packages. 1

2.10 Project Management

(Questions related to these tasks make up 1-8% of the exam.)

- 2.10.1 Follow project schedules. 1, 6, 14
- 2.10.2 Prepare closeout documents. 1, 3

October 1, 2018

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

**Water-Based Systems Layout Certification****Level III Content Outline****Engineering Technician**

The candidates for NICET certification at Level III in Water-Based Systems Layout should have the knowledge, experience and skills needed to work independently with standards, plans, and specifications to produce complete submittals for all types of systems. They oversee Level I and II technicians and design projects from start to finish. Level III technicians have at least 5 years of experience in water-based systems layout.

There are two exams listed at Level III. Both are required for certification.

Test # 10013: General Plans Preparation**3.1 Contract Documents**

(Questions related to these tasks make up 1-9% of the exam.)

3.1.1 Create/apply project specifications. 1

3.1.2 Explore value engineering options. 1

3.2 Survey Existing Conditions

(Questions related to these tasks make up 1-9% of the exam.)

3.2.1 Evaluate existing systems. 1

3.3 Codes and Standards

(Questions related to these tasks make up 6-16% of the exam.)

3.3.1 Determine design criteria. 1

3.3.2 Implement water-based system designs. 1, 3, 6

3.4 Sprinkler System Layout

(Questions related to these tasks make up 40-50% of the exam.)

3.4.1 Layout complex systems. 1, 7

3.4.2 Address mixed occupancy protections. 1, 2, 7

3.4.3 Determine applicability of pipe schedule systems. 1

3.4.4 Evaluate storage occupancies. 1

3.4.5 Address impacts of building features on water-based systems. 1

3.4.6 Perform seismic calculations. 1

3.4.7 Optimize system layouts. 1

3.5 Complex Standpipe System Layout

(Questions related to these tasks make up 8-18% of the exam.)

3.5.1 Determine flow and pressure requirements. 2, 3

3.6 Fire Pump Unit Layout

(Questions related to these tasks make up 8-18% of the exam.)

3.6.1 Layout fire pumps and all appurtenances. 3

3.7 Water Storage Tanks

(Questions related to these tasks make up 1-10% of the exam.)

3.7.1 Select water storage tank sizes and types. 1, 4

3.8 Project Management

(Questions related to these tasks make up 1-10% of the exam.)

3.8.1 Manage contract modifications. 1, 5, 8

3.8.2 Prepare project schedules. 1, 8

3.8.3 Manage approval processes. 1



Test # 10014: Hydraulics and Water Supply Planning

3.9 Calculate Standpipe Systems

(Questions related to these tasks make up 5-15% of the exam.)

3.9.1 Determine system demands. 1, 2

3.9.2 Determine remote hose valve locations. 2

3.10 Calculate Water Supply with Pumps

(Questions related to these tasks make up 25-35% of the exam.)

3.10.1 Evaluate water supplies. 1, 3, 4, 5

3.10.2 Select fire pumps. 2, 3, 6

3.10.3 Evaluate fire pump systems. 1, 3

3.11 Hydraulic Calculation Principles

(Questions related to these tasks make up 55-65% of the exam.)

3.11.1 Perform hydraulic calculations. 1, 4, 5

October 1, 2018

footnote number is linked to a reference on the Selected General References listing
(numbering starts over for each exam)



Water-Based Systems Layout

Level IV – Content Outline

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.

4.1 Safety

Questions related to this task make up 2 - 6% of the exam.

4.1.1 Manage compliance with safety and environmental requirements.

Knowledge:

OSHA training course requirements in 29 CFR 1910.132-138
OSHA accident investigation procedures in 29 CFR 1904
Purpose and significance of experience modification rates (EMR) and total recordable incident ratio (TRIR)
Recording and Reporting Occupational Injuries and Illness in 29 CFR 1904
EPA requirements for disposal of waste materials
Nature, scope, and source material for LEED requirements

Skills:

Manage and document personnel safety training.
Manage and document waste material disposal procedures.
Investigate accidents and document their consequences and any disciplinary actions taken.
Use forms as required by OSHA to document and report work-site injuries.
Maintain records of injuries.
Follow proper notification procedures for hazardous material spills.
Document the compliance of a project's design and installation with LEED requirements.

4.2 Contract Documents

Questions related to this task make up 4 - 7% of the exam.

4.2.1 Review and analyze project contracts.

Knowledge:

NFPA 13, 14, 20
Relative authority of contracts, codes, standards, plans, AHJs, engineers, and contractors
Project contract structure and terminology as defined in AIA standard forms
Types of expenses encountered in completing a project (materials, labor, equipment, subcontractors, overhead costs, additional insurance, bonds, subsistence, permits, licenses, and so on)
Insurance terminology

Skills:

Identify and evaluate the client's objectives, needs, concerns, constraints, and resources.
Interpret project's special requirements (e.g., safety, 3-D plans, security clearance, drug testing, special work hours, and so forth).
Interpret change order requirements and value engineering options.
Identify pricing, costs, and fees established, and payment responsibilities assigned, by a contract.
Identify procurement procedures and requirements in federal or military contracts.
Identify bonding and insurance requirements.
Interpret tax requirements.
Identify potential liabilities that could accrue to the various parties to a contract.
Interpret consequences of penalty clauses for missed deadlines.
Interpret indemnification and termination requirements.
Communicate clearly (verbal, written, electronic) with owner's representative and other contractors.

4.3 Research - No tasks at this level

4.4 Survey Existing Conditions

Questions related to this task make up 10 - 20% of the exam.

4.4.1 Review and evaluate existing complex fire protection systems.

Knowledge:

NFPA 13, 14, 20
Types of plans and documents with information about existing systems

Skills:

Review and evaluate drawings of existing complex water-based systems (e.g., high-piled storage, pre-action, fire pumps with variable-speed drivers, high-rise buildings).
Evaluate system inspection and test reports.
Evaluate appropriateness of existing complex system and modify as necessary.

4.4.2 Evaluate complex or unusual building construction.

Knowledge:

Meaning of fire resistance ratings
Operational and inspection, testing, and maintenance requirements of various system components and configurations

(Task 4.4.2 continued on next page)



(Task 4.4. 2 continued)

Skills:

- Estimate the strength of structural members in relation to fire protection system support requirements.
- Evaluate the fire protection system implications of spaces with limited access, such as combustible concealed spaces or crawl spaces.
- Evaluate the fire resistance ratings of walls for use with the room design method.
- Evaluate the fire resistance ratings of enclosures for determination of standpipe protection requirements.

4.5 Codes and Standards

Questions related to this task make up 4 - 7% of the exam.

4.5.1 Determine the intent of current fire protection codes and standards.

Knowledge:

- NFPA revision process (ROP, ROC, and so on)
- NFPA revision publications (TIA, errata, and so forth)
- NFPA 13: 1.5 and 13R: 1.4

Skills:

- Research the status of updates to standards.
- Use NFPA's process to obtain informal interpretations.
- Determine the intent of the committee in a standard that is subject to competing interpretations.
- Evaluate the equivalency of alternate arrangements.

4.6 System Layout

Questions related to this task make up 45 - 55% of the exam.

4.6.1 Lay out sprinkler systems for special occupancies.

Knowledge:

NFPA 13

Skills:

- Identify the significant features, construction, and operating characteristics of the facility to be protected.
- Select and lay out appropriate sprinkler system devices, piping, and support.
- Include fire pumps, tanks, or other water supply elements as needed.

4.6.2 Resolve sprinkler and standpipe system issues.

Knowledge:

- NFPA 13, 14, 20, 25
- Effects of corrosion on equipment and systems
- Impacts of sprinkler system variables on various parts of a complex fire protection system
- Impacts of standpipe system variables on various parts of a complex fire protection system
- Impacts of related/interfaced systems upon the components of a sprinkler system

Skills:

- Research issues related to sprinkler and standpipe systems.
- Solve complex issues related to sprinkler and standpipe systems.
- Investigate corrosion.
- Plan a piping obstruction investigation.
- Resolve issues that involve multiple considerations, including occupancies, hazards, building construction, fire protection systems, resource availability, project specifications, and/or interpretation of codes and standards.

4.6.3 Resolve fire pump system issues.

Knowledge:

NFPA 13, 20

- Impacts of fire pump system variables on various parts of complex fire protection systems
- Demands placed upon a fire pump system by various system configurations

Skills:

- Research issues related to fire pump systems.
- Solve complex fire pump issues (e.g., multiple water supplies, multiple fire pumps, high-demand/high-pressure situations, pressure regulating devices, variable speed pumps, and so on).
- Resolve issues that involve multiple considerations, including occupancies, hazards, building construction, fire protection systems, resource availability, project specifications, and/or interpretation of codes and standards.

4.6.4 Resolve water supply issues.

Knowledge:

NFPA 13, 14, 20

- Impacts of water supply variables on various parts of complex fire protection systems
- Demands placed upon a water supply system by various system configurations

Skills:

- Research issues related to water supply.
- Solve complex water supply issues (e.g., high-rise buildings, multiple water supplies, multiple pumps).
- Resolve issues with underground piping on new and existing projects.
- Resolve issues that involve multiple considerations, including occupancies, hazards, building construction, fire protection systems, resource availability, project specifications, and/or interpretation of codes and standards.

4.6.5 Evaluate system hydraulics.

Knowledge:

- Elements of hydraulics
- NFPA 13, 14
- Hazen-Williams formula
- Formula for the number of sprinklers to be calculated on a branch line in a given design area

(Task 4.6.5 continued on next page)



(Task 4.6.5 continued)

Formulas for pressure loss or gain through elevation and for pressure flow through an orifice
Hardy-Cross formula and method

Skills:

Determine the most appropriate hydraulic design area, hydraulic factors and parameters, and calculation method(s) for the application.
Review and troubleshoot hydraulic calculations to assure completeness and accuracy.
Manually calculate pressure and flow changes due to elevation differences, pipe friction, and open orifices within a tree sprinkler system or a standpipe system.
Use a computer to hydraulically calculate complex systems involving loops and grids, including water, antifreeze, foam, foam-water, and all other water-based applications.
Verify that all connected demands have been included, and that the various parts and types of systems are balanced.
Identify changes to the system that would improve its hydraulics.
Evaluate the hydraulic performance of the system.
Explain and justify the hydraulic design to appropriate authorities.

4.6.6 Apply advanced concepts of bracing and restraints to unusual situations.

Knowledge:

NFPA 13

Skills:

Research manufacturers' listing requirements.
Apply advanced concepts of bracing and restraints.
Recognize potential hydraulic impacts such as water hammer.
Correlate work with PE on alternative bracing requirements.

4.6.7 Coordinate complex interfaces with other fire protection systems.

Knowledge:

NFPA 13

ASME A17.1

Parts and contents of contract documents
Parts and contents of plans and specifications
Impacts of fire protection system variables on various parts of interfaced fire protection systems, and routes by which those impacts are realized

Skills:

Research manufacturers' recommendations.
Read and interpret contract documents.
Coordinate with design professionals and the engineer of record to develop complex arrangements with other fire protection systems.

Coordinate water-based system with elevator equipment and elevator AHJ.

Resolve interface issues that involve multiple considerations, including occupancies, hazards, building construction, fire protection system configurations, resource availability, project specifications, and interpretation of codes and standards.

4.6.8 Provide pre-engineered systems layout, RFP preparation, and project management for special hazard systems projects.

Knowledge:

NFPA 17, 17A, 72, 2001

Special hazards suppression terminology
Names and functions of special hazard system components
Names and applications of suppression agents
Types of capacity, mounting, connection, and compatibility issues associated with special hazard system components
Requirements and connections for system or device actuation
Dangers to people or property associated with particular suppression agents
Types of acceptance tests applied to various types of special hazard systems, and the standards that specify test methods and acceptable results

Skills:

Layout a pre-engineered dry chemical, wet chemical, or clean agent system.
Develop the scope of work for a special hazard system contract.
Work with project stakeholders to develop submittals and subcontracts for special hazard system layout and installation work.
Review special hazard system plans for completeness.
Coordinate the scheduling of special hazard system work with other detection and suppression systems work, and with other construction work at the project location.
Manage the fabrication and installation of piping for a special hazard system.
Manage the acceptance testing of a special hazard system and interpret the results.

4.7 Submittal and Approval Process -

No tasks at this level

4.8 Project Management

Questions related to this task make up 18 - 22% of the exam.

4.8.1 Oversee the development of project management plans, and verify their feasibility.

Knowledge:

Critical Path Method

Gantt charts

Work Breakdown Structure

(Task 4.8.1 continued on next page)



(Task 4.8.1 continued)

Major roles on a large project
Factors that affect expected and actual completion times for various tasks
Basic requirements of labor law (wage/hour requirements, union requirements, minority protections)

Skills:

Evaluate a project schedule for completeness and accuracy.
Use the critical path method to analyze a project schedule.
Use Gantt charts to document and analyze a project.
Schedule work on a water-based system as part of a larger project.
Forecast labor and material requirements at various times during a project.
Design forms for data gathering and reporting.
Communicate work schedule information with job-site contractors.
Manage subcontractors and attend project meetings.

4.8.2 Develop installation specifications to meet the project's engineering criteria and system design.

Knowledge:

Formatting of standard industry specifications (AIA, CSI)
Terminology of insurance underwriter's requirements
General installation procedures

Skills:

Interpret field survey to determine and apply site-specific protection requirements.
Communicate with owner to determine fire protection objectives and goals.
Apply NFPA standards, insurance requirements, and local building codes to the project.
Apply manufacturer's instructions.
Create clear and organized written reports.

4.8.3 Develop a project budget.

Knowledge:

Basic accounting procedures
Cost factors related to a water-based suppression system project
Sources of cost estimating information

Skills:

Calculate estimated profit.
Obtain expense- and revenue- related information from project contract documents, plans, and specifications.
Identify any constraints on the project timeline that could affect the budget.
List and estimate all expense items for a project.
Estimate material cost escalation.
Estimate manpower requirements for all phases, including submittal and closeout.
Estimate manpower cost escalation.
Identify all equipment that will be needed for installation and other project site work.

Develop a written itemized budget and cash flow requirements for the project.
Communicate clearly and accurately, both verbally and in writing.

4.8.4 Monitor project progress and manage expenses.

Knowledge:

Basic bookkeeping procedures
Project budget components
Cost factors (RFIs, RFPs, construction bulletins, change orders, and progress billing)
Gantt charts

Skills:

Obtain and organize data related to the progress of a project.
Use progress data and Gantt charts to measure project progress.
Manage labor requirements.
Identify and monitor invoicing and payment deadlines.
Monitor and manage acceptances of and payments for equipment deliveries.
Manage account collections and subcontractor payments.
Process and track RFIs, RFPs, construction bulletins, change orders, and progress billing.
Prepare and maintain a schedule of values.
Manage project retainage.
Prepare work progress reports.
Communicate clearly and accurately, both verbally and in writing.

4.8.5 Evaluate final acceptance test results.

Knowledge:

NFPA 13
System commissioning/acceptance test procedures

Skills:

Interpret system plans, specifications, and as-built drawings.
Report test data from the field on appropriate forms and retain for records.
Interpret test results and compare with project objectives.
Evaluate the status of the system and recommend corrective actions.
Communicate clearly and accurately, both verbally and in writing.

4.8.6 Prepare maintenance plans.

Knowledge:

NFPA 25
Role of the inspector according to NFPA standards

Skills:

Interpret inspection, testing, and maintenance summary tables and charts in NFPA standards.
Analyze risks and potential liabilities.
Prepare schedules based on site equipment and conditions.
Communicate clearly and accurately, both verbally and in writing.



Water-Based Systems Layout

Level I Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
1NFPA 13	2016
2NFPA 13D	2016
3NFPA 13R	2016
4NFPA 291	2016

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page (example provided on the main program page). They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a water-based systems layout technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

- 5Blueprint Reading for the Building Trades. (1985), John E. Traister, Craftsman Book Company
- 6NFPA 14 (2016): Standard for the Installation of Standpipe and Hose Systems, National Fire Protection Association (NFPA)
- 7NFPA 20 (2016): Standard for the Installation of Stationary Pumps for Fire Protection, National Fire Protection Association (NFPA)
- 8NFPA 22 (2013): Standard for Water Tanks for Private Fire Protection, National Fire Protection Association (NFPA)
- 9NFPA 24 (2016): Standard for the Installation of Private Fire Service Mains and Their Appurtenances, National Fire Protection Association (NFPA)
- 10NFPA 25 (2014): Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, National Fire Protection Association (NFPA)
- 11NFPA 101 (2015): Life Safety Code, National Fire Protection Association (NFPA)
- 12OSHA 29 CFR 1910: Occupational Safety and Health Standards, Occupational Safety and Health Administration (OSHA)
- 13OSHA 29 CFR 1926: Safety and Health Regulations for Construction, Occupational Safety and Health Administration (OSHA)
- 14OSHA Construction eTool – Electrical Incidents: Ground-Fault Circuit Interrupters, Occupational Safety and Health Administration (OSHA)

➤ This listing is not intended to be complete or representative.

October 1, 2018



Water-Based Systems Layout

Level II Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
1NFPA 13	2016
2NFPA 14	2016
3NFPA 20	2016
4NFPA 291	2016

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page (example provided on the main program page). They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a water-based systems layout technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

5Architectural Graphic Standards (9th Edition), American Institute of Architects, Wiley.

6Construction Management Jumpstart: The Best Step Toward a Career in Construction Management. (Second Edition), Barbara J. Jackson, Sybex.

7International Building Code (2015), International Code Council (ICC)

8NFPA 13D (2016): Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, National Fire Protection Association (NFPA)

9NFPA 13R (2016): Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies, National Fire Protection Association (NFPA)

10NFPA 70 (2014): National Electric Code (NEC), National Fire Protection Association (NFPA)

11NFPA 72 (2016): National Fire Alarm and Signaling Code, National Fire Protection Association (NFPA)

12NFPA 101 (2015): Life Safety Code, National Fire Protection Association (NFPA)

13OSHA 29 CFR 1910: Occupational Safety and Health Standards, Occupational Safety and Health Administration (OSHA)

14Project Management (8th Edition). (2003), Harold Kerzner, Ph.D., Wiley

➤ This listing is not intended to be complete or representative.

October 1, 2018



Water-Based Systems Layout

Level III General Plans Preparation

Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
1NFPA 13	2016
2NFPA 14	2016
3NFPA 20	2016
4NFPA 22	2013

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page (example provided on the main program page). They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a water-based systems layout technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

5A Guide to the Project Management Body of Knowledge (PMBOK Guide) (5th Edition). (2013), Project Management Institute (PMI).

6International Building Code (2015), International Code Council (ICC)

7NFPA 13R (2016): Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, National Fire Protection Association (NFPA)

8Project Management: A Systems Approach to Planning, Scheduling, and Controlling (8th Edition). (2003), Harold Kerzner, Ph.D., Wiley

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- This listing is not intended to be complete or representative.

October 1, 2018



Water-Based Systems Layout

Level III Hydraulics and Water Supply Planning

Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
1NFPA 13	2016
2NFPA 14	2016
3NFPA 20	2016
4NFPA 291	2016

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page (example provided on the main program page). They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

During the exam, the following title will be available to candidates **on-screen only**:

<u>Title</u>
5Fire Protection Hydraulics and Water Supply Analysis (3 rd Edition). (2012), Pat D. Brock, Oklahoma State University

*Test questions are based on the edition listed above. This edition will be available to candidates during the exam in PDF format.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a water-based systems layout technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

6NFPA 101 (2015): Life Safety Code, National Fire Protection Association (NFPA)

➤ This listing is not intended to be complete or representative.

October 1, 2018



Water-Based Systems Layout

Level IV Selected General References

Candidates are permitted to bring only the following references into the test center:

Title	Edition*
NFPA 13	2013
NFPA 14	2013
NFPA 20	2013
NFPA 25	2014

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a water-based systems layout technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

29 CFR 1910: Occupational Safety and Health Standards.

49 CFR 23: Transportation

ABCs of Experience Rating. National Council on Compensation Insurance.

ASME A17.1/CSA B44 (2010): Safety Code for Elevators and Escalators. American Society of Mechanical Engineers.

ASTM A53 (2007): Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless. ASTM International.

Construction Management – Jumpstart. Barbara J. Jackson, Sybex.

Cost Estimating. Rodney D. Stewart, Wiley.

Fire Protection Hydraulics and Water Supply Analysis. Pat D. Brock, Fire Protection Publications.

NFPA 22 (2013): Water Tanks for Private Fire Protection, National Fire Protection Association.

NFPA 24 (2013): Installation of Private Fire Service Mains and Their Appurtenances, National Fire Protection Association.

NFPA 72 (2013): National Fire Alarm and Signaling Code, National Fire Protection Association.

NFPA 214 (2011): Water-Cooling Towers, National Fire Protection Association.

NFPA 2001 (2012): Clean Agent Fire Extinguishing Systems, National Fire Protection Association.

➤ This listing is not intended to be complete or representative.

April 30, 2014

Exam Information

Water-Based Systems Layout Exam	
Level I Exam	92 questions, 125 min.
Level II Exam	108 questions, 185 min.
Level III: General Plan Preparation Exam	58 questions, 170 min
Level III: Hydraulics and Water Supply Planning Exam	50 questions, 230 min.
Level IV Exam	70 questions, 290 min. including a 20-minute break

Fees

Water-Based Systems Layout Standard Model/CBT Application

Level I	\$225
Level II	\$290
Level III	
General Plan Preparation	\$285
Hydraulics and Water Supply	\$285
Level IV	\$400
Base Recertification Fee (includes one subfield)	\$200
Incremental Fee (each additional subfield)	\$50

Inspection and Testing of Water-Based Systems Program Information

Technician Profile

Application Package (fees, certification requirements, experience forms, performance measures, and Level IV major project guidelines)

Exam Content Outlines

References Material used during program development

Exam Information (number of questions, time allotted)

Fees (application, recertification)

Inspection and Testing of Water-Based Systems (I&TWBS) Technician Profile

This certification program is for engineering technicians engaged in the inspection and testing of existing water-based fire protection systems, including identifying and addressing emergency and pre-planned impairments. Areas covered include inspection, testing, documentation, safety, and work management. Technical areas covered include types of water-based systems and their components; types of damage and deficiencies that can impact system operation; basic building features; system inspection and testing frequencies, requirements, and procedures; use of appropriate tools and test equipment; working safely with minimal impact on surroundings; applicable codes and standards, primarily NFPA 25; impairment procedures; and reporting of findings.

Level I I&TWBS Technicians

Level I I&TWBS technicians are trainees and entry-level technicians who perform limited job tasks under supervision. 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. They have at least 6 months of experience in I&TWBS.

Level II I&TWBS Technicians

Level II I&TWBS technicians perform routine tasks under limited supervision. Level II Technicians can inspect and test wet pipe and dry pipe sprinkler systems; inspect standpipe systems, fire pumps, tanks, and fire mains for evidence of damage, deficiency, or impairment; and complete standard reports. Level II Technicians have at least 2 years of experience in I&TWBS.

Level III I&TWBS Technicians

Level III I&TWBS technicians can work independently without supervision. Level III technicians perform and supervise inspections and tests of all water-based fire protection systems other than foam-water, water-mist, and ultra-high-speed water spray systems, particularly those that require, for safety and accuracy, knowledge of system operation, materials, interfaces, specialized fire protection functions, and/or hydraulic effects of high or changing pressures. Level III Technicians have at least 5 years of experience in I&TWBS.



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Inspection and Testing of Water-Based Systems



Basic Instructions

Certification candidates must submit the entire Certification Application Package, including the Test Application and the Experience Application. After a candidate passes a written exam requirement, his or her work experience will be evaluated by NICET.

At minimum, a candidate must submit the Test Application in order to schedule and sit for an exam. However, to prevent delays in certification, candidates are recommended to submit their completed Experience Application at the time they apply for the exam.

Each NICET Standard Model program has a specialized Certification Application Package, which can be found on NICET's website. Each Certification Application Package is comprised of the following parts:

Requirements for Certification

Test Application

Section I: Candidate Information

Section II: Payment Form

Experience Application

Part I: Work History

Part II: Verifier Data

Part III: Performance Verification

Part IV: Personal Recommendation (required at Level III)

Mail your application with payment to:

NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

If you're submitting a form that supplements a previously-paid experience evaluation, then send to:

NICET Evaluation, 1420 King Street, Alexandria, VA 22314

REMEMBER!

- **Ensure that you are submitting the correct application materials and fee payment. Access the current certification criteria and fee information at www.nicet.org.**
- **Make a copy of the entire application and keep it with your testing/certification records.**
- **Include name and identification number on every page of every part of the application.**



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Inspection and Testing of Water-Based Systems



Requirements for Certification

Level I	Level II	Level III
Examination¹ – Pass the Required Tests:		
Level I Insp. & Testing Fundamentals Level I Work Practices	Level I Insp. & Testing Fundamentals Level I Work Practices Level II Inspection Level II Testing Level II Work Practices	Level I Insp. & Testing Fundamentals Level I Work Practices Level II Inspection Level II Testing Level II Work Practices Level III Inspection Level III Testing
Performance Verification – Obtain Supervisor Verification of all Performance Measures for:		
Level I	Levels I and II	Levels I, II, and III
Work Experience – Provide complete, detailed position descriptions and time allocations showing:		
<p>6 months of involvement with water-based fire protection systems inspection and testing activities. This may include up to 3 months of any combination of the following activities:</p> <ul style="list-style-type: none"> • Water-based systems installation, service, maintenance, and/or acceptance testing • Governmental enforcement of inspection and testing requirements for water-based systems • Insurance review of inspection and testing activities for water-based systems • Water-based systems layout • Fire alarm systems inspection <p><i>*Note: All time requirements are full-time equivalent.</i></p>	<p>The minimum required for Level I plus eighteen months of work experience in the inspection and periodic testing of water-based fire protection systems. This eighteen months may include up to three months of any combination of the following activities:</p> <ul style="list-style-type: none"> • Water-based systems installation, service, maintenance, and/or acceptance testing • Governmental enforcement of inspection and testing requirements for water-based systems • Insurance review of inspection and testing activities for water-based systems • Water-based systems layout • Fire alarm systems inspection <p><i>*Note: All time requirements are full-time equivalent.</i></p>	<p>The minimum required for Level II plus three years of work experience in the inspection and periodic testing of water-based fire protection systems, including a full range of inspection, testing, reporting, impairment management and supervisory activities, and involving a variety of systems and facilities.</p> <p><i>*Note: All time requirements are full-time equivalent.</i></p>
Personal Recommendation – Obtain recommendation ratings showing a capacity for:		
(not required)	(not required)	Independent Engineering Technician Responsibilities

¹ If you are currently certified at a particular Level in this program, you do NOT need to take any test listed for that Level or lower. For example, if you want to test for Level II and are certified in this program at Level I through previous work element testing, then you must pass the Level II Inspection, Level II Testing, and the Level II Work Practices exams, but do not need to take the Level I exams.



National Institute for Certification in Engineering Technologies®

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www.nicet.org



NICET ENGINEERING TECHNICIAN CERTIFICATION Test Application - Section 1: Candidate Information

(Please print clearly or type)

ID Number

Name: ☐ Mr. ☐ Ms. _____
Last Name First Name Middle Initial
Name Change? If your name has changed since your last application, enter your previous name here: _____

Note: At your test site, you will be required to present a government-issued photo ID; the name on your ID must be identical to the name that you provide above. This name will also appear on all correspondence and any certification documents issued to you by NICET.

Indicate your status below. You must write your ID number in the space provided at the top right corner of each page of the application.

- ☐ I have a NICET ID my number is: _____. Note: If you have achieved NICET certification, your NICET ID number is NOT the same as the certification number that appears on your certificate and wallet card. Your NICET ID number can be found on most of your personal NICET records. If you do not know your NICET ID number, please call NICET at 888-476-4238.

- ☐ This is my first application.

First-time applicants must provide ONE of the government ID numbers requested below. In the Test Application Package and the Experience Application package, when a space is provided in the top right corner for a NICET ID number, please write your Government ID number. Once NICET has processed your test application, you will be issued a permanent NICET ID number.

- ☐ Social Security Number: _____
☐ Driver's License No.: _____ State: _____ Expiration date: _____
☐ Government-issued photo ID no.: _____ Issue date: _____ Expiration date: _____
Issuing agency: _____
☐ Passport No.: _____ Issuing country: _____ Issue date: _____

NICET reserves the right to require a photocopy of this ID to confirm the submitted information (name, ID number, address, signature).

Address Information

Home Address:

Street Apt.

City State Zip Code +4

Present Employer:

Business Address: Company Name

Street

When receiving items by mail, which address do you prefer?

Business ☐ Home ☐

City State Zip Code +4
Present Position Title: _____

Electronic Contact Information and Preferences

Phone Numbers Business: _____ Home: _____
Mobile/cell: _____ Fax: _____

Email Addresses Business: _____

(Please print carefully) Home: _____

May we contact you about NICET business by:

- Email? ☐ yes ☐ no If yes, preferred email address? ☐ Business ☐ Home
If you permit NICET to contact you by email, then your testing authorization notice and other correspondence about your upcoming exam will be delivered via email. Please ensure that your e-mail filter can accept messages from the domain @nicet.org
- Fax? ☐ yes ☐ no

Applicant's Statement of Understanding

I certify that the information given on this page is accurate and current, that NICET may use the information as indicated to identify me and to send me information, and that it is my responsibility to notify NICET should any of the information provided on this page change. I have read, understood, and accept the NICET Conditions of Application. I have read, understood, and agree to abide by the NICET Code of Ethics.

Signature

Date

Conditions of Application for Technicians

1. **NICET has established policies, procedures, and fees** that govern certification decisions, the uses of certification, and interactions with applicants and certificants. These policies, procedures, and fees may be changed by NICET at any time without prior notification. These policies, procedures, and fees are freely available on NICET's website (www.nicet.org). Each person who signs any NICET application accepts and agrees to follow these policies and procedures in all dealings with NICET.
2. **Each NICET certification may have multiple criteria** that must be met by a candidate in order for the certification to be conferred. These criteria may be changed by NICET at any time without prior notification. Current criteria, along with general information about NICET and its certification programs, are available from NICET's website (www.nicet.org). Individuals who are not resident in, or working in, the United States or its territories may not be eligible for certification. These individuals must contact NICET before applying and may be required to follow additional procedures, with additional fees, to demonstrate that they meet the criteria.
3. All applicants, candidates, and certificants **must comply with the NICET Code of Ethics** (see previous page) and follow generally accepted ethical practices at all times. For example, acquiring and/or providing specific knowledge of test questions prior to testing, or acquiring or providing assistance during an examination; intentionally providing information to NICET that is incomplete, or inaccurate; or knowingly providing technical services in an unsafe, inaccurate, or unprofessional manner may subject the offender to any number of sanctions, including legal prosecution.
4. NICET reserves the right to **deny, suspend, or revoke any certification** (pending or awarded) should the Institute determine that an applicant, candidate, or certificant has misrepresented information, violated a NICET policy or procedure, or violated the NICET Code of Ethics.
5. Maintenance of **current accurate contact information** is the responsibility of the applicant. NICET requires accurate contact information to communicate to the applicant important information related to testing, certification, and recertification.
6. **The NICET name, logo, and certification mark are the property of NICET and may not be used without the expressed written permission of the Institute.**
7. **NICET approval letters, wallet cards, and certificates** are issued to certificants for their use but remain NICET property at all times and may be recalled by the Institute at any time without prior notification.
8. **NICET test questions and examinations** are the copyrighted property of NICET. Any copying, sharing, or distribution of the content of those test questions and/or examinations constitutes copyright infringement and is a violation of U. S. federal law. Violators will be subject to suspension or revocation of NICET status and/or prosecution to the full extent of the law.
9. Each person who signs a NICET application grants NICET the **right to contact individuals** named in application materials or other communications with NICET to confirm the accuracy of information provided by the applicant.
10. **NICET certification must be used, represented, and displayed** in accordance with NICET policies. NICET certification does not constitute a license to practice engineering.
11. Each person who signs a NICET application grants NICET the **right to publish their name, address, and certification** information in its certification directories and to provide that information to others in response to bonafide inquiries. Test scores will be given to the test-taker only, unless the test-taker submits a release form authorizing NICET to give the scores to another specified individual.
12. The applicant's **Social Security number or government-issued ID number** is required for identification purposes. It will be used for NICET internal use ONLY and will not be given to anyone else without legitimate legal reason.
13. **An applicant's test records will be purged** for an individual certification area after five years if no further testing is completed in that certification area and the individual is not certified in that area. If the applicant has active certifications or is actively testing in other certification areas, the records for those other certification areas will not be affected.
14. **An applicant with a disability** as defined in Title III of the Americans with Disabilities Act who may be placed at a disadvantage when taking a NICET certification examination must advise NICET, in writing, of their needs by including a letter or other appropriate documentation with their application. NICET will respond by telephone or other means to make appropriate accommodations.
15. **All certifications expire** three years after an individual's initial certification is awarded and every third year thereafter. Recertification will be based on the certificant's activities during that three-year period. Requirements and fees may be found in NICET's Continuing Professional Development Policy (See www.nicet.org). Several months before expiration, a recertification application will be sent to the last postal or email address provided by the certificant. If the application with payment is not received by NICET prior to the expiration date, the certificate will expire. Reinstatement to Active Status will involve an additional fee. If reinstatement has not occurred three years after the expiration date, all certifications and all testing records will be purged. Payment of new testing and/or application fees does not substitute for payment of the full recertification fee when due. Additionally, obtaining a higher-level NICET certification does not alter or "reset" the originally established three-year certification period.

NICET Code of Ethics

NICET-certified engineering technicians and technologists recognize that the services they render have a significant impact on the quality of life for everyone. As they perform their duties and responsibilities on behalf of the public, employers, and clients, they shall demonstrate personal integrity and competence. Accordingly, certificants shall:

1. Have due regard for the physical environment and for public safety, health, and well being. If their judgment is overruled under circumstances where the safety, health, property, or welfare of the public may be endangered, they shall notify their employer, client, and such other authority as may be appropriate. An employee shall initially express those concerns to the employer.
2. Undertake only those assignments for which they are competent by way of their education, training, and experience.
3. Perform their duties in an efficient and competent manner with fidelity and honesty.
4. Admit and accept their own errors when proven wrong and never distort nor alter the facts in an attempt to justify their decisions.
5. Avoid conflicts of interest whenever possible. When unavoidable, they shall disclose to their employer or client, in writing, any action that might create the appearance of a conflict of interest.
6. Avoid receiving and granting bribery in all its forms.
7. Strive to maintain their proficiency by updating their technical knowledge and skills in engineering technology.
8. Not misrepresent or permit misrepresentation of their own or their associate's academic or professional qualifications nor exaggerate their degree of responsibility for any work.
9. Not reveal facts, data, or information obtained in connection with services rendered without prior consent of the client or employer except as authorized by law.

Candidate Name: _____

NICET ID No.: _____



NICET ENGINEERING TECHNICIAN CERTIFICATION Test Application - Section 2: PAYMENT FORM

Examination Selection		
For each exam selected, indicate the Window ID number of your preferred 3-month testing window (not to be more than six months from the postmark date on this application) from the Eligibility Schedule to the right. The fee includes an experience evaluation if the candidate passes the written exam.		
	Window ID	Fee
Electrical Power Testing		
<input type="checkbox"/> Level I Exam (10027)		\$225
<input type="checkbox"/> Level II Exam (10028)		\$290
<input type="checkbox"/> Level III Exam (10029)		\$345
<input type="checkbox"/> Level IV Exam (10030)		\$400
Inspection and Testing of Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10035)		\$225
<input type="checkbox"/> Level II Exam (10036)		\$290
Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10007)		\$225
<input type="checkbox"/> Level II Exam (10008)		\$290
<input type="checkbox"/> Level III Exam (10009)		\$345
<input type="checkbox"/> Level IV Exam (10010)		\$400
Inspection and Testing of Water-Based Systems		
<input type="checkbox"/> Level I Inspection & Testing Fundamentals (10017)		\$170
<input type="checkbox"/> Level I Work Practices Exam (10018)		\$170
<input type="checkbox"/> Level II Inspection Exam (10019)		\$180
<input type="checkbox"/> Level II Testing Exam (10020)		\$180
<input type="checkbox"/> Level II Work Practices Exam (10021)		\$180
<input type="checkbox"/> Level III Inspection & Responsibilities Exam (10022)		\$225
<input type="checkbox"/> Level III Advanced Testing Exam (10023)		\$225
Water-Based (formerly Automatic Sprinkler) Systems Layout		
<input type="checkbox"/> Level I Exam (10011)		\$225
<input type="checkbox"/> Level II Exam (10012)		\$290
<input type="checkbox"/> Level III General Plan Preparation Exam (10013)		\$285
<input type="checkbox"/> Level III Hydraulics & Water Supply Exam (10014)		\$285
<input type="checkbox"/> Level IV Exam (10016)		\$400
Special Hazards Systems		
<input type="checkbox"/> Level I Exam (10031)		\$225
<input type="checkbox"/> Level II Exam (10032)		\$290
<input type="checkbox"/> Level III Exam (10033)		\$345
<input type="checkbox"/> Level IV Exam (10034)		\$400
Video Security Systems Technician		
<input type="checkbox"/> Level I Exam (10001)		\$225
<input type="checkbox"/> Level II Exam (10002)		\$290
<input type="checkbox"/> Level III Exam (10003)		\$345
<input type="checkbox"/> Level IV Exam (10004)		\$400
Video Security Systems Designer		
<input type="checkbox"/> Level I Exam (10005)		\$290
<input type="checkbox"/> Level II Exam (10006)		\$345
Total:		\$0

Eligibility Schedule			
Window ID	Window Period	Window ID	Window Period
1	January/February/March	7	July/August/September
2	Feb/March/Apr	8	August/September/October
3	March/April/May	9	September/October/November
4	April/May/June	10	October/November/December
5	May/June/July	11	November/December/January
6	June/July/August	12	December/January/February

You can apply for your test online.

You can submit payment for this application at NICET's website. Visit www.nicet.org, and login to your account. From there, you can submit/update your contact information, select your test, and pay with a credit card.

Payment and mailing information

Payment of the total Examination fee in the form of a check or money order made payable to NICET, must accompany this application form.

Any Certification Application that includes a check or money order must be sent to NICET at:

Via U.S. Postal Service:
NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

Via FedEx, UPS:
NICET
c/o Bank of America Lockbox Services
Lockbox 418651
MA5-527-02-07
2 Morrissey Blvd.
Dorchester, MA 02125

Any Certification Application forms that do not include a payment must be sent to:

Evaluations
NICET
1420 King Street
Alexandria, VA 22314

Don't forget to:

- Sign and Date the Applicant's Statement of Understanding in Section 1.
- Enclose your payment.
- Keep a copy of this application for your records.
- Mail all sections of this application together.

Express Evaluation (optional)

To speed up your experience evaluation, please contact NICET at 888-476-4238, Option 4, to ask for Express Evaluation instructions and arrange for electronic payment of the Express Evaluation fee of \$295 per subfield per Level. Express evaluations will be completed within 10 business days of the receipt of payment.

NICET OFFICE USE ONLY						
Employer ID	Postmark Date	Spec. Cont.	ADA	App #	Lockbox #1	Amt. Paid



Experience Application Part 1: Work History Sections 1, 2, and 3



INSTRUCTIONS and CHECKLIST

First-time applicants (and those specifically directed by NICET):

For the span of your entire career, complete one form **consisting of at least sections 1, 2, and 3** for each position held at each employer **and for any period within a given position in which your responsibilities changed significantly.**

Returning applicants

Follow the instructions above solely for the period of time from the end date of your last work history submittal to the date you submit a new application.

Section 1 – Position Identification

Section 2 – Time Allocation

Break out your experience into all applicable technical areas in which you worked while in the position listed in Section 1.

Section 3 – Detailed Description of Work Performed

For each Subfield / Technical Area (S/TA) into which you divided your work in Section 2 – Time Allocation, provide detailed descriptions, in your own words, of the work you performed.

- Detail the technical and supervisory nature of the work.
- Describe the types of tasks you performed and the types and scopes of projects on which you worked.
- Detail the types of materials, tools, machinery, systems, and system components with which you worked.

For all gaps in your work histories (e.g., unemployment periods, winter breaks, and so on.

In Section 2, line item "Other", write "Gap" and in Section 3 on page 2 of 3 provide the reason for the gap.

If you are submitting a work history amendment you must submit the following:

- a signed and dated letter of explanation for the changes you made to your account
- the amended work history forms countersigned by your verifier, who by so doing indicates his or her attestation to the accuracy and completeness of the amended account

Work History Form Checklist – Do:

- ☐ Submit Sections 1, 2 and 3 of the form of the form for each position held.
- ☐ Ensure that the forms are completely and accurately filled out for the period from one submittal to the next.
- ☐ Make sure to provide the "Dates Positions Held" including **month** and **year**.
- ☐ Provide in Section 3, corresponding detailed descriptions for each Subfield / Technical Area (S/TA) in which your experience was broken out in Section 2, using your own words.
- ☐ Sign and date each page as indicated. Unsigned documents will not be accepted.

Work History Form Checklist - Do Not:

- ☐ Submit official position descriptions, resumes, testimonials, and marketing materials in lieu of completing Section 3 to describe your responsibilities.
- ☐ Submit amended work experience accounts without a signed letter of explanation for the changes in your work history unless directed to do so by NICET.
- ☐ Have verifier countersign work history forms unless directed by NICET to do so.
- ☐ Submit forms of your own design.

All information provided in candidate's application is cross-evaluated with documents on file to verify the following:

- consistency of work experience accounts
- appearance of signatures and initials
- appropriateness of verifier and recommender

and, as needed, through third-party entities including the following:

- licensing bodies and authorities having jurisdiction
- previous and current employers
- other sources of official documentation

Note: Work experience documents submitted with applications to test are placed in the queue for evaluation when a candidate meets the exam requirements for a given subfield and level. Work experience documents received in response to Conditional Decision Letters (CDLs) are placed in the queue for evaluation upon their receipt. In both cases the documents are evaluated in the order they are placed in their respective queues. (first-come, first-served)

Based on the present workload, it may take up to 90 days from the date a candidate meets an exam requirement for work experience documents to be evaluated and up to 60 days from date of receipt for CDL responses to be evaluated.



Candidate: _____

NICET ID No: _____

**Experience Application - Part I: Work History****Section 1 – Position Identification**

Employer:	Location of employer (city, state):	Name of supervisor (s):
Candidate's Position:	Dates position / responsibilities held:	Full-time <input type="checkbox"/> Part-time <input type="checkbox"/> Seasonal <input type="checkbox"/>
President / owner / co-owner	From: Month _____ Year _____ To: Month _____ Year _____	If part-time, hours per week: _____ If full-time seasonal, months worked per season _____

Section 2 – Time Allocation

Subfield / Technical Area (S/TA)	Description	Time devoted to S/TA (%)
Fire Alarm Systems (FA)	Fire alarm systems specific activities including project management, system layout (plan preparation), equipment selection, installation, troubleshooting, servicing, and technical sales.	%
Fire Alarm Systems Inspection / Testing (ITF)	Fire alarm systems work limited to performing, planning, and coordinating the inspection and testing of fire alarm systems.	%
Special Hazards Systems (SH)	Special hazards suppression systems specific activities including project management, system layout (plan preparation), equipment selection, installation, acceptance testing, troubleshooting, servicing, and sales.	%
Water-based Fire Protection Systems Layout (SP)	Water-based fire protection systems layout specific activities including project management, system layout (plan preparation), hydraulic calculations, site evaluation, equipment selection, plan approval, and sales.	%
Water-based Fire Protection Systems Inspection / Testing (ITS)	Specifically performing and managing the inspecting and testing of existing systems according to NFPA 25. Does not include work performed during installation and final testing / commissioning of new systems.	%
Water-based Fire Protection Systems Fitting / Fabrication (SF)	The performance and supervision of fitting, fabrication, maintenance, tests and inspections performed during installation and final testing / commissioning of new water-based fire protection systems or additions to systems.	%
Other Fire Protection Work (OFP)	This includes work with portable extinguishers, standpipe hoses and nozzles, municipal and private fire hydrants, fire-stopping, and firefighter duties.	%
Video Security System Technician (VST)	Video security systems specific activities including management, installation, preventative and corrective maintenance, tests and inspections, troubleshooting, and servicing.	%
Video Security System Designer (VSD)	Video security systems design and plan preparation specific activities including management, plan preparation, site evaluation, equipment selection, plan approval, and technical sales.	%
Industrial Instrumentation (I/I)	Industrial instrumentation work including management, design assistance, installation and maintenance of industrial measurement and control systems.	%
Audio Systems (AS)	Audio system specific activities including the layout, installation, and maintenance of audio systems for commercial, industrial, and large space applications.	%
Electrical Power Testing (EPT)	Specifically testing electrical power equipment, cabling, and systems operating in the range of 600 V and above. Does not include general wireman duties.	%
Other Low / Limited Voltage Systems (LV)	Work with non-fire alarm low/ limited voltage systems such as security, access control, nurse call, building control, computer networking, and emergency lighting.	%
Other Electrical Systems (GE)	General electrician work - residential and commercial wiring of loads including light machinery, lighting, HVAC components, and distribution panels and outlets.	%
Other	Specify: Gap:	%
The sum of all the values in this column cannot exceed 100%.		100%

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature _____

Date _____

Verifier's Signature
(Only if directed by NICET) _____

Sections 1, 2, and 3 must be filled out for each position held.

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed

NICET cannot accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations. If supplementary space is needed use additional pages of Section 3.

S/TA	*EXAMPLE*	Detailed Description of Technical Work Performed
SF		Supervised and performed the installation, corrective maintenance, under construction testing, and commissioning of new fire sprinkler systems and system additions. Systems installed included wet, dry, pre-action, deluge, and foam. Components installed and maintained included piping, pipe hangers, earthquake bracing, alarm check valves, various cutout valves, flow sensors, FD connections, standpipe hose connections, jockey and fire pumps, and backflow preventers. Installed systems of 25 – 600 heads in a variety of building types including residential and commercial high rise, mercantile, manufacturing, school, and military.
S/TA		Detailed Description of Technical Work Performed
S/TA		Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____

Candidate NICET ID No.: _____



**NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part II: Verifier Data**

(Please print legibly or type)

To be completed by the Verifier only

Name: _____ Title: _____

Current employer: _____

Daytime phone: _____ Email: _____

Professional licenses/certifications: _____

My observation of the candidate occurred during my employment at:

☐ Current employer

☐ Previous employer: _____

My observation of the candidate occurred as a part of my role as:

☐ Candidate's direct supervisor

☐ Candidate's indirect supervisor/manager responsible for the candidate's work results/outcomes

☐ Engineer on one of the candidate's projects

☐ Governmental authority: _____

☐ Contract supervisor for: _____ client, or _____ general contractor

☐ Other: _____

I have (Check all that apply):

☐ directly observed the candidate's work.

☐ directly observed the results of the candidate's work.

☐ received reliable reports from those who have directly observed the candidate's work.

☐ observed the candidate's ability to supervise others who are doing this work.

During what time period were you in the above-indicated relationship with the candidate?

From ____ / ____ to ____ / ____
Mo. Yr. Mo. Yr.

Verifier's Statement:

I certify that:

- I understand and have carefully considered each performance measure that I have verified or will verify.
- I have not verified, and will not verify, any performance measure that I have not either personally observed or received reliable and specific reports from one who has personally observed the performance.
- I have not signed, and will not sign, any verification statement on a form that does not have the candidate's name at the top.
- I have not asked nor will I ask anyone to sign my name in my stead.

Signature _____ Date _____ Initials _____

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____

Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Inspection and Testing of Water-Based Systems

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level I Performance Measures

<i>The candidate has repeatedly demonstrated an ability to:</i>		Verifier's Initials
0304-1101	maintain personal safety on the jobsite.	
0304-1102	follow verbal or written instructions, obtaining information when needed.	
0304-1103	locate basic information in NFPA 25.	
0304-1104	reliably identify equipment commonly used in inspecting and testing water-based systems.	
0304-1105	reliably identify components commonly used in water-based systems.	
0304-1106	identify physical damage to components of water-based systems.	
0304-1107	confirm that control valves are in the correct position.	
0304-1108	determine whether existing signage is properly attached and legible.	
0304-1109	accurately record inspection and testing data in the field.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____

Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____ Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Inspection and Testing of Water-Based Systems

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level II Performance Measures		
The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0304-3101	plan a sequence of inspection and testing tasks that efficiently meet the requirements of codes and standards.	
0304-3102	determine the age of different types of installed sprinklers.	
0304-3103	determine the presence of foreign material in opened pipes by visual inspection.	
0304-3104	read and interpret fire protection plans, acceptance reports, and inspection and testing reports.	
0304-3105	conduct pre-inspection meetings that acquire sufficient information for complete and accurate inspections.	
0304-3106	conduct inspections and tests without unnecessary disruption to the client's work processes.	
0304-3107	conduct and report on a fire pump churn test without immediate supervision.	
0304-3108	conduct and report on a full flow trip test of a dry pipe system without immediate supervision.	
0304-3109	work within the scope and limitations of the role of the inspector (avoiding evaluations based on design standards while performing NFPA 25-compliant inspection and testing activities).	
0304-3110	conduct post-inspection meetings that convey complete and accurate information to the owner/representative.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____

Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Inspection and Testing of Water-Based Systems

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at the right if you have witnessed that capability in the candidate's performance of his/her job.

Level III Performance Measures

The candidate has repeatedly demonstrated an ability to:		Verifier's Initials
0304-5101	assure that inspection and testing team members have the qualifications, knowledge, and tools to properly complete assigned jobs.	
0304-5102	identify the presence of special systems such as foam, water mist, or ultra-high speed water spray.	
0304-5103	create the flow required for various tests.	
0304-5104	manage the discharge from flow tests to avoid property damage or work disruption.	
0304-5105	use a pitot gauge to accurately measure water flow.	
0304-5106	inspect and test systems protecting freezers and cold storage areas.	
0304-5107	test supervisory devices on tanks.	
0304-5108	identify and test various types and configurations of detection systems that cause the activation of pre-action and deluge systems.	
0304-5109	complete formal reports on a variety of testing and inspection activities that clearly and accurately present and interpret the results to the designated parties.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____

Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____

Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part IV: Personal Recommendation
(Please print legibly or type)

Section 1 – Recommender's Personal Information

This form must be completed by a professional who is familiar with the technical capabilities and background of the applicant and can attest to the technical quality, responsibility, and ethics demonstrated in the applicant's work experience. NICET prefers recommendations from licensed professional engineers, registered land surveyors, or NICET-certified engineering technologists and senior engineering technicians, but will also accept recommendations from other professionals such as graduate engineers, scientists, senior level technicians and technologists, fire marshals, code officials, or officials of other authorities having jurisdiction.

Name: _____ Phone Number: (____) ____ - _____

Position Title: _____

Company Name: _____

My highest degree is: _____ in: _____ field from: _____ school

I am (registered, certified, licensed) as: _____ by: _____

Registration/Certification/License Number: _____ Date granted: _____

Describe your technical background: _____

The person who completes this recommendation form cannot also provide Performance Measure verifications for this candidate. NICET will not accept recommendation forms that are completed by relatives or subordinates of the applicant.

Section 2 – Recommender's Relationship with the Candidate

Familiarity with the candidate's character, abilities, and accomplishments:

- ☐ Unfamiliar – little relevant interaction
☐ Somewhat familiar – occasional interaction
☐ Reasonably familiar – regular interaction
☐ Very familiar – frequent interaction

Length of time that you have known the candidate: _____ years and _____ months

Nature of your relationship with the candidate:

- | | |
|----------------------------------------------------------------------|---------------------------------------------------------------------|
| <input type="checkbox"/> association within the company | <input type="checkbox"/> association through contracting activities |
| <input type="checkbox"/> association through professional activities | <input type="checkbox"/> other: _____ |

Describe your professional relationship with the applicant: _____



Candidate: _____

Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION Experience Application, Part IV: Personal Recommendation

Section 3 – Recommender's Evaluation of the Candidate

Role of the Engineering Technician:

Apply well-defined and proven procedures, methods, and practices, derived from established or real-time engineering guidance, to specific technical assignments, and do so in an ethical and responsible manner.

Regarding the role described in the box above:

☐ I do not recommend this candidate for this role.

☐ I recommend this candidate for this role because he/she has (check all that apply):

☐ made substantial progress toward independent capability in this role.

☐ fulfilled this role, demonstrating good, Independent technical judgment and self-management.

☐ fulfilled this role, demonstrating a capability to resolve complex technical issues and lead a team of technicians.

Please indicate by placing a mark in the one most appropriate box to the right of each statement, whether, and to what degree, the candidate demonstrates each of the following attributes.

	Never	Some- times	Mostly	Always	Don't know
The candidate consistently works hard to achieve the objectives of his/her job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate is attentive to his/her own work and to the work of others that impacts his/her own responsibilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate shows initiative and equanimity in dealing with new jobs, changed circumstances, or problems, and accepts responsibility for outcomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate organizes and directs the activities of work teams to achieve their objectives in a timely and cost-effective manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate develops and maintains cordial and goal-oriented relationships with work team members and with clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate encourages, uses, and appreciates the ideas and initiative of others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate communicates clearly and effectively with work team members and clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate's actions are ethical and his/her statements are truthful and do not conceal or hold back relevant information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments or observations on the candidate's capabilities, responsibility, and achievements:

Section 4 – Recommender's Statement

I attest that all information I have provided is, to the best of my knowledge, true. I understand that falsifying information on this form can affect my right to serve as a recommender or a verifier for other NICET certification candidates and can result in my own NICET certification(s) being revoked.

Name of Recommender (please print) _____

Signature of Recommender _____

Date _____

Incomplete recommendation forms will not be accepted by NICET.

This form expires one year after being signed by the recommender.

Mail the completed Experience Application Package with payment to: NICET, c/o Bank of America, PO Box 418651, Boston, MA 02241-8651
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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.



Inspection and Testing of Water-Based Systems

Standard Model/Computer-Based Testing

Level II Content Outline

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

Under limited supervision, inspect and test wet pipe and dry pipe sprinkler systems; inspect standpipe systems, fire pumps, tanks, and fire mains for evidence of damage, deficiency, or impairment; and complete standard reports.

There are three exams listed at Level II; all three plus the two listed at Level I are required for certification at Level II.

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 # 10019: Level II Inspection

2.1 Inspection

(Questions related to these tasks makeup 100% of the exam)

2.1.1 Perform visual inspection of installed sprinklers for damage and visually apparent operational deficiencies or impairments, and verify presence of an adequate supply of spare sprinklers.

Knowledge:

NFPA 25: 5.2.1, 5.2.1.3, 5.4.1.4, 5.4.1.5
Function and appearance of the parts of a sprinkler
Minimum clearance rules for sprinklers

Skills:

Differentiate between markings/paint applied at the factory and those applied after installation.
Recognize damage and other conditions that affect the operation of a sprinkler.
Recognize violations of sprinkler clearance rules.
Determine whether an adequate supply of spare sprinklers has been provided.

2.1.2 Inspect fire pumps and fire pump system components for damage and visually apparent operational deficiencies or impairments.

Knowledge:

NFPA 25: 8.2 and Table A.8.2.2
Function and appearance of the major parts of each type of fire pump system

Skills:

Determine inspection frequencies by referring to NFPA 25: Table 8.1.1.2.
Verify that the scope of an inspection can be fulfilled in conformance with NFPA 25: 8.2.
Inspect pump houses for conditions that could affect proper operation of the enclosed fire pump.
Inspect a pump system for indications of conditions that could affect its proper functioning.
Inspect a fire pump electrical system for indications of conditions that could affect the pump's proper functioning.
Inspect a fire pump diesel system for indications of conditions that could affect the pump's proper functioning.

2.1.3 Inspect tanks for water levels, air pressures, or temperatures that are outside of expected ranges.

Knowledge:

Units of measure for temperature
NFPA 25: 9.2.4.1

Skills:

Use NFPA 25: 9.2.1, 9.2.2, 9.2.4, and Table 9.1.1.2 to determine inspection frequencies.



Recognize indicators of the correct fill level and/or desired air pressure for a tank.
Read thermometers and water level and air pressure gauges.
Identify visible damage to a thermometer or gauge, or readings that are outside of the expected range.

2.1.4 Visually inspect standpipe and hose systems for damage and visually apparent operational deficiencies or impairments.

Knowledge:

Function and appearance of major components of standpipe systems

NFPA 25: Table 6.1.1.2/"Inspection"

Scope of NFPA 1962

Skills:

Use NFPA 25: Table 6.1.1.2 to determine inspection frequencies.

Verify that the scope of an inspection can be fulfilled in conformance with NFPA 25: Table 6.1.2, first column (except "Hose").

Determine whether hose is present and properly stored.

Identify external deficiencies that limit or threaten the functionality of a standpipe system, except for hoses.

Use NFPA 25: Table 13.1.1.2 to determine inspection frequencies for standpipe valves.

2.1.5 Inspect fire mains, including hydrants, post indicator valves (PIVs), exterior hose houses, monitor nozzles, and mainline strainers for damage and apparent operating condition.

Knowledge:

NFPA-25: Chapter 7.2, and 13.3.2

Skills:

Determine inspection frequencies from NFPA 25: Table 7.1.1.2.

Identify hydrant outlets.

Identify externally visible deficiencies that could limit or threaten the functionality of fire mains.

Identify externally visible deficiencies that could limit or threaten the functionality of wet barrel or dry barrel hydrants.

Identify externally visible deficiencies that could limit or threaten the functionality of post indicator valves.

Identify externally visible deficiencies that could limit or threaten the functionality of hose houses.

Identify externally visible deficiencies that could limit or threaten the functionality of monitor nozzles.

2.1.6 Visually inspect the interior of drained and opened pipes for evidence of foreign material.

Knowledge:

NFPA 25: 14.2, 14.3

Methods for inspecting pipe interiors

Indicators of the presence of foreign material

Skills:

Use NFPA 25: 14.2 and 14.3 to determine inspection frequencies.

Identify obstructions such as sludge, rocks, coupons, slime, MIC, rust, scale, corrosion, trash, zebra mussels, sediment, etc.

Visually inspect pipe interiors.

2.1.7 Visually inspect the interior of opened and drained alarm, dry pipe, deluge, and swing check valves, and strainers for any conditions that might limit proper functioning, and to clean strainers.

Knowledge:

NFPA 25: 13.4.1.2, 13.4.2.1, 13.4.3.1.7, 13.4.4.1.5, and 13.4.4.1.6

Which preaction, deluge and dry pipe valves need to be opened to be reset

Internal components of alarm, dry pipe, deluge, and swing check valves and their functioning

Skills:

Use NFPA 25: Table 13.1.1.2 to determine inspection frequencies.

Reset alarm valves, dry pipe valves, and check valves.

Locate, remove, clean, and replace strainers.

Recognize damage to components or other indicators of limited functionality

Identify visible damage or deficiencies that could limit or threaten the functionality of the valve or strainer.

2.1.8 Verify the presence of correct system signage.

Knowledge:

NFPA 25: 4.1.8, 5.2.8, 13.3.1, and 13.4.4.1.3

Skills:

Verify that correct signage is in place and provides needed information.

Report signage deficiencies.



Test # 10020: Level II Testing

2.2 Testing

(Questions related to these tasks makeup 100% of the exam)

2.2.1 Determine whether sprinklers and gauges are due for testing or replacement.

Knowledge:

NFPA 25: 5.3.1 testing and replacement requirements for sprinklers

NFPA 25: 5.3.2 testing and replacement requirements for gauges

Appearances of the types of sprinklers for which NFPA 25: 5.3.1 lists specific testing or replacement requirements

Types of markings that are found on sprinklers indicating type and age

Skills:

Use NFPA 25: Table 5.1.1.2 to determine testing frequencies.

Use markings and physical characteristics to determine sprinkler types.

Use markings on sprinklers to determine their ages.

Use information on gauges to determine their ages.

Review available testing records.

Recommend testing or replacement of sprinklers and gauges.

2.2.2 Perform a main drain test.

Knowledge:

Purpose of main drain test

Problems that can arise during, or as a result of, the test procedure

Skills:

Use NFPA 25: 13.2.5, 13.3.3.4, and Table 13.1.1.2 to determine testing frequencies.

Obtain records of the acceptance main drain test and any subsequent main drain tests.

Locate points in system at which testing procedures will be conducted.

Survey the surrounding area for potential discharge damage issues prior to testing.

Conduct a main drain test.

Evaluate the test results.

Record the test results and any conditions that suggest further investigation.

2.2.3 Test control valves for proper function.

Knowledge:

NFPA 25: 13.3.3

Appearances and functions of various types of control valves, including butterfly, indicating, non-rising stem gate, and OS & Y valves

Appearances and purposes of spanner wrenches and roadway box keys

Skills:

Use NFPA 25: Table 13.1.1.2 to determine testing frequencies.

Locate control valves.

Conduct valve tests, including torsion tests and range of motion tests.

Evaluate functioning per NFPA 25: 13.3.3.1 and 13.3.3.2.

Record and report test results.

2.2.4 Perform priming water, low air pressure, and quick-opening device tests on dry pipe systems.

Knowledge:

NFPA 25: 13.4.4.2.1, 13.4.4.2.4, and 13.4.4.2.6

Various trim arrangements used for dry-pipe valves

Quick-opening device (QOD) operation

Skills:

Determine testing frequencies.

Locate, read, and interpret manufacturers' instructions.

Conduct a priming water test and evaluate results.

Conduct a low air pressure test and evaluate results.

Conduct a QOD trip test and evaluate results.

Identify damage to components.

Record and report test results and any observed component damage.



2.2.5 Perform a partial flow trip test on a dry pipe system.

Knowledge:

Testing frequencies listed in NFPA 25: 13.4.4.2.2 and 13.4.4.2.3

Procedures required to return a system to service

Tools required for procedure

Skills:

Use tools required for testing.

Determine when a partial flow trip test is mandated or allowed.

Locate the points at which test procedures are to be conducted.

Perform a dry pipe system partial flow trip test per NFPA 25: A.13.4.4.2.2.3.

Identify problems that can arise during or as a result of the testing procedures, and take steps to prevent or resolve them.

Return system to service.

Record and report test results.

2.2.6 Perform a full flow trip test on a dry pipe system to determine whether a change in the water delivery time has occurred, and a dry pipe system air leakage test.

Knowledge:

NFPA 25: 13.4.4.2.2.2 – 13.4.4.2.2.3 for testing frequencies and scheduling considerations

Tools and equipment needed for the testing procedures

Skills:

Locate points in the system that will be used in the test procedures.

Identify problems that can arise during or as a result of the testing procedures, and take steps to prevent or resolve them.

Use the tools and equipment required for the testing procedures.

Conduct a full flow trip test of a dry pipe system consistent with NFPA 25: 13.4.4.2.2.2, 13.4.4.2.3 – 13.4.4.2.5.2, and A.13.4.4.2.2.2.

Conduct a dry pipe system air leakage test consistent with NFPA 25: 13.4.4.2.9.

Note any damage to parts of the system, or any conditions that could limit its functionality.

Return system to service.

Determine the water delivery time and compare with records from past tests.

Record and report test results and any deficiencies.

2.2.7 Perform a waterflow alarm test on a sprinkler system.

Knowledge:

NFPA 25: 5.3.3, including pass/fail criteria

Alarm connections of various systems

Appearances and functions of the major components of fixed wet pipe or dry pipe sprinkler systems

Problems that can arise during, or as a result of, the test procedure

Skills:

Use NFPA 25: 5.3.3 to determine testing frequencies.

Identify the alarm company and AHJ for notification.

Survey surrounding area for potential discharge damage issues prior to testing.

Identify any undesired consequences that could result from an alarm signal.

Conduct a waterflow alarm test to verify water flow and alarm activation.

Document and report test results and any deficiencies identified.

2.2.8 Test supervisory signaling devices such as valve tamper switches, low air pressure, and low temperature to verify proper signal transmission and reception.

Knowledge:

Tools required for tests

Appearances and functions of the major parts of various supervisory signaling devices

Environmental, system, or other conditions required for a successful test

Skills:

Use NFPA 25: Table 5.1.1.2 to determine testing frequencies.

Identify alarm and AHJ contacts for notification of test-related signals.

Identify the various supervisory signaling devices requiring testing.

Procure and use the tools needed for testing.

Test devices in accordance with manufacturer instructions to verify proper signal transmission and reception.

Locate, read, and interpret manufacturers' instructions.



2.2.9 Perform no-flow (churn) and weekly tests on a fire pump.

Knowledge:

NFPA 25: 8.3.1, 8.3.2, and 8.3.3.2(1)

Testing frequency in NFPA 25: Table 8.1.1.2

Functions and appearances of the parts of each type of fire pump

Controller isolation switch safety precautions

Skills:

Identify alarm and AHJ contacts for notification of test-related signals.

Locate and identify fire pumps and controllers.

Conduct a churn test of an electric fire pump.

Conduct a churn test of a diesel fire pump.

Determine rated churn pressure.

Identify unique pump characteristics (e.g. reduced-voltage / soft-start, variable speed, etc.) and modify test procedures/criteria accordingly.

Recognize and resolve any problems that arise while the fire pump is operating in the no flow condition.

Use test outcomes and observations to determine the operational readiness of the fire pump.

Identify any damage to the pump system equipment, and any conditions or problems encountered during testing that could limit or threaten the pump system's functionality.

Record and report test results.

2.2.10 Test antifreeze solutions to determine their freezing points.

Knowledge:

NFPA-25: Section 5.3.4

Purpose, parts, and operation of a handheld refractometer

Purpose, parts, and operation of a hydrometer

Skills:

Identify the system's capacity.

Determine the number of test samples required.

Identify the target freezing point for the antifreeze solution.

Locate the points for the test procedure.

Obtain a sample of the antifreeze solution.

Measure the specific gravity of the antifreeze solution using a hydrometer.

Measure the specific gravity of the antifreeze solution using a refractometer.

Identify the solution and its freezing point.

Record and report test results.

2.2.11 Identify system conditions discovered during inspection and/or testing that would prompt an obstruction investigation.

Knowledge:

NFPA 25: 14.2.2.2

Skills:

Identify the conditions that indicate that an obstruction investigation should be recommended.

Identify the nature and possible sources of obstructing material.

Record and report observations and recommendations.



Test # 10021: Level II Work Practices

2.3 Documentation

(Questions related to these tasks makeup 12-16% of the exam)

2.3.1 Prepare formal reports for work under the scope of Level II.

Knowledge:

NFPA 25: 4.3

Role of the inspector/tester in determining the status of a water-based fire protection system

Retention requirements as listed in NFPA 25: 4.3

Skills:

Determine which information must be included in reports.

Identify which party or parties should receive the final report.

Complete reports on Level II inspection and testing activities, results, and observations.

2.4 Safety

(Questions related to these tasks makeup 14-18% of the exam)

2.4.1 Follow safe practices for Level II inspections and tests.

Knowledge:

NFPA 25: 4.9

OSHA 29 CFR 1926.32 (f)

Lock out/Tag Out procedures (OSHA 29 CFR, 1910.147 (a)(1)(i))

Confined space entry precautions (OSHA 29 CFR, 1910.146)

Fall protection requirements (OSHA 29 CFR, 1926.104)

Skills:

Locate, read, and interpret the manufacturers' recommendations for proper use of testing equipment.

Recognize other potentially unsafe conditions at a worksite and obtain a determination and a resolution on how to proceed.

Determine whether contained liquids or gases are under pressure.

Determine whether electrical circuits are energized.

Identify potentially hazardous equipment deficiencies.

Identify situations that require lock-out/tag-out.

Ensure that correct procedures are followed during entry into confined spaces.

2.5 Work Management

(Questions related to these tasks makeup 68-72% of the exam)

2.5.1 Plan a sequence of inspection and testing tasks.

Knowledge:

Information, documents, and tools required for each task

Sequence of testing that makes sense and maximizes efficiency

Steps involved in each task

Frequencies/scheduling of inspection tasks

Support required from fitters, alarm technicians, or other qualified personnel

Equipment requirements for various procedures

Skills:

Coordinate impairments and/or work area disruptions.

Determine support required from fitters, alarm technicians, or other qualified personnel.

Determine priorities among various considerations.

Plan placement and/or movement of equipment.

Develop the sequence.

2.5.2 Identify the tools and equipment required for Level II inspection or testing of water-based fire protection systems.

Knowledge:

NFPA 25

NFPA 291

Names and appearances of tools required for performance of standard inspection and testing procedures

Skills:

Identify the tools required for specific inspection and testing procedures.

Recognize when test equipment needs recalibration or equipment.

2.5.3 Identify records from the contractor's and the owner's files related to the system to be inspected.

Knowledge:

NFPA 25: 4.3

Fire protection system terminology

Representation of building elements and system components in fire protection system plans

Purposes/scope of various types of plans and reports

Types of documents/information required

Possible alternate sources of required information

Skills:

Read and interpret fire protection system plans,

acceptance test reports, and inspection and testing reports.



2.5.4 Conduct a pre-inspection conference with the owner.

Knowledge:

Inspection and testing procedures and frequencies for various systems and components
Time required for performance of various inspection and testing procedures
Scheduling considerations for various inspection and testing procedures

Skills:

Identify the alarm monitoring company and AHJ.
Coordinate access to the facility and/or system components.
Coordinate disruptive aspects of inspection and testing procedures with the facility's work processes.
Coordinate any support needed for property damage avoidance.
Read the scope of the contract.
Communicate clearly and professionally.

2.5.5 Notify applicable parties about test-related fire alarm and supervisory signals.

Knowledge:

Role of system monitoring service
Types of monitoring services (protected premises, central station, proprietary, remote, and fire command)

Skills:

Follow-up after testing to confirm receipt of signals.
Notify the monitoring service that testing has been completed.

2.5.6 Work with the owner to plan and implement an impairment procedure.

Knowledge:

NFPA 25: 15.3, 15.5 – 15.7
Planned and Emergency Impairments types
Potential consequences to system operation while impaired
Tagging procedures

Skills:

Identify the alarm monitoring company and AHJ contacts for notification.
Plan for the beginning and end of the impairment.
Plan for potential fire hazards that could arise during the impairment.
Establish notification procedures before and after the impairment.
Estimate the time required for the pre-planned impairment.
Utilize valve shut-off/impairment tags.
Encourage the owner to limit operations during impairment.
Develop a plan so that systems can be returned to service immediately if a problem arises.
Manage work processes during the impairment to minimize its duration.
Respond to an emergency impairment.

2.5.7 Conduct a post-inspection conference with the owner.

Knowledge:

NFPA 25: 4.1.4, 15.5, 15.6, 15.7, A.4.1.4
Conditions that constitute an emergency impairment
Deficiencies that affect the functionality of the system

Skills:

Explain inspection and test results to the owner.
Provide notifications in response to an impairment and/or system deficiency.
Recommend corrective actions.
Advise the owner that the system has been restored.
Communicate clearly and professionally.



Inspection and Testing of Water-Based Systems

Standard Model/Computer-Based Testing

Level III Content Outline

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

Without supervision, perform and supervise inspections and tests of all water-based fire protection systems other than foam-water, water-mist, and ultra-high-speed water spray systems, particularly those that require, for safety and accuracy, knowledge of system operation, materials, interfaces, specialized fire protection functions, and/or hydraulic effects of high or changing pressures.

There are two exams listed at Level III; both, plus the two listed at Level I and the three listed at Level II are required for certification at Level III.

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 # 10022: Level III Inspections and Responsibilities

3.1 Inspection

(Questions related to these tasks makeup 79-83% of the exam)

3.1.1 Inspect deluge and preaction systems for damage or any conditions that might limit proper functioning.

Knowledge:

Function and appearance of the major components that are unique to deluge and/or preaction systems
Functions and components of different types of activation systems
NFPA 25: 3.5.2, 3.6.4.2, 3.6.4.5, 13.4.3.1

Skills:

Use NFPA 25: 13.4.3.1 and Table 13.1.1.2 to determine inspection frequencies.
Verify that the scope of an inspection job can be fulfilled in conformance with NFPA 25: 13.4.3.1.
Visually inspect the components that are unique to deluge and/or preaction systems (including air maintenance device, closed sprinklers, and inspector's test connection) for damage or conditions that could limit or threaten the functionality of the system.
Inspect the condition of any associated non-electrical detection devices.

3.1.2 Visually inspect water-spray systems for proper alignment of nozzles and for damage or any conditions that might limit proper functioning.

Knowledge:

Function and appearance of the components of water spray nozzles and pipe supports
Function and appearance of the major parts of each type of pneumatic or hydraulic detection system
NFPA 25: 3.6.6, 10.2.5, Table 10.1.1.2

Skills:

Use NFPA 25: Table 10.1.1.2 to determine inspection frequencies.
Verify that the scope of an inspection job can be fulfilled in conformance with NFPA 25: 10.2.5.
Identify target hazard being protected.
Verify proper alignment of the nozzles.
Inspect spray nozzles and pipe supports for externally visible damage or deficiencies that limit or threaten the functionality of the water spray system.
Inspect pneumatic and hydraulic detectors (pilot line detectors) for damage or conditions that could limit or threaten their functionality.

3.1.3 Perform an external inspection of a water storage tank and its support structure for evidence of damage, corrosion, reduced support, or other possible deficiencies.

Knowledge:

NFPA 25: 9.2.5 and Table 9.1.1.2

Skills:

Use NFPA 25: 9.2.5 and Table 9.1.1.2 to determine inspection frequencies for tank system components.



Inspect the outside of the tank and its external components for evidence of damage, corrosion, or other possible deficiencies.

Inspect external insulation and protective coatings for evidence of damage, corrosion, reduced support, or other possible deficiencies.

Inspect the support structure of the tank for evidence of damage, corrosion, reduced support, or other possible deficiencies.

Inspect the immediate environment of the tank for possible hazards to the proper functioning of the tank.

Record and report any deficiencies.

3.1.4 Perform an internal inspection of a tank, heating system, and anti-vortex plate for evidence of corrosion, silt build-up, leaks, and other possible deficiencies.

Knowledge:

NFPA 25: 9.2.6

Skills:

Use NFPA 25: 9.2.6 to determine inspection frequencies. Identify any tank deficiencies, including waste materials, debris, aquatic growth and life, silt build-up, cracks in floor or walls, poor condition of lining or coating, obstruction or blockage of vortex plate or pump inlet, etc.

Verify functioning of automatic fill valves.

3.1.5 Inspect systems protecting freezers and cold storage areas for evidence of ice blockages.

Knowledge:

NFPA 25: 5.2.4.4, 14.4, and Figure A.5.2.4.4

Skills:

Use NFPA 25: 5.2.4.4, 14.4 to determine inspection frequencies.

Read and interpret gauge readings on air lines in dry pipe and preaction sprinkler systems.

Inspect lines entering refrigerated areas for ice blockage and evidence of damage to pipes or fittings.

Use alternative methods for investigating possible ice blockages.

3.1.6 Identify special systems, including foam, water mist, and ultra high-speed water spray.

Knowledge:

NFPA 25: 11.2

Functions and visual appearances of the components unique to a foam system

Functions and visual appearances of the components unique to a water mist system

Functions and visual appearances of the components unique to an ultra high-speed water spray system

Skills:

Use NFPA 25: Tables 10.1.1.2, 11.1.1.2, and 12.1.2 to determine inspection frequencies.

Identify the presence of a foam, water mist, or ultra-high-speed water spray system.

3.3 Documentation

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

3.3.1 Prepare formal reports for work under the scope of Level III.

Knowledge:

NFPA 25: 4.3

Role of the inspector/tester in determining the status of a water-based fire protection system

Skills:

Determine which information must be included in reports. Identify which party or parties should receive the final report.

Complete reports on Level III inspection and testing activities, results, and observations.

3.5 Work Management

(Questions related to these tasks makeup 4-8% of the exam)

3.5.2 Supervise inspection and testing personnel and jobs.

Knowledge:

NFPA 25

Knowledge and skills required for inspection and testing tasks

Potential consequences of poor performance of various inspection and testing tasks

Knowledge and skills that can lead to the most accurate inspection and testing results, and those that can prevent injury, damage, or unnecessary expense
NICET Practice Analysis (Content Outlines) for Inspection and Testing of Water-Based Systems

Skills:

Evaluate the capabilities of inspection and testing personnel.

Identify gaps between the knowledge and skills possessed by personnel and those required for competent performance.

Select individuals for, and assign them to, particular tasks. Provide the correct degree of supervision to assure correct performance of assigned inspection and testing tasks.

Provide training appropriate to the skill level of individuals.

Promote awareness of safety hazards on a job site and appropriate protections.

Promote awareness of potential damage or workplace disruption from inspection and testing activities and possible corrective measures.

Ensure that inspectors have the necessary tools and information to properly carry out their parts of the job.



Monitor the completion of required inspections/tests, the correct collection of data and observations, the job schedule, and returning of the system to service.

Test # 10023: Level III Advanced Testing

3.2 Testing

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

3.2.1 Perform a flow test on a fire pump to determine its pressure and flow characteristics, and whether further investigation is indicated.

Knowledge:

NFPA 25: 8.3.3 and 8.3.5

Purpose, parts, and operation of a pitot gauge

Purpose, parts, and operation of a multimeter

Terminology and units of measure applied to pumps and pump rotation, to water pressure and flow, and to electrical potential and current

Affinity laws

Skills:

Use NFPA 25: 8.3.3 and Table 8.1.2 to determine testing frequencies.

Convert velocity pressure to flow.

Identify alarm and AHJ contacts for notification of test.

Survey surrounding area for potential discharge damage issues prior to testing

Locate the points to conduct test procedures.

Conduct a fire pump flow test.

Use a pitot gauge to measure velocity pressure.

Plot test data on a graph.

Interpret the test results and data plots.

Determine the pump's rated conditions.

Use a multimeter to measure volts and amps

Use a tachometer to measure rotation.

Apply affinity laws to flow/pressure test results based on observed RPM.

Identify any damage to the pump system equipment, and any conditions or problems encountered during testing that could limit or threaten the pump system's functionality and recommend further investigation if warranted.

Record and report test results.

3.2.2 Perform a trip test on a deluge system.

Knowledge:

NFPA 25: 13.4.3.2.2 through 13.4.3.2.6,

Differences between deluge and preaction systems

Trip test procedures

Skills:

Identify alarm and AHJ contacts for notification of test-related signals.

Locate points for test procedures.

Take steps to prevent property damage or injury resulting from test procedures.

Conduct a trip test on a deluge system.

Observe, identify, and record the discharge patterns of spray nozzles.

Apply pass/fail criteria specified in NFPA 25 13.4.3.2, 13.4.3.2.6.2, and A13.4.3.2.2, to test results.

3.2.3 Perform preaction system tests, including priming water test, partial and full flow trip tests, and detection system interface tests.

Knowledge:

NFPA 25: 13.4.3.2 and related Annex sections

Appearances and functions of preaction valves, trim, and detection system components

Function and appearance of the components of a preaction system

Skills:

Identify alarm and AHJ contacts for notification of test-related signals.

Conduct a trip test on a preaction system protecting a freezer.

Conduct a test of the detection system to verify interface with preaction valve.

Use NFPA 25: 13.4.4.2.2 – 13.4.3.3.4, and Table 13.1.1.2 to determine testing frequencies and scheduling considerations for full-flow trip testing.

Use NFPA 25: 13.4.3.2.1 to determine testing frequencies for priming water tests. Obtain, read, and interpret manufacturer's documentation for specific valves.

Identify specific valves, their trim, and their functions.

Locate points in the system used in the test procedures.

Conduct a partial flow trip test.

Conduct a full flow trip test; determine whether a change in the water delivery time has occurred.

Perform a priming water test on a preaction systems equipped with supervisory air.

Record and report observations and test results, including any deficiencies.

3.2.4 Perform an operational test on a water spray fixed system and determine whether further investigation is indicated.

Knowledge:

NFPA 25: 10.3

Skills:

Use NFPA 25: Table 10.1.1.2 to determine testing frequencies.

Identify alarm and AHJ contacts for notification of test-related signals.



Research and identify appropriate test criteria.
Verify that test protocols (including the contractor's pre-test documentation) are in conformance with NFPA 25: 10.3.

Conduct an operational test of a water spray fixed system.
Replace discharge nozzles with pressure gages as needed.
Verify that the nozzle discharge pattern is correct.
Record and report test results and any deficiencies identified.

3.2.5 Test tank heating system, low temperature alarms, high temperature limit switch, and high and low water-level alarms to verify proper signal transmission and reception.

Knowledge:
NFPA 25: 9.3

Skills:

Use NFPA 25: 9.3 and Table 9.1.1.2 to determine testing frequencies and scheduling considerations.
Test supervisory devices per manufacturer instructions.
Test low temperature alarms and high temperature limit switches for accuracy and for reliability of signal transmission and reception.
Test water level alarms for accuracy and for reliability of signal transmission and reception.
Test water level indicators (per NFPA 25: A.9.3.1 for mercury gauges) for accuracy and freedom of movement.
Record and report test results and observations, including any deficiencies.

3.2.6 Perform a hydrostatic test on a standpipe system.

Knowledge:

NFPA 25: 6.3.2
Purpose and procedures for a standpipe system hydrostatic test
Potential hazards associated with hydrostatic testing
Tools required for test procedures

Skills:

Use NFPA 25: 6.3.2.1 and Table 6.1.1.2 to determine testing frequencies and scheduling considerations.
Locate points and sections in the standpipe system for use in the test procedure.
Follow procedures to mitigate potential hazards.
Use a test pump.
Measure hydrostatic pressure with a pressure gauge.
Conduct a standpipe system hydrostatic test at the pressure specified in NFPA 25: 6.3.2.1.
Record and report test results and any observed deficiencies.

3.2.7 Perform a full flow test on a standpipe system to verify that the water supply still provides the design pressure at the desired flow.

Knowledge:

Types of standpipe systems and their full flow testing requirements

Standpipe system full flow test procedures

Appearances and functions of standpipe system components that will be used in testing

Potential hazards of testing procedures

Potential for property damage from testing procedures

Tools necessary to conduct the test

Skills:

Use NFPA 25: 6.3.1 and Table 6.1.1.2 to determine testing frequencies and scheduling considerations.

Locate the pressure and flow criteria at the time of installation.

Obtain manufacturer's documentation for pressure reducing or restricting hose valves.

Locate points in the system used in the test procedures.

Take steps to prevent property damage or personal injury resulting from the test procedures.

Conduct a full flow test consistent with NFPA 25: 6.3.1.

Record and report test results and any observed deficiencies.

3.2.8 Test pressure reducing and relief valves for proper operation.

Knowledge:

NFPA 25: 13.5, 3.3.24, 3.3.25, 3.5.1, 3.5.4, and 3.5.5
Appearances and functions of various types of pressure reducing and relief valves and their trim, including pressure regulating devices, pressure restricting devices, pressure control valves, pressure reducing valves, and pressure relief valves
Potential hazards of testing procedures
Potential for property damage from testing procedures
Full and partial flow test procedures
Tools required for the test procedures

Skills:

Use NFPA 25: 13.5 and Table 13.1.1.2 to determine testing frequencies and scheduling considerations.

Locate and identify pressure reducing and relief valves and regulating devices.

Locate the pressure and flow criteria at the time of installation.

Verify that pressure reducing and relief valve settings are as required.

Obtain, read, and interpret manufacturer's documentation for specific valves.

Identify specific valves, their trim, and their functions.

Locate points in the system used in the test procedures.

Calculate pressure elevation differences and adjust pressure readings accordingly.

Take steps to prevent property damage or personal injury resulting from the test procedures.

Conduct a partial flow test.

Conduct a full flow test.



Use pressure gauges, pitot tubes, and conversion charts to measure pressure and flow.
Record and report observations and test results, including any deficiencies.

3.2.9 Perform functional tests of hydrants and monitor nozzles.

Knowledge:

Different types of water distribution systems and other water sources in the local community

Characteristics of public and private water supply systems

NFPA 25: 7.3.2 and 7.3.3

Test procedures for monitor nozzles mounted on hydrants and elsewhere

Tools required for the test procedure

Proper procedures for opening and closing hydrants

Potential impacts of water discharge

Skills:

Use NFPA 25: Table 7.1.1.2 to determine testing frequencies.

Verify that each hydrant is within the scope of the testing contract.

Plan for and mitigate impacts from water discharge.

Properly use tools required for the test procedures.

Conduct a hydrant test to verify functionality.

Test monitor nozzles per NFPA 25, 7.3.3.2.

Record and report test results and any deficiencies.

3.2.10 Perform a flow test to verify that the condition of underground piping has not deteriorated.

Knowledge:

NFPA 25: 7.3.1

Appearances and functions of the components of fire hydrants

Tools and procedures for operating a fire hydrant

Alternate methods of achieving flow from underground piping

Tools (e.g. pitot gauge, hydrant wrench, pressure gauge with hydrant thread cap and tap, ruler) necessary to conduct the test

Full flow test procedures

Velocity pressure (psi) to flow (gpm) conversion

NFPA 291: Chapter 4

General types of hydrant outlets and their coefficients of discharge (as described in NFPA 291: Figure 4.7.1)

Skills:

Use NFPA 25: Table 7.1.1.2 to determine testing frequencies.

Determine the age of the piping to be tested, and locate any previous flow test results.

Locate points where test procedures are to be conducted.

Determine hydrant coefficients.

Use a Pitot gauge to measure velocity pressure.

Take steps to prevent property damage or injury resulting from the test procedures.

Conduct a flow test of underground piping.
Plot test results.

Determine whether test results suggest that deterioration in the condition of the piping has occurred.

Record and report test results and any observed deficiencies.

3.2.11 Perform a forward flow test on a backflow prevention device.

Knowledge:

NFPA 25: 13.6.2

Appearances and functions of the components of a backflow prevention device

Procedures for a forward flow test

Skills:

Use NFPA 25: 13.6.2 and Table 13.1.1.2 to determine testing frequencies and scheduling considerations.

Determine the required flow rate based on system demand.

Locate the points at which test procedures will be conducted.

Survey surrounding area for potential discharge damage issues prior to testing.

Conduct a forward flow test consistent with NFPA 25: 13.6.2.

Record and report test results and any observed deficiencies.

3.4 Safety

(Questions related to these tasks makeup 2-6% of the exam)

3.4.1 Follow safe practices for Level III inspections and tests.

Knowledge:

NFPA 25, 70E

Hazards associated with various types of pressurized or energized equipment

Skills:

Take steps to prevent property damage or personal injury resulting from the performance of Level III test procedures, particularly where those involve pressurized water or gas, or energized circuits.

3.5 Work Management

(Questions related to these tasks makeup 7-11% of the exam)

3.5.1 Identify specialized equipment required for Level III tests.

Knowledge:

Names and appearances of tools and specialized equipment used in Level III tests

Specific tools and specialized equipment required for specific Level III tests

Skills:



Identify specialized equipment required for specific
Level III tests.



Inspection and Testing of Water-Based Systems

Level I Selected General References

Candidates are permitted to bring only the following reference into the test center.

<u>Title</u>	<u>Edition*</u>
NFPA 25	2014

This standard will also be available on-screen during the exam. Candidates may refer to their hardcopy and/or the on-screen copy.

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

During the exam, the following titles will be available to candidates **on-screen only**:

<u>Title</u>	<u>Edition*</u>
NFPA 13	2013
NFPA 20	2013
NFPA 72	2013
NFPA 291	2013

*The test questions are based on the editions listed above. These editions will be available to candidates during the exam in PDF format. Hard copies of these publications will NOT be permitted in the test center.

In addition to the references listed above, the following publications can provide some of the job knowledge required by an inspection and testing technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

29 CFR 1910: Occupational Safety and Health Standards.

29 CFR 1926: Safety and Health Regulations for Construction.

Fire Protection Handbook Volume 1. Arthur E. Cote, National Fire Protection Association.

Fire Protection Handbook Volume 2. Arthur E. Cote, National Fire Protection Association.

NFPA 70E (2012): Electrical Safety in the Workplace. National Fire Protection Association.

➤ This listing is not intended to be complete or representative.

Effective December 1, 2014



Inspection and Testing of Water-Based Systems

Level II Selected General References

Candidates are permitted to bring only the following reference into the test center.

<u>Title</u>	<u>Edition*</u>
NFPA 25	2014

This standard will also be available on-screen during the exam. Candidates may refer to their hardcopy and/or the on-screen copy.

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Effective December 1, 2014



Inspection and Testing of Water-Based Systems

Level III Selected General References

Candidates are permitted to bring only the following reference into the test center.

<u>Title</u>	<u>Edition*</u>
NFPA 25	2014

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NFPA 291	2013

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Fire Protection Handbook Volume 1. Arthur E. Cote, National Fire Protection Association.

Fire Protection Handbook Volume 2. Arthur E. Cote, National Fire Protection Association.

NFPA 16 (2011): Installation of Foam-Water Sprinkler and Foam-Water Spray Systems. National Fire Protection Association.

NFPA 22 (2013): Water Tanks for Private Fire Protection. National Fire Protection Association.

NFPA 24 (2013): Installation of Private Fire Service Mains and Their Appurtenances. National Fire Protection Association.

NFPA 70 (2014): National Electric Code. National Fire Protection Association.

NFPA 70E (2012): Electrical Safety in the Workplace. National Fire Protection Association.

NFPA 72 (2013): National Fire Alarm and Signaling Code. National Fire Protection Association.

➤ This listing is not intended to be complete or representative.

Effective December 1, 2014

Exam Information

Inspection and Testing of Water-Based Systems Exam	
Level I: Inspection and Testing Fundamentals Exam 55 questions, 80 min.	
Level I: Work Practices 50 questions, 80 min.	
Level II: Inspection Exam 47 questions, 80 min.	
Level II: Testing 52 questions, 80 min.	
Level II: Work Practices 54 questions, 80 min.	
Level III: Inspections and Responsibilities Exam 53 questions, 80 min.	
Level II: Advanced Testing 79 questions, 110 min.	

Fees

Water-Based Systems Layout Standard Model/CBT Application	
Level I	
Inspection and Testing Fundamentals	\$170
Work Practices	\$170
Level II	
Inspection	\$180
Testing	\$180
Work Practices	\$180
Level III	
Inspection and Responsibilities	\$225
Advanced Testing	\$225
Base Recertification Fee (includes one subfield)	\$200
Incremental Fee (each additional subfield)	\$50

Special Hazard Systems Program Information

Technician Profile

Application Package (fees, certification requirements, experience forms, performance measures, and Level IV major project guidelines)

Exam Content Outlines

References Material used during program development

Exam Information (number of questions, time allotted)

Fees (application, recertification)

Special Hazard Systems (SH) Technician Profile

This certification program is designed for engineering technicians engaged in the detailing and layout and/or installation and maintenance related to special hazards suppression systems. Technical areas covered include knowledge of physical science and mathematics, elements of electricity and electronics, available fire suppression agents, available fire protection devices, hydraulics of the flow of various agents, systems installation, servicing and maintenance, applicable codes and insurance authority standards, and contract interpretation and preparation

Level I SH Technicians

Level I SH technicians are trainees and entry-level technicians who perform limited job tasks under supervision. They are learning, much like apprentices. They learn to identify wiring and devices and their purposes; read and measure quantities; read drawings; and mount and remove devices and piping. They have at least 6 months of experience in SH.

Level II SH Technicians

Level II SH technicians perform routine tasks under limited supervision. Level II Technicians can inspect, maintain, repair, install, perform functional tests on, commission, and apply basic specs 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 SH.

Level III SH Technicians

Level III SH technicians can work independently without supervision. Level III Technicians Design gaseous, dry, and wet agent systems; prepare submittals, estimates, and project reports; manage a special hazards project; and inspect, maintain, repair, install, and test complex systems. Level III Technicians have at least 5 years of experience in SH.

Level IV SH Technicians

Level IV SH technicians are senior-level technicians whose work includes complex and specialized systems. Level IV Technicians Design systems involving unique applications of agents/devices, and/or explosion prevention; troubleshoot complex systems; and manage multiple project teams; interpret and negotiate contracts. Level IV Technicians have at least 10 years of experience in SH.



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Special Hazards Systems



Basic Instructions

Certification candidates must submit the entire Certification Application Package, including the Test Application and the Experience Application. After a candidate passes a written exam requirement, his or her work experience will be evaluated by NICET.

At minimum, a candidate must submit the Test Application in order to schedule and sit for an exam. However, to prevent delays in certification, candidates are recommended to submit their completed Experience Application at the time they apply for the exam.

Each NICET Standard Model program has a specialized Certification Application Package, which can be found on NICET's website. Each Certification Application Package is comprised of the following parts:

Requirements for Certification

Test Application

Section I: Candidate Information

Section II: Payment Form

Experience Application

Part I: Work History

Part II: Verifier Data

Part III: Performance Verification

Part IV: Personal Recommendation (required at Levels III and IV)

Part V: Major Project Write-Up (required at Level IV)

Mail your application with payment to:

NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

If you're submitting a form that supplements a previously-paid experience evaluation, then send to:

NICET Evaluation, 1420 King Street, Alexandria, VA 22314

REMEMBER!

- **Ensure that you are submitting the correct application materials and fee payment.**
- **Access the current certification criteria and fee information at www.nicet.org.**
- **Make a copy of the entire application and keep it with your testing/certification records.**
- **Include name and identification number on every page of every part of the application.**



NICET ENGINEERING TECHNICIAN CERTIFICATION
Certification Application Package
Special Hazards Systems



Requirements for Special Hazards Systems Certification

Level I	Level II	Level III	Level IV
Examination – Pass the:			
Level I exam	Levels I and II exams	Levels I, II, and III exams	Levels I, II, III, and IV exams
Performance Verification – Obtain supervisor verification of:			
All Level I Performance Measures	All Levels I and II Performance Measures	All Levels I, II, and III Performance Measures	All Levels I, II, III, and IV Performance Measures
Work History – Provide complete, detailed position descriptions and time allocations showing¹:			
<p>A minimum of 6 months of technical experience with special hazards systems, which MUST include:</p> <ul style="list-style-type: none"> at least 3 months in special hazards systems plan preparation, installation, acceptance testing, inspection and periodic testing, and/or repair and recharge. <p>Up to 3 months may be in related experience³.</p>	<p>A minimum of 24 months of experience which MUST include:</p> <ul style="list-style-type: none"> at least 12 months of special hazards systems-specific work experience in one or more of the following roles / functions: <ul style="list-style-type: none"> system plan preparation installation acceptance testing inspection, testing and maintenance repair and recharge experience with at least 2 of the following: <ul style="list-style-type: none"> foam systems water-mist systems aerosol systems inert clean agent systems chemical clean agent systems (including halon) CO₂ systems dry chemical systems specialty detection⁴ explosion prevention <p>Up to 12 months may be in related experience³.</p>	<p>A minimum of 60 months of experience which MUST include:</p> <ul style="list-style-type: none"> at least 48 months of special hazards systems-specific work experience including: <ul style="list-style-type: none"> design / configuration (in the office or field) including both electrical and mechanical system layout AND installation acceptance testing inspection, testing and maintenance repair and recharge experience with at least 3 of the following: <ul style="list-style-type: none"> foam systems water-mist systems aerosol systems inert clean agent systems chemical clean agent systems (including halon) CO₂ systems dry chemical systems specialty detection⁴ explosion prevention integrated systems with multiple zones <p>Up to 12 months may be in related experience³.</p>	<p>A minimum of 120 months of experience, which MUST include:</p> <ul style="list-style-type: none"> at least 108 months of special hazards systems-specific work experience including: <ul style="list-style-type: none"> senior management role with overall responsibility for projects' technical aspects including system specifying, estimating and sales, design, code compliance review, installation, and final acceptance experience with at least 4 of the following: <ul style="list-style-type: none"> foam systems water-mist systems aerosol systems inert clean agent systems chemical clean agent systems (including halon) low-pressure CO₂ systems dry chemical systems specialty detection⁴ explosion prevention integrated systems with multiple zones <p>Up to 12 months year may be in related experience³.</p>
Personal Recommendation – Obtain recommendation ratings showing a capacity for:			
(not required)	(not required)	Independent engineering technician responsibilities	Senior engineering technician responsibilities
Major Project – Provide a detailed description of a major project and your role in it showing:			
(not required)	(not required)	(not required)	Senior responsibility for a special hazards system project of substantial complexity

¹ Time periods are full time equivalent.

² A maximum of three months of credit will be awarded for installation / inspection / service and maintenance of pre-engineered and factory-designed systems.

³ Related experience includes involvement in fire alarm systems and/or water-based fire protection systems plan preparation, installation, acceptance testing; inspection and periodic testing, and/or service/maintenance.

⁴ Specialty detection types include optical, pressure, air sampling, aspirating smoke, linear heat, etc.



National Institute for Certification in Engineering Technologies®

A division of the National Society of Professional Engineers
www.nicet.org



NICET ENGINEERING TECHNICIAN CERTIFICATION Test Application - Section 1: Candidate Information

(Please print clearly or type)

ID Number

☐ Mr.

Name Change? If your name has changed since your last application, enter your previous name here: _____

Name: ☐ Ms.

Last Name

First Name

Middle Initial

Note: At your test site, you will be required to present a government-issued photo ID; the name on your ID must be identical to the name that you provide above. This name will also appear on all correspondence and any certification documents issued to you by NICET.

Indicate your status below. You must write your ID number in the space provided at the top right corner of each page of the application.

- ☐ I have a NICET ID my number is: _____. **Note:** If you have achieved NICET certification, your NICET ID number is NOT the same as the certification number that appears on your certificate and wallet card. Your NICET ID number can be found on most of your personal NICET records. If you do not know your NICET ID number, please call NICET at 888-476-4238.

- ☐ This is my first application.

First-time applicants must provide ONE of the government ID numbers requested below. In the Test Application Package and the Experience Application package, when a space is provided in the top right corner for a NICET ID number, please write your Government ID number. Once NICET has processed your test application, you will be issued a permanent NICET ID number.

- ☐ Social Security Number: _____

- ☐ Driver's License No.: _____

State: _____

Expiration date: _____

- ☐ Government-issued photo ID no.: _____

Issue date: _____

Expiration date: _____

Issuing agency: _____

- ☐ Passport No.: _____

Issuing country: _____

Issue date: _____

NICET reserves the right to require a photocopy of this ID to confirm the submitted information (name, ID number, address, signature).

Address Information

Home Address:

Street

Apt.

City

State

Zip Code +4

Present Employer:

Company Name

Business Address:

Street

City

State

Zip Code +4

When receiving items by mail, which address do you prefer?

Business ☐ Home ☐

Present Position Title: _____

Electronic Contact Information and Preferences

Phone Numbers

Business: _____

Home: _____

Mobile/cell: _____

Fax: _____

Email Addresses

Business: _____

(Please print carefully) Home: _____

May we contact you about NICET business by:

- **Email?** ☐ yes ☐ no **If yes, preferred email address?** ☐ Business ☐ Home
If you permit NICET to contact you by email, then your testing authorization notice and other correspondence about your upcoming exam will be delivered via email. Please ensure that your e-mail filter can accept messages from the domain @nicet.org
- **Fax?** ☐ yes ☐ no

Applicant's Statement of Understanding

I certify that the information given on this page is accurate and current, that NICET may use the information as indicated to identify me and to send me information, and that it is my responsibility to notify NICET should any of the information provided on this page change. I have read, understood, and accept the NICET Conditions of Application. I have read, understood, and agree to abide by the NICET Code of Ethics.

Signature

Date



Conditions of Application for Technicians

1. **NICET has established policies, procedures, and fees** that govern certification decisions, the uses of certification, and interactions with applicants and certificants. These policies, procedures, and fees may be changed by NICET at any time without prior notification. These policies, procedures, and fees are freely available on NICET's website (www.nicet.org). Each person who signs any NICET application accepts and agrees to follow these policies and procedures in all dealings with NICET.
2. **Each NICET certification may have multiple criteria** that must be met by a candidate in order for the certification to be conferred. These criteria may be changed by NICET at any time without prior notification. Current criteria, along with general information about NICET and its certification programs, are available from NICET's website (www.nicet.org). Individuals who are not resident in, or working in, the United States or its territories may not be eligible for certification. These individuals must contact NICET before applying and may be required to follow additional procedures, with additional fees, to demonstrate that they meet the criteria.
3. All applicants, candidates, and certificants **must comply with the NICET Code of Ethics** (see previous page) and follow generally accepted ethical practices at all times. For example, acquiring and/or providing specific knowledge of test questions prior to testing, or acquiring or providing assistance during an examination; intentionally providing information to NICET that is incomplete, or inaccurate; or knowingly providing technical services in an unsafe, inaccurate, or unprofessional manner may subject the offender to any number of sanctions, including legal prosecution.
4. NICET reserves the right to **deny, suspend, or revoke any certification** (pending or awarded) should the Institute determine that an applicant, candidate, or certificant has misrepresented information, violated a NICET policy or procedure, or violated the NICET Code of Ethics.
5. Maintenance of **current accurate contact information** is the responsibility of the applicant. NICET requires accurate contact information to communicate to the applicant important information related to testing, certification, and recertification.
6. **The NICET name, logo, and certification mark are the property of NICET and may not be used without the expressed written permission of the Institute.**
7. **NICET approval letters, wallet cards, and certificates** are issued to certificants for their use but remain NICET property at all times and may be recalled by the Institute at any time without prior notification.
8. **NICET test questions and examinations** are the copyrighted property of NICET. Any copying, sharing, or distribution of the content of those test questions and/or examinations constitutes copyright infringement and is a violation of U. S. federal law. Violators will be subject to suspension or revocation of NICET status and/or prosecution to the full extent of the law.
9. Each person who signs a NICET application grants NICET the **right to contact individuals** named in application materials or other communications with NICET to confirm the accuracy of information provided by the applicant.
10. **NICET certification must be used, represented, and displayed** in accordance with NICET policies. NICET certification does not constitute a license to practice engineering.
11. Each person who signs a NICET application grants NICET the **right to publish their name, address, and certification** information in its certification directories and to provide that information to others in response to bonafide inquiries. Test scores will be given to the test-taker only, unless the test-taker submits a release form authorizing NICET to give the scores to another specified individual.
12. The applicant's **Social Security number or government-issued ID number** is required for identification purposes. It will be used for NICET internal use **ONLY** and will not be given to anyone else without legitimate legal reason.
13. **An applicant's test records will be purged** for an individual certification area after five years if no further testing is completed in that certification area and the individual is not certified in that area. If the applicant has active certifications or is actively testing in other certification areas, the records for those other certification areas will not be affected.
14. **An applicant with a disability** as defined in Title III of the Americans with Disabilities Act who may be placed at a disadvantage when taking a NICET certification examination must advise NICET, in writing, of their needs by including a letter or other appropriate documentation with their application. NICET will respond by telephone or other means to make appropriate accommodations.
15. **All certifications expire** three years after an individual's initial certification is awarded and every third year thereafter. Recertification will be based on the certificant's activities during that three-year period. Requirements and fees may be found in NICET's Continuing Professional Development Policy (See www.nicet.org). Several months before expiration, a recertification application will be sent to the last postal or email address provided by the certificant. If the application with payment is not received by NICET prior to the expiration date, the certificate will expire. Reinstatement to Active Status will involve an additional fee. If reinstatement has not occurred three years after the expiration date, all certifications and all testing records will be purged. Payment of new testing and/or application fees does not substitute for payment of the full recertification fee when due. Additionally, obtaining a higher-level NICET certification does not alter or "reset" the originally established three-year certification period.

NICET Code of Ethics

NICET-certified engineering technicians and technologists recognize that the services they render have a significant impact on the quality of life for everyone. As they perform their duties and responsibilities on behalf of the public, employers, and clients, they shall demonstrate personal integrity and competence. Accordingly, certificants shall:

1. Have due regard for the physical environment and for public safety, health, and well being. If their judgment is overruled under circumstances where the safety, health, property, or welfare of the public may be endangered, they shall notify their employer, client, and such other authority as may be appropriate. An employee shall initially express those concerns to the employer.
2. Undertake only those assignments for which they are competent by way of their education, training, and experience.
3. Perform their duties in an efficient and competent manner with fidelity and honesty.
4. Admit and accept their own errors when proven wrong and never distort nor alter the facts in an attempt to justify their decisions.
5. Avoid conflicts of interest whenever possible. When unavoidable, they shall disclose to their employer or client, in writing, any action that might create the appearance of a conflict of interest.
6. Avoid receiving and granting bribery in all its forms.
7. Strive to maintain their proficiency by updating their technical knowledge and skills in engineering technology.
8. Not misrepresent or permit misrepresentation of their own or their associate's academic or professional qualifications nor exaggerate their degree of responsibility for any work.
9. Not reveal facts, data, or information obtained in connection with services rendered without prior consent of the client or employer except as authorized by law.



Candidate Name: _____

NICET ID No.: _____



**NICET ENGINEERING TECHNICIAN CERTIFICATION
Test Application - Section 2:
PAYMENT FORM**

Examination Selection

For each exam selected, indicate the Window ID number of your preferred 3-month testing window (not to be more than six months from the postmark date on this application) from the Eligibility Schedule to the right. The fee includes an experience evaluation if the candidate passes the written exam.

	Window ID	Fee
Electrical Power Testing		
<input type="checkbox"/> Level I Exam (10027)		\$225
<input type="checkbox"/> Level II Exam (10028)		\$290
<input type="checkbox"/> Level III Exam (10029)		\$345
<input type="checkbox"/> Level IV Exam (10030)		\$400
Inspection and Testing of Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10035)		\$225
<input type="checkbox"/> Level II Exam (10036)		\$290
Fire Alarm Systems		
<input type="checkbox"/> Level I Exam (10007)		\$225
<input type="checkbox"/> Level II Exam (10008)		\$290
<input type="checkbox"/> Level III Exam (10009)		\$345
<input type="checkbox"/> Level IV Exam (10010)		\$400
Inspection and Testing of Water-Based Systems		
<input type="checkbox"/> Level I Inspection & Testing Fundamentals (10017)		\$170
<input type="checkbox"/> Level I Work Practices Exam (10018)		\$170
<input type="checkbox"/> Level II Inspection Exam (10019)		\$180
<input type="checkbox"/> Level II Testing Exam (10020)		\$180
<input type="checkbox"/> Level II Work Practices Exam (10021)		\$180
<input type="checkbox"/> Level III Inspection & Responsibilities Exam (10022)		\$225
<input type="checkbox"/> Level III Advanced Testing Exam (10023)		\$225
Water-Based (formerly Automatic Sprinkler) Systems Layout		
<input type="checkbox"/> Level I Exam (10011)		\$225
<input type="checkbox"/> Level II Exam (10012)		\$290
<input type="checkbox"/> Level III General Plan Preparation Exam (10013)		\$285
<input type="checkbox"/> Level III Hydraulics & Water Supply Exam (10014)		\$285
<input type="checkbox"/> Level IV Exam (10016)		\$400
Special Hazards Systems		
<input type="checkbox"/> Level I Exam (10031)		\$225
<input type="checkbox"/> Level II Exam (10032)		\$290
<input type="checkbox"/> Level III Exam (10033)		\$345
<input type="checkbox"/> Level IV Exam (10034)		\$400
Video Security Systems Technician		
<input type="checkbox"/> Level I Exam (10001)		\$225
<input type="checkbox"/> Level II Exam (10002)		\$290
<input type="checkbox"/> Level III Exam (10003)		\$345
<input type="checkbox"/> Level IV Exam (10004)		\$400
Video Security Systems Designer		
<input type="checkbox"/> Level I Exam (10005)		\$290
<input type="checkbox"/> Level II Exam (10006)		\$345
Total:		\$0

Eligibility Schedule

Window ID	Window Period	Window ID	Window Period
1	January/February/March	7	July/August/September
2	Feb/March/Apr	8	August/September/October
3	March/Apr/May	9	September/October/November
4	April/May/June	10	October/November/December
5	May/June/July	11	November/December/January
6	June/July/August	12	December/January/February

You can apply for your test online.

You can submit payment for this application at NICET's website. Visit www.nicet.org, and login to your account. From there, you can submit/update your contact information, select your test, and pay with a credit card.

Payment and mailing information

Payment of the total Examination fee in the form of a check or money order made payable to NICET, must accompany this application form.

Any Certification Application that includes a check or money order must be sent to NICET at:

Via U.S. Postal Service:
NICET
c/o Bank of America
PO Box 418651
Boston, MA 02241-8651

Via FedEx, UPS:
NICET
c/o Bank of America Lockbox Services
Lockbox 418651
MA5-527-02-07
2 Morrissey Blvd.
Dorchester, MA 02125

Any Certification Application forms that do not include a payment must be sent to:

Evaluations
NICET
1420 King Street
Alexandria, VA 22314

Don't forget to:

- Sign and Date the Applicant's Statement of Understanding in Section 1.
- Enclose your payment.
- Keep a copy of this application for your records.
- Mail all sections of this application together.

Express Evaluation (optional)

To speed up your experience evaluation, please contact NICET at 888-476-4238, Option 4, to ask for Express Evaluation instructions and arrange for electronic payment of the Express Evaluation fee of \$295 per subfield per Level. Express evaluations will be completed within 10 business days of the receipt of payment.

NICET OFFICE USE ONLY

Employer ID	Postmark Date	Spec. Cont.	ADA	App #	Lockbox #1	Amt. Paid



Experience Application Part 1: Work History Sections 1, 2, and 3



INSTRUCTIONS and CHECKLIST

First-time applicants (and those specifically directed by NICET):

For the span of your entire career, complete one form **consisting of at least sections 1, 2, and 3** for each position held at each employer **and for any period within a given position in which your responsibilities changed significantly.**

Returning applicants

Follow the instructions above solely for the period of time from the end date of your last work history submittal to the date you submit a new application.

Section 1 – Position Identification

Section 2 – Time Allocation

Break out your experience into all applicable technical areas in which you worked while in the position listed in Section 1.

Section 3 – Detailed Description of Work Performed

For each Subfield / Technical Area (S/TA) into which you divided your work in Section 2 – Time Allocation, provide detailed descriptions, in your own words, of the work you performed.

- Detail the technical and supervisory nature of the work.
- Describe the types of tasks you performed and the types and scopes of projects on which you worked.
- Detail the types of materials, tools, machinery, systems, and system components with which you worked.

For all gaps in your work histories (e.g., unemployment periods, winter breaks, and so on).

In Section 2, line item "Other", write "Gap" and in Section 3 on page 2 of 3 provide the reason for the gap.

If you are submitting a work history amendment you must submit the following:

- a signed and dated letter of explanation for the changes you made to your account
- the amended work history forms countersigned by your verifier, who by so doing indicates his or her attestation to the accuracy and completeness of the amended account

Work History Form Checklist – Do:

- ☐ Submit Sections 1, 2 and 3 of the form of the form for each position held.
- ☐ Ensure that the forms are completely and accurately filled out for the period from one submittal to the next.
- ☐ Make sure to provide the "Dates Positions Held" including **month** and **year**.
- ☐ Provide in Section 3, corresponding detailed descriptions for each Subfield / Technical Area (S/TA) in which your experience was broken out in Section 2, using your own words.
- ☐ Sign and date each page as indicated. Unsigned documents will not be accepted.

Work History Form Checklist - Do Not:

- ☐ Submit official position descriptions, resumes, testimonials, and marketing materials in lieu of completing Section 3 to describe your responsibilities.
- ☐ Submit amended work experience accounts without a signed letter of explanation for the changes in your work history unless directed to do so by NICET.
- ☐ Have verifier countersign work history forms unless directed by NICET to do so.
- ☐ Submit forms of your own design.

All information provided in candidate's application is cross-evaluated with documents on file to verify the following:

- consistency of work experience accounts
- appearance of signatures and initials
- appropriateness of verifier and recommender

and, as needed, through third-party entities including the following:

- licensing bodies and authorities having jurisdiction
- previous and current employers
- other sources of official documentation

Note: Work experience documents submitted with applications to test are placed in the queue for evaluation when a candidate meets the exam requirements for a given subfield and level. Work experience documents received in response to Conditional Decision Letters (CDLs) are placed in the queue for evaluation upon their receipt. In both cases the documents are evaluated in the order they are placed in their respective queues. (first-come, first-served)

Based on the present workload, it may take up to 90 days from the date a candidate meets an exam requirement for work experience documents to be evaluated and up to 60 days from date of receipt for CDL responses to be evaluated.



Candidate: _____ NICET ID No: _____

**Experience Application - Part I: Work History****Section 1 – Position Identification**

Employer:	Location of employer (city, state):	Name of supervisor (s):
Candidate's Position:	Dates position / responsibilities held:	Full-time <input type="checkbox"/> Part-time <input type="checkbox"/> Seasonal <input type="checkbox"/>
President / owner / co-owner	From: Month _____ Year _____ To: Month _____ Year _____	If part-time, hours per week: _____ If full-time seasonal, months worked per season _____

Section 2 – Time Allocation

Subfield / Technical Area (S/TA)	Description	Time devoted to S/TA (%)
Fire Alarm Systems (FA)	Fire alarm systems specific activities including project management, system layout (plan preparation), equipment selection, installation, troubleshooting, servicing, and technical sales.	%
Fire Alarm Systems Inspection / Testing (ITF)	Fire alarm systems work limited to performing, planning, and coordinating the inspection and testing of fire alarm systems.	%
Special Hazards Systems (SH)	Special hazards suppression systems specific activities including project management, system layout (plan preparation), equipment selection, installation, acceptance testing, troubleshooting, servicing, and sales.	%
Water-based Fire Protection Systems Layout (SP)	Water-based fire protection systems layout specific activities including project management, system layout (plan preparation), hydraulic calculations, site evaluation, equipment selection, plan approval, and sales.	%
Water-based Fire Protection Systems Inspection / Testing (ITS)	Specifically performing and managing the inspecting and testing of existing systems according to NFPA 25. Does not include work performed during installation and final testing / commissioning of new systems.	%
Water-based Fire Protection Systems Fitting / Fabrication (SF)	The performance and supervision of fitting, fabrication, maintenance, tests and inspections performed during installation and final testing / commissioning of new water-based fire protection systems or additions to systems.	%
Other Fire Protection Work (OFP)	This includes work with portable extinguishers, standpipe hoses and nozzles, municipal and private fire hydrants, fire-stopping, and firefighter duties.	%
Video Security System Technician (VST)	Video security systems specific activities including management, installation, preventative and corrective maintenance, tests and inspections, troubleshooting, and servicing.	%
Video Security System Designer (VSD)	Video security systems design and plan preparation specific activities including management, plan preparation, site evaluation, equipment selection, plan approval, and technical sales.	%
Industrial Instrumentation (I/I)	Industrial instrumentation work including management, design assistance, installation and maintenance of industrial measurement and control systems.	%
Audio Systems (AS)	Audio system specific activities including the layout, installation, and maintenance of audio systems for commercial, industrial, and large space applications.	%
Electrical Power Testing (EPT)	Specifically testing electrical power equipment, cabling, and systems operating in the range of 600 V and above. Does not include general wireman duties.	%
Other Low / Limited Voltage Systems (LV)	Work with non-fire alarm low/ limited voltage systems such as security, access control, nurse call, building control, computer networking, and emergency lighting.	%
Other Electrical Systems (GE)	General electrician work - residential and commercial wiring of loads including light machinery, lighting, HVAC components, and distribution panels and outlets.	%
Other	Specify: Gap:	%
The sum of all the values in this column cannot exceed 100%.		100%

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature _____

Date _____

Verifier's Signature
(Only if directed by NICET) _____

Sections 1, 2, and 3 must be filled out for each position held.

5/15

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed

NICET cannot accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations. If supplementary space is needed use additional pages of Section 3.

S/TA	*EXAMPLE*	Detailed Description of Technical Work Performed
SF	Supervised and performed the installation, corrective maintenance, under construction testing, and commissioning of new fire sprinkler systems and system additions. Systems installed included wet, dry, pre-action, deluge, and foam. Components installed and maintained included piping, pipe hangers, earthquake bracing, alarm check valves, various cutout valves, flow sensors, FD connections, standpipe hose connections, jockey and fire pumps, and backflow preventers. Installed systems of 25 – 600 heads in a variety of building types including residential and commercial high rise, mercantile, manufacturing, school, and military.	
S/TA		Detailed Description of Technical Work Performed
S/TA		Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____ NICET ID No: _____

Experience Application - Part I: Work History

Section 3 – Detailed Description of Work Performed (continue as needed)

NICET will not accept submissions provided on forms or in formats other than our own.

Provide separate entries for each S/TA for which you made an entry in Section 2 using the designated abbreviations.

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

S/TA	Detailed Description of Technical Work Performed

AFFIDAVIT: I certify that the above is a true and complete breakout of the time I spent working in the subfields/technical areas indicated for the listed position. I understand that provision of misinformation is in violation of the NICET Code of Ethics and policy, and can result in the rejection of this application and/or the revocation of any certificate NICET has issued in my name.

Applicant's Signature

Date

Verifier's Signature
(Only if directed by NICET.)

**Sections 1, 2, and 3 must
be filled out for each
position held.**

All information provided is subjected to cross-confirmation with documents on file and as needed through third-party entities including licensing bodies, previous and current employers, and other sources of official documentation.



Candidate: _____

Candidate NICET ID No.: _____

**NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part II: Verifier Data**

(Please print legibly or type)

To be completed by the Verifier only

Name: _____ Title: _____

Current employer: _____

Daytime phone: _____ Email: _____

Professional licenses/certifications: _____

My observation of the candidate occurred during my employment at:

☐ Current employer☐ Previous employer: _____

My observation of the candidate occurred as a part of my role as:

☐ Candidate's direct supervisor☐ Candidate's indirect supervisor/manager responsible for the candidate's work results/outcomes☐ Engineer on one of the candidate's projects☐ Governmental authority: _____☐ Contract supervisor for: _____ client, or _____ general contractor☐ Other: _____

I have (Check all that apply):

☐ directly observed the candidate's work.☐ directly observed the results of the candidate's work.☐ received reliable reports from those who have directly observed the candidate's work.☐ observed the candidate's ability to supervise others who are doing this work.

During what time period were you in the above-indicated relationship with the candidate?

From ____ / ____ to ____ / ____
Mo. Yr. Mo. Yr.**Verifier's Statement:***I certify that:*

- *I understand and have carefully considered each performance measure that I have verified or will verify.*
- *I have not verified, and will not verify, any performance measure that I have not either personally observed or received reliable and specific reports from one who has personally observed the performance.*
- *I have not signed, and will not sign, any verification statement on a form that does not have the candidate's name at the top.*
- *I have not asked nor will I ask anyone to sign my name in my stead.*

Signature _____ Date _____ Initials _____

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If this form supplements a previously-paid experience evaluation, send it to: NICET Evaluation, 1420 King Street, Alexandria VA 22314



Candidate: _____

Candidate NICET ID No.: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Special Hazards Systems

Performance verification may be provided by a single verifier or a combination of verifiers. Note: Each verifier must complete a Verifier Data form.

Instructions to the Verifier: For each performance measure listed, please write your initials in the column at right if you have witnessed that capability in the candidate's performance of his/her job.

Level I Performance Measures		
<i>The candidate has repeatedly demonstrated an ability to:</i>		Verifier's Initials
0305-1101	maintain personal safety on the job, including identifying and properly using personal protective equipment.	
0305-1102	reliably identify equipment and related materials commonly used in special hazards systems.	
0305-1103	follow written and verbal instructions related to special hazards systems equipment, test procedures, and safety.	
0305-1104	perform <u>at least one of the following</u> : <ul style="list-style-type: none">• properly install special hazards system raceways, wiring, and piping; or,• operate basic special hazards system components during inspection or testing; or,• identify and compile design-related special hazards system information from engineering plans and specifications.	

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____

Date: _____

Note: Verifier must have submitted one "Verifier Information" form related to this candidate.

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Instructions to the Verifier: For each performance measure listed, please write your initials in the column at right if you have witnessed that capability in the candidate's performance of his/her job.

Level II Performance Measures (In the Level II Performance Measures listed below, the term "special hazards system" excludes pre-engineered and factory-designed systems.)									
The candidate has repeatedly demonstrated an ability to:									Verifier's Initials
0305-3101	identify and properly react to special hazards system-related safety risks.								
0305-3102	behave ethically on the job, consistent with the NICET Code of Ethics.								
0305-3103	report completely and accurately on personal activities, work progress, and problems encountered.								
0305-3104	train and/or supervise the routine work of a special hazards technician trainee.								
0305-3105	report errors in plans or changes in site conditions that warrant a review of the special hazards system design.								
0305-3106	interpret special hazards system inspection and test reports.								
0305-3107	recognize, interpret, and properly apply the codes, standards, and manufacturers' specifications that are relevant to the special hazards system work being performed.								
0305-3108	perform <u>at least one of the following</u> : <ul style="list-style-type: none">Inspect or install an automatic detection system that directly releases a special hazards agent; orlayout components and any needed wiring and piping for an automatic detection system that directly releases a special hazards agent.								
0305-3109	perform <u>at least one of the following</u> : <ul style="list-style-type: none">according to system plans and operational matrix, program a special hazards system that is designed for a single hazard; orperform a basic sequence-of-operations test on a special hazards system designed for a single hazard; oruse codes and manufacturer specifications to determine the correct spacing requirements for a special hazards system's components and place on drawings.								
0305-3111	gather site and system information needed for a special hazards system's site surveys or as-built drawings, and accurately and clearly place it on drawings.								
0305-3112	communicate with the AHJ, other trades, and the customer in a professional manner.								
For the following performance measure, the candidate must have applied the measure towards at least two types of systems.									
0305-3110	perform <u>at least one of the following</u> : <ul style="list-style-type: none">install agent containers and properly configure associated piping and releasing circuits; ortest a special hazards system's releasing circuits; orlay out a special hazards system's piping and restraints. (Verifier: please initial any system type below for which you have witnessed the candidate apply this performance measure.)								
Systems:	Foam	CO ₂	Water-mist	Aerosol	Inert clean agent	Chemical clean agent	Dry chemical	Specialty detection required	Explosion prevention
Verifier's initials:									

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

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NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part III: Performance Verification
Special Hazards Systems

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Instructions to the Verifier: For each performance measure listed, please write your initials in the column at right if you have witnessed that capability in the candidate's performance of his/her job.

Level III Performance Measures

(In the Level III Performance Measures listed below, the term "special hazards system" excludes pre-engineered and factory-designed systems.)

The candidate has repeatedly demonstrated an ability to:

Verifier's
Initials

0305-5101	perform preliminary/pre-bid walk-throughs to determine the appropriate system/agent type for protecting the site's hazard.	
0305-5102	calculate a special hazards system's minimum required agent quantity.	
0305-5103	calculate standby battery requirements, voltage drops on circuits, and power supply current load.	
0305-5104	use manufacturer software to perform special hazards system flow calculations.	
0305-5105	perform <u>at least one of the following</u> : <ul style="list-style-type: none">• prepare a complete bill of materials for a new special hazards system; or• estimate the quantities of all materials required for a special hazards system installation project and procure them.	
0305-5106	conduct and document job-site safety training in accordance with OSHA requirements.	
0305-5107	coordinate a special hazards system's design and installation work with general contractors and with other trades on-site and in project meetings.	
0305-5108	coordinate and monitor the design and installation activities of a special hazards system project team to comply with the project schedule.	
0305-5109	prepare preliminary drafts of as-built drawings and O&M manuals.	
0305-5110	train end users in the operation and basic maintenance of installed special hazards systems.	

For the following two performance measures, the candidate must have applied each measure towards at least three types of systems.

0305-5111 The candidate has repeatedly demonstrated the ability to select the correct quantities, types, and locations of all of the detection and activation devices for a complete special hazards system.
(Verifier: please initial any system type below for which you have witnessed the candidate apply this performance measure.)

Systems:	Foam	CO ₂	Water-mist	Aerosol	Inert clean agent	Chemical clean agent	Dry chemical	Specialty detection required	Explosion prevention	Integrated systems with multiple zones
Verifier's initials:										

0305-5112 The candidate has repeatedly demonstrated the ability to select the correct quantities, types, and locations of all of the mechanical components for a complete special hazards system.
(Verifier: please initial any system type below for which you have witnessed the candidate apply this performance measure.)

Systems:	Foam	CO ₂	Water-mist	Aerosol	Inert clean agent	Chemical clean agent	Dry chemical	Specialty detection required	Explosion prevention	Integrated systems with multiple zones
Verifier's initials:										

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

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Experience Application, Part III: Performance Verification
Special Hazards Systems

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Instructions to the Verifier: For each performance measure listed, please write your initials in the column at right if you have witnessed that capability in the candidate's performance of his/her job.

Level IV Performance Measures (In the Level IV Performance Measures listed below, the term "special hazards system" excludes pre-engineered and factory-designed systems.)										
The candidate has repeatedly demonstrated an ability to:										Verifier's Initials
0305-7101	select a special hazards agent, system type (local application, total flood, partial volume, extended discharge), and agent storage method (central or distributed), based on project requirements and site conditions.									
0305-7102	design a special hazards system that includes <u>at least three of the following features or requirements</u> : <ul style="list-style-type: none"> multiple nozzle tiers; unbalanced hydraulic flow split; seismic bracing; explosion control; pressure venting (over pressurization); selector valves; manifolded agent storage; extended discharge; high- or low-expansion foam calculations; and/or advanced detection types (e.g. aspirating smoke, optical flame, video). 									
0305-7103	communicate effectively with AHJs and other design professionals to optimize the design and shorten the acceptance process.									
0305-7104	develop and accurately document special hazards system project budgets that meet the client's needs, contractual obligations, codes and standards, and the company's resource constraints.									
0305-7105	coordinate and oversee multiple special hazards system project plans and schedules to meet project objectives (budget, schedule, other contractual requirements, applicable code requirements), avoid conflicts with other trades, and optimize use of company resources.									
0305-7106	comply with the NICET Code of Ethics in all work activities and relationships.									
For the following performance measure, the candidate must have applied the measure towards at least four types of systems.										
0305-7107	The candidate has capably performed in a senior management role with overall responsibility for projects' technical aspects including system specifying, estimating and sales, design, code compliance review, installation, and final acceptance. <i>(Verifier: please initial any system type below for which you have witnessed the candidate apply this performance measure.)</i>									
Systems:	Foam	Low-pressure CO ₂	Water-mist	Aerosol	Inert clean agent	Chemical clean agent	Dry chemical	Specialty detection required	Explosion prevention	Integrated systems with multiple zones
Verifier's initials:										

Statement of Verification: I verify that I have a detailed personal knowledge of the candidate's performance related to each of the performance measures that I have initialed above and that, in my best professional judgment and according to government and industry standards and best practices, each initialed statement is true and has been repeatedly and consistently demonstrated.

Signature: _____ Date: _____

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Candidate: _____ Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part IV: Personal Recommendation
(Please print legibly or type)

Section 1 – Recommender's Personal Information

This form must be completed by a professional who is familiar with the technical capabilities and background of the applicant and can attest to the technical quality, responsibility, and ethics demonstrated in the applicant's work experience. NICET prefers recommendations from licensed professional engineers, registered land surveyors, or NICET-certified engineering technologists and senior engineering technicians, but will also accept recommendations from other professionals such as graduate engineers, scientists, senior level technicians and technologists, fire marshals, code officials, or officials of other authorities having jurisdiction.

Name: _____ Phone Number: (____) ____-____

Position Title: _____

Company Name: _____

My highest degree is: _____ in: _____ field from: _____ school

I am (registered, certified, licensed) as: _____ by: _____

Registration/Certification/License Number: _____ Date granted: _____

Describe your technical background: _____

The person who completes this recommendation form cannot also provide Performance Measure verifications for this candidate. NICET will not accept recommendation forms that are completed by relatives or subordinates of the applicant.

Section 2 – Recommender's Relationship with the Candidate

Familiarity with the candidate's character, abilities, and accomplishments:

- ☐ Unfamiliar – little relevant interaction
☐ Somewhat familiar – occasional interaction
☐ Reasonably familiar – regular interaction
☐ Very familiar – frequent interaction

Length of time that you have known the candidate: _____ years and _____ months

Nature of your relationship with the candidate:

- | | |
|----------------------------------------------------------------------|---------------------------------------------------------------------|
| <input type="checkbox"/> association within the company | <input type="checkbox"/> association through contracting activities |
| <input type="checkbox"/> association through professional activities | <input type="checkbox"/> other: _____ |

Describe your professional relationship with the applicant: _____



Candidate: _____

Candidate's NICET ID No: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION
Experience Application, Part IV: Personal Recommendation

Section 3 – Recommender's Evaluation of the Candidate

Role of the Engineering Technician:

Apply well-defined and proven procedures, methods, and practices, derived from established or real-time engineering guidance, to specific technical assignments, and do so in an ethical and responsible manner.

Regarding the role described in the box above:

☐ I do not recommend this candidate for this role.☐ I recommend this candidate for this role because he/she has (check all that apply):☐ made substantial progress toward independent capability in this role.☐ fulfilled this role, demonstrating good, Independent technical judgment and self-management.☐ fulfilled this role, demonstrating a capability to resolve complex technical issues and lead a team of technicians.

Please indicate by placing a mark in the one most appropriate box to the right of each statement, whether, and to what degree, the candidate demonstrates each of the following attributes.

	Never	Some- times	Mostly	Always	Don't know
The candidate consistently works hard to achieve the objectives of his/her job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate is attentive to his/her own work and to the work of others that impacts his/her own responsibilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate shows initiative and equanimity in dealing with new jobs, changed circumstances, or problems, and accepts responsibility for outcomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate organizes and directs the activities of work teams to achieve their objectives in a timely and cost-effective manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate develops and maintains cordial and goal-oriented relationships with work team members and with clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate encourages, uses, and appreciates the ideas and initiative of others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate communicates clearly and effectively with work team members and clients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The candidate's actions are ethical and his/her statements are truthful and do not conceal or hold back relevant information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments or observations on the candidate's capabilities, responsibility, and achievements:

Section 4 – Recommender's Statement

I attest that all information I have provided is, to the best of my knowledge, true. I understand that falsifying information on this form can affect my right to serve as a recommender or a verifier for other NICET certification candidates and can result in my own NICET certification(s) being revoked.

Name of Recommender (please print) _____

Signature of Recommender _____

Date _____

Incomplete recommendation forms will not be accepted by NICET.

This form expires one year after being signed by the recommender.

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Candidate: _____

Verifier: _____

NICET ENGINEERING TECHNICIAN CERTIFICATION Experience Application, Part V: Major Project Special Hazards Systems

Each candidate for certification at Level IV in Special Hazards Systems must submit a write-up (in narrative/essay format) of their role in a large and technically complex special hazards system project demonstrating senior-level engineering technician capabilities and responsibilities.

General Guidelines

The Major Project Write-up must be a concise, detailed, 2 to 3 page written description of the candidate's role in one* major special hazards system project.

The major project write-up must be type-written, identified by the candidate's name and NICET ID number, and on separate pages from other application documents. (The write-up is not a part of the work history in Part I of the application.)

The write-up must specifically identify the project and your role/title in it.

The candidate must be the sole author of the major project write-up. (Official job or project descriptions or testimonials from others will not be accepted.)

The project must be recent (within the last 4 years) and must have been completed.

Your involvement in the project must include a range of special hazards systems activities*.

The candidate's involvement in the project must demonstrate independent, senior-level engineering technician work, including delegation of responsibilities and duties.

The write-up must reflect senior-level understanding of the nature and importance of the various aspects of the system and the project, and the roles of the various people involved in the completion and acceptance of the project.

Guidelines for Description of the Project

The write-up should address each of the following in a detailed narrative:

- The location of the project, the type of facility, and the purpose or objective of the project
- Size of the project (square or cubic footage, number of hazards protected, agent quantity, number of cylinders/containers, number of discharge devices, etc.)
- Time period (project length, start/stop dates, dates of candidate's involvement, amount of time candidate spent on project)
- Scope of special hazards system project (type of system(s), agents, mechanical components, electrical components, interface with fire alarm and building/process control systems)

Guidelines for Description of the Candidate's Role

The write-up should address each of the following in a detailed narrative:

- Supervisory or oversight responsibilities (number of people, the tasks they performed, and your relationship to them)
- Range/scope of activities and role in each activity (hazard analysis, estimating & proposals, approvals, design calculations (agent, hydraulic, battery, voltage drop, etc), system installation, check-out and final acceptance testing, coordination of work with general contractor and other trades, contract management, etc.)

**Note: If all of these activities cannot be documented for a single project, they may be accumulated via several more narrowly focused projects.*

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Special Hazards Systems

Level I Certification Content Outline

Standard Model Program with Computer-Based Testing

The candidate for NICET certification as a Level I Special Hazards Systems technician should have the knowledge and experience to:

Under direct supervision, identify wiring and devices and their purposes; read and measure quantities; read drawings; and mount and remove devices and piping.

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.

1.1 Inspection, Testing, and Maintenance Tasks

(Approximately 43-49% of the exam)

1.1.1 Identify system type and components.

Knowledge:

Special hazards drawing symbols in NFPA 170
Special hazard system component characteristics and functions
System types and components as defined in the "Definitions" sections of NFPA 11, 12, 12A, 13, 16, 17, 17A, 68, 69, 79, 70, 72, 750, 2001, 2010.
Names and classifications of common extinguishing agents

Skills:

Visually identify system types and components.
Interpret drawings to identify system components.

1.1.2 Check the locations of an existing system's detection, control, and mechanical components for changes.

Knowledge:

Fire protection symbols in NFPA 170

Skills:

Interpret as-built drawings.
Compare current device layout to the layout in the record drawings.
Document discrepancies in field report and on the record drawings.

1.1.3 Visually inspect a site's construction features for changes.

Knowledge:

General architectural symbols
General drafting methods
Ability of construction changes to affect the protected area's square footage and volume

Skills:

Interpret as-built drawings.
Use a drawing legend to identify symbols.
Compare existing area conditions to previous drawings to identify discrepancies.
Check for holes in walls or ceilings.
Redline as-built drawings, and report changes to design department.

1.1.4 Activate alarm initiating devices of a special hazard system.

Knowledge:

Initiating device types, their characteristics, and their functions
Water-based system switches, their characteristics, and their functions

Skills:

Apply testing material to activate smoke alarm.
Use heat source to activate heat detector.
Apply IR, UV/IR light source to activate flame detector.
Activate water-based system switches.
Activate initiation devices according to manufacturer instructions.
Reset activated initiating devices according to manufacturer instructions.
Verify activation of notification devices.
Confirm device's operation to the lead technician.
Document results.

1.1.5 Determine whether container's agent quantity and/or pressure is within the documented range.

Knowledge:

Accepted methods for determining agent quantities

Skills:

Follow proper procedures for measuring agent quantities.
Properly use listed measuring devices.
Read pressure gauge.
Use thermometer to measure ambient temperature.
Determine current agent quantity.
Document quantities on system inspection form and on system container.



Special Hazards Systems

1.1.6 Inspect cylinders and their discharge hoses for corrosion, physical damage, and hydrotest status.

Knowledge:

Symptoms of corrosion or physical damage

Skills:

Recognize corrosion in accordance with Compressed Gas Association (CGA) pamphlet C-6.

Recognize physical damage (dents, bulges, pits) in accordance with Compressed Gas Association (CGA) pamphlet C-6.

Document relevant information about the cylinder and its conditions.

Recognize site's numbering/labeling scheme for cylinders.

1.1.7 Visually inspect piping and hangers for physical damage.

Knowledge:

Conditions that cause corrosion or physical damage

Piping and hanger types, their purpose, and their physical characteristics

Skills:

Recognize corrosion.

Recognize physical damage.

Recognize obstructions to nozzles.

Determine whether other building services are using special hazard system piping for support.

Document inspection results.

1.2 Repair and Recharge Tasks

(Approximately 6-12% of the exam)

1.2.1 Replace damaged wires.

Knowledge:

Proper methods for connecting wires

Proper methods for pulling wires

Wire gauge classifications and their impact on circuit operation

Skills:

Use a multimeter to test for shorts and opens in replaced wire.

Verify that the wire is not energized.

Use the appropriate tools to pull and connect wire.

1.2.2 Replace damaged mechanical system components.

Knowledge:

Names, functions, and visual appearances of mechanical components and fasteners

Procedures for connecting mechanical components

Fastener types and their applications

Fitting types and classes and their applications

Pipe types and schedules

Skills:

Use manufacturers' recommendations and guidelines to identify component replacements.

Use hand and power tools to measure, remove, insert, and connect components.

Identify and correctly attach appropriate mechanical fasteners for the application.

1.3 Installation Tasks

(Approximately 22-28% of the exam)

1.3.1 Obtain installation information from shop drawings.

Knowledge:

Basic measurement units and conversions

Terminology used to describe components and systems in special hazard system specifications

Arithmetic

Basic geometry

Drawing scale, wiring legend, and other drawing components and their purposes

Types of drawings and their purposes

Skills:

Use system plans to determine the correct mounting location and arrangement of special hazard system components.

Use a legend to interpret a shop drawing.

Read and understand installation notes and diagrams.

Read and interpret shop drawings to determine installation requirements.

1.3.2 Install raceways and conduit.

Knowledge:

Conduit types and their characteristics

Skills:

Use system plans to determine the location and routing of raceways and conduit.

Coordinate with other trades.

Use NFPA 70 Annex C to determine how many conductors may be placed within a conduit.

Use NFPA 70 314.16 to select proper junction box size based on number of conductors.

Install supports for raceways and conduit.

Use a conduit bender and/or threading machine.

Use hand and power tools to cut, thread, bend, and install conduit.



Special Hazards Systems

1.3.3 Install piping for a special hazard system.

Knowledge:

Fastener types and their physical characteristics
Fitting types and their physical characteristics
Pipe bracing system types
Pipe types and materials and their characteristics related to installation
Weights, forces, bracing involved in restraining discharge/distribution piping

Skills:

Use hand and power tools to install piping.
Use mechanical components to install discharge piping systems.
Apply fittings to piping.
Apply joining techniques to piping.
Apply pipe joint dressing.
Identify pipe type and schedule, and ensure that it complies with the drawing notes.
Create redline drawings.
Read and interpret isometric drawings.
Recognize physical obstructions that make a part of the planned pipe routing difficult or impossible.

1.3.4 Install air sampling piping.

Knowledge:

Pipe hanger types and their characteristics
Pipe hanger fasteners and fittings and their characteristics
Pipe types and materials and their characteristics related to installation

Skills:

Install piping according to the installation documents
Read and interpret system drawings.
Read and interpret isometric drawings.
Use a pipe cutter, drills, and hand tools to install air sample piping.
Create redline drawings.
Connect pipe to high-sensitivity smoke detector (HSSD) detector inlet.
Obtain piping limitations from system drawings and manufacturer specifications.
Recognize site conditions that require a change to the drawings and/or design.

1.3.5 Mount special hazard system components.

Knowledge:

Suppression system components and their physical characteristics
Bracing systems and their physical characteristics
Wall, ceiling, and floor construction and their weight-bearing capacities

Skills:

Use hand and power tools to mount components.
Interpret plans to determine component locations.
Select the appropriate fasteners for mounting components on various types of wall, ceiling, or floor construction.
Install bracing reinforcements.
Mount components in accordance with manufacturers' recommendations.

1.4 System Design and Configuration Tasks

(Approximately 11-17% of the exam)

1.4.1 Derive installation information from architectural and engineering plans and specifications.

Knowledge:

Common architectural graphic standards
Basic units of measurement and metric conversions
Terminology used to describe components and systems in special hazard system specifications
Basic mathematics and geometry
Specification sections related to special hazards and related work
Drawing scale, wiring legend and other drawing components and their purpose
Types of drawings (floorplan, riser, elevation, wiring diagrams, schematics, etc.) and their purpose

Skills:

Use NFPA 170 to interpret fire protection symbols.
Read and interpret system drawings, plans, and specifications to determine dimensions, types of materials, elevations, locations, and other information pertaining to the design of a special hazard suppression system.
Perform area and volume calculations based on scaled dimensional data presented on plans and specifications or data obtained from site surveys.
Identify points on the job site from information in the plans.

1.4.2 Identify basic electrical units and components.

Knowledge:

Basic electrical units Ohm's Law formula variables and their relationship to each other
Functions of basic electronic components Circuit types

Skills:

Identify basic electronic components on a circuit schematic.
Identify how either a steady voltage or current, or a changing voltage or current, in a simple series circuit would be affected by the presence of a single basic electronic component.
Identify how either a steady voltage or current, or a changing voltage or current, in a simple parallel circuit would be affected by the presence of a single basic electronic component.



Special Hazards Systems

1.4.3 Identify the purposes of standards, codes, specifications, and manufacturer-specific listings and what professions or roles are involved in establishing and enforcing their use.

Knowledge:

Purposes of standards, codes, product and project specifications, and listings
Roles of the AHJ, the owner, and the project engineer

Skills:

Retrieve the correct standard(s) for a particular agent or hazard.
Identify the authorities who require the application of standards, codes, specifications, and listings.
Interpret terminology and statements found in standards, project specifications, and manufacturers' literature.

1.5 Work Management Tasks

No tasks at this Level.

1.6 Safety Tasks

(Approximately 11-17% of the exam)

1.6.1 Practice personal safety on the job site.

Knowledge:

OSHA workplace safety regulations
Safety practices for handling and transporting cylinders according to OSHA 49 CFR Part 177.840
Safety requirements for hearing protection according to 29 CFR Part 1910.95
PPE requirements according to 29 CFR Part 1910.132
Safe scaffold usage according to 29 CFR Part 1926.453
Terminology associated with toxic and hazardous substances in OSHA 29 CFR Part 1910.1200
Safety guidelines for exposure to blood-borne pathogens according to 29 CFR Part 1910.1030
Safety requirements for using ladders, scissor lifts, and boom lifts per OSHA
PPE and their purposes
Basic first aid procedures
Purpose of MSDS

Skills:

Interpret cylinder placard information according to OSHA and DOT guidelines.
Safely use step ladders, scissor and boom lifts, and fall protection.
Safely use electrically and pneumatically powered tools.
Identify and report site hazards.
Recognize confined spaces as defined by OSHA.
Apply basic first aid.
Locate, read, and interpret MSDS.



Special Hazards Systems

Level II Certification Content Outline

Standard Model Program with Computer-Based Testing

The candidate for NICET certification as a Level II Special Hazards Systems technician should have the knowledge and experience to:

Under limited supervision, inspect, maintain, repair, install, perform functional tests on, commission, and apply basic specs and standards to the placement and configuration of components in gaseous, dry, and wet agent systems.

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.

2.1 Inspection, Testing, and Maintenance Tasks

(Approximately 22-28% of the exam)

2.1.1 Verify integrity of detection and control system circuits.

Knowledge:

Control panel functions
Basic electronics
Meanings of, and test procedures for, short circuits, open circuits, and ground faults

Skills:

Use a multimeter to test for short circuits, open circuits, and ground faults.
Verify integrity of circuits in compliance with NFPA 70 Article 760 and NFPA 72 Chapter 12.
Document results.

2.1.2 Conduct a smoke detector sensitivity test.

Knowledge:

Types of smoke detectors and their functions

Skills:

Follow manufacturer procedures for using smoke sensitivity tools.
Determine acceptable sensitivity limits from smoke detector manufacturer
Clean smoke detectors.
Comply with NFPA 72: 14.4.4.3.4.
Document results.

2.1.3 Test notification devices for audibility.

Knowledge:

Types of notification devices that require audibility testing
Sound-producing equipment that may impact notification device coverage
Types of conditions that might interfere with notification device audibility

Skills:

Operate a calibrated decibel meter.
Take audibility readings in accordance with NFPA 72: Annex D.
Determine whether audibility levels comply with NFPA 72: Annex D.
Document results.

2.1.4 Install firmware upgrades on system devices.

Knowledge:

Control panel functions
Firmware-to-control panel interfaces
Control panel programming

Skills:

Use manufacturer software to upgrade device firmware.
Document firmware updates.
Test system to ensure proper operation after firmware update.

2.1.5 Arm and disarm systems.

Knowledge:

Actuator types and their functions
Emergency control functions and interfaces
Manual system components (and their mechanical functions)
Electrical wiring types and their voltages
Procedures for disarming and arming releasing mechanisms

Skills:

Follow manufacturer guidelines for arming and disarming system.
Use manufacturer-recommended tools for resetting system.
Follow static energy safety requirements.
Remove actuator.
Reinstall actuator.
Disconnect pneumatic and cable devices.
Disconnect releasing/actuating devices.
Reconnect system devices.
Ensure clean and tight connections.
Record actions.

2.1.6 Visually inspect foam systems for damage or conditions that could limit proper functioning.

Knowledge:

Foam system types, their visual characteristics, and their functions
Product tank types and their visual characteristics

Skills:

Ensure proper valve alignment.

(Task 2.1.6 continued on next page)



(Task 2.1.6 Skills continued)

- Inspect discharge devices for physical damage, obstructions, and corrosion.
- Inspect supports for damage and metal-to-metal, connection-point corrosion.
- Inspect foam chamber to ensure that vapor seals are intact on cone-roof tanks.
- Ensure that air aspirators are free of obstructions.
- Ensure that high-back pressure foam makers are free of product.
- Perform inspection in accordance with NFPA 25 Chapter 11, NFPA 11 Chapter 11, and NFPA 16 Chapter 9.

2.1.7 Check storage tank liquid level and collect foam concentrate sample for lab analysis.**Knowledge:**

- Foam tank types and their physical characteristics
- Foam types Potential sources of pollution in concentrate
- Frequencies for testing in NFPA 25

Skills:

- Follow manufacturer instructions for collecting and preparing samples.
- Drain pressure from bladder tank prior to collecting sample.
- Collect a foam sample according to testing laboratory's preference.
- Perform inspection in accordance with NFPA 25 Chapter 11.
- Submit documentation with sample to lab.

2.1.8 Conduct a room integrity test.**Knowledge:**

- Below-Ceiling-Leakage Area (BCLA)
- Highest-protected height requirements
- Geometry (room area and volume)

Skills:

- Interpret as-built drawings.
- Properly use an infiltrometer and position it in the correct position within opening.
- Calibrate infiltrometer's vacuum gauges and pressure gauges.
- Follow the testing procedures incorporated in the infiltrometer manufacturer's software package.
- Identify sources of leakage, and recommend solutions to responsible party.
- Apply the requirements of NFPA 2001: 7.7.2.3 and Annex C.
- Conduct a smoke pencil test in accordance with NFPA 2001: Annex C to identify areas of leakage.
- Ensure that the room complies with NFPA 75 requirements.
- Perform integrity test to determine whether an enclosure's venting complies with design specifications and NFPA 2001.
- Determine whether the room will hold the designed extinguishing concentration of the agent.
- Verify that the room is as depicted in the record drawings.
- Compare test results with previous test result data.
- Document test results.

2.1.9 Perform a sequence-of-operations test.**Knowledge:**

- Control panel programming
- System controls' arming and disarming procedures
- Detection schemes (single-detector, cross-zone, counting, etc.)
- Emergency control functions (elevator recall, damper operation, air handler shutdown, automatic door closure, building fire alarm activation, emergency power-off, emergency shutdown, automatic gate openers, remote monitoring, smoke purge, etc) and their interfaces
- Releasing functions (sprinkler system activation, simulated agent activation, maintenance bypass switch, manual actuators, abort operation, low pressure switches)

Skills:

- Interpret as-built drawings.
- Interpret sequence-of-operations matrices.
- Verify first alarm; check for time delays.
- Check for proper detection functions.
- Test fire alarm functions in accordance with NFPA 72, including Chapter 21.
- Check for proper emergency control functions and interfaces.
- Check for proper releasing functions.
- Operate selector valves and lockout valves according to procedures in appropriate NFPA standard.
- Document results.

2.1.10 Verify whether container's agent quantity and/or pressure is within the allowable range.**Knowledge:**

- Basic math
- Ambient conditions (temperature, altitude, barometric pressure) that permit variances in quantity and/or pressure

Skills:

- Use NFPA 11, 12, 12A, 13, 17, 69, 72, 90A, 101, 170, 750, 2001, 2010 to determine whether agent quantity is within an allowable range.
- Compare current agent quantity with the documented quantity.
- Compare current agent pressure with the documented pressure.

2.1.11 Test a system's emergency standby battery power supply.**Knowledge:**

- Battery appearance and physical characteristics
- Symptoms of battery defects
- NFPA requirements for battery replacement frequency

Skills:

- Visually determine battery condition.
- Check amount of time since battery replacement.
- Identify battery type.
- Operate a load test meter.
- Operate a multimeter.
- Document results.



2.2 Repair and Recharge Tasks

(Approximately 10-16% of the exam)

2.2.1 Troubleshoot electrical circuitry.

Knowledge:

Wiring classes and styles
Wire types, construction/layers, and the functions of each layer
Circuit functions of switches, relays and transformers
Functions of suppression system components and the role of each in the proper operation of a system
Typical auxiliary functions that may be interfaced to the circuit
Emergency control functions and interfaces
Single-detector, crosszone and counting zone detection schemes
Detection circuit types (conventional, addressable, analog, digital, multiplex) and their construction
Visual appearance of fiber-optic lines
RS232, RS485 data circuit components and connectors
Factors that determine the capacity of notification / sound circuits, and elements of supervision, sync / non-sync, coded signal, wattage per speaker, voltage levels, current-limited/non-current limited
Power supply and limitations
Standard troubleshooting techniques

Skills:

Use NFPA 170 to interpret drawings.
Use manufacturer's literature to determine and follow system controls in arming and disarming procedures.
Perform ohms law calculations for DC circuits.
Identify switches, relays, and transformers, and their impact on the circuit.
Interpret manufacturer's recommendations and guidelines for circuit components, test equipment, and test procedures.
Trace circuits.
Recognize series and parallel circuits, and connect test equipment to measure voltage, current, and resistance.
Use multimeters, tone generators, linemen butt sets, insulation testers, lamps, dynamic battery testers, and blasting galvanometers to test circuits and measure electrical parameters.
Verify that wiring complies with NFPA 70: Article 760.
Test fire alarm circuits, following the guidelines in NFPA 72 Table 14.4.3.2.
Read and interpret system wiring diagrams.
Review and/or modify system programming.
Read and interpret sequence of operation matrices.

2.2.2 Conduct testing of cylinders and hoses.

Knowledge:

Potential hazards associated with pressurized containers
Units of pressure

Skills:

Follow the testing requirements and frequencies given in NFPA 12, 12A, 17, 17A, 69, 750, 2001, 2010.
Obtain, read, and interpret hydrostatic test procedures and information from the hydro-test test equipment manufacturer's specifications.
Obtain, read, and interpret cylinder data from the cylinder manufacturer's literature.
Determine the maximum operating pressure for the cylinder.
Visually inspect the cylinder.

Safely operate portable and shop hydrostatic testing equipment according to 29 CFR Part 1910: 132-138.
Perform a hydrostatic test on a cylinder according to Compressed Gas Association (CGA) pamphlet(s) C-6 and C-1, and DOT 49 CFR.
Dry the cylinder with a heater.
Record and report test procedures and results.

2.2.3 Recharge clean agent cylinders.

Knowledge:

Units of pressure
Units of weight
Agencies that regulate recharge and pressurized cylinder transportation

Skills:

Interpret agent's MSDS to determine its hazards.
Use hand and power tools to disconnect and remove cylinders and tanks.
Determine whether cylinders are eligible for recharging according to NFPA 12, 12A, 17, 17A, 750 and 2001, and DOT 49 CFR prior to recharge.
Obtain and follow the agent manufacturer's requirements and procedure for recharging cylinders.
Select and use cylinder inspection equipment in accordance with Compressed Gas Association (CGA) pamphlet C-6.
Conduct external and internal inspections of cylinders in accordance with Compressed Gas Association (CGA) pamphlet C-6.
Verify calibration of the filling and testing equipment prior to use.
Follow proper connection and filling procedures per manufacturer's instructions.
Properly use and install safety shipping devices for cylinders.
Recondition a cylinder valve according to the manufacturer's instructions.
Use pressure gauges, thermometers, and weigh scales to monitor the cylinder filling process, and properly fill cylinder to the desired agent level according the system design specifications.
Use agent leak standard device to verify whether recharged cylinder's leak rate is within acceptable range in manufacturer listing.
Use a leak detector to check for potential cylinder leaks.
Properly record and report filling functions and anomalies.
Document pre-recharge inspection/requalification results according to Department of Transportation requirements prior to shipment.
Handle and test cylinders in accordance with 49 CFR parts 171-179.
Properly secure clean agent cylinders.
Test the system releasing circuit with the clean agent cylinder disconnected.
Reconnect suppression cylinders to the discharge piping and return system to normal operation.
Stamp re-qualified cylinders in accordance with Compressed Gas Association (CGA) pamphlet C-6.



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2.2.4 Recharge foam system tanks.

Knowledge:

Proper valve positions for various system configurations
Methods for measuring a tank's content/liquid level
Units of pressure

Skills:

Properly measure a tank's content/liquid level.
Identify a tank's existing content/foam concentrate type.
Interpret and follow the tank manufacturers' filling procedures.
Operate vacuum pumps and hoses.
Operate foam concentrate pumps and hoses.
Operate the pressure regulator for a compressed nitrogen or compressed air cylinder.
Operate and read a pressure gauge.

2.2.5 Conduct foam bladder integrity tests.

Knowledge:

Components of a foam bladder tank and their functions
Procedures for foam bladder integrity test
Concentrate pumping/transfer techniques
Units of pressure
Skills:
Operate vacuum pumps.
Operate foam concentrate pumps.
Operate and read a pressure gauge.
Recognize various types of foam bladder types
Follow the bladder tank manufacturer's procedures for conducting foam bladder integrity tests.
Record and report test procedures and results.

2.2.6 Replace damaged electrical system components.

Knowledge:

Names, functions, and visual appearances of electrical components
Procedures for connecting electrical components

Skills:

Identify damage to electrical components, including physical, water, and over-current damage.
Obtain compatibility information from manufacturers' component compatibility lists.
Operate diagnostic tools such as multimeters, battery load testers/meters, and flame detector test lamps to determine component functionality, detector sensitivity meter.
Use hand tools such as screwdrivers and wire strippers to remove, insert and connect components.
Use static control devices to prevent damage to components.
Configure address for replaced devices.

2.3 Installation Tasks

(Approximately 32-38% of the exam)

2.3.1 Terminate wiring at panels and devices.

Knowledge:

Types of connectors and their applications
Terminal strip and connection limitations
High and low voltage cable separation requirements in the same enclosure

Skills:

Interpret system drawings, specifications, and sequence-of-operations matrices.
Interpret control panel and device manufacturers' instructions.
Use a multimeter or volt-ohmmeter to confirm continuity.
Bundle and route internal panel wiring to meet codes and standards.
Assure that wire termination conforms to NFPA 70 and 72.

2.3.2 Test the integrity of installed wire for ground faults and for adequate insulation.

Knowledge:

NFPA 72: Table 14.4.3.2
Testing tools and their functions
Hazards associated with insulation testing

Skills:

Locate and identify the two ends of an installed wire.
Test wiring in accordance with NFPA 70 and 72: Table 14.4.3.2.
Test circuits for ground faults using a multimeter.
Use an insulation tester to test wire integrity.
Document results.

2.3.3 Perform initial system programming to implement a sequence-of-operations

Knowledge:

Suppression system devices and their functions
Basic programming concepts
BCD (binary-coded decimal)
Computer/device connections, interfaces, and I/O port assignments

Skills:

Interpret system drawings, specifications, and sequence-of-operations matrices.
Determine the capacity and limitations of the panel, and the types of suppression system devices to be monitored or controlled.
Define input and output devices.
Obtain programming procedures from the manufacturer's literature.
Program a sequence-of-operations.
Test monitored or controlled devices to verify that the program functions in accordance with the sequence-of-operations and NFPA 72.

2.3.4 Address field devices.

Knowledge:

Field device physical characteristics and functions
BCD (binary-coded decimal)

Skills:

Verify that devices supplied are correct.
Operate barcode readers, dip switches, rotary switches, and configuration IR tools.
Use various manufacturer-specified addressing schemes to enter device locations into the control panel software.
Record device addresses on the as-built drawings.
Obtain and interpret manufacturers' documentation for field devices.

**2.3.5 Program detection devices for sensitivity.****Knowledge:**

Detection device types and their functions
Programming methods used for setting detector sensitivity

Skills:

Interpret plans and specifications to determine required sensitivity settings.
Interpret and follow manufacturer specifications for setting detector sensitivity.

2.3.6 Set flame detector viewing angles according to the system plans and site conditions.**Knowledge:**

Geometry
Flame detector types and operation

Skills:

Use angle finders and/or laser pointers to establish the cone of vision.
Use ruled scales.
Interpret design drawings.
Interpret and follow manufacturer specifications.

2.3.7 Actuate and verify operation of electrical detection and control devices during pretesting and commissioning.**Knowledge:**

Control panel/device functions
Signaling devices and their functions

Skills:

Test devices in accordance with NFPA 72 Table 14.4.3.2.
Verify that low voltage wiring complies with NFPA 70: Article 760.
Use tools to test devices and reset actuators.
Interpret system drawings to locate devices to be tested.
Interpret system sequence-of-operations matrix.
Interpret and follow manufacturer testing requirements.

2.3.8 Actuate and verify operation of mechanical devices during pretesting and commissioning.**Knowledge:**

Means of actuation of mechanical devices, including valves, manifolds, etc.
Mechanical device characteristics and their operation
Direction of flow requirements

Skills:

Test mechanical devices in compliance with NFPA 11, 12, 12A, 17, 17A, 750, 2001, and 2010.
Disable and enable releasing mechanisms of special hazards system for testing purposes.
Interpret and follow manufacturer testing requirements.
Verify proper placement and orientation of components in accordance with manufacturer specifications.

2.3.9 Install foam system control valves and proportioning equipment.**Knowledge:**

Types of piping and their applications
Direction of flow indicators
Types of foam systems, proportioning equipment, and control valves

Skills:

Use equipment to handle and lift materials.
Use hand tools.
Use power tools and pipe threading machine.
Interpret device location diagrams in NFPA 11 and 16.
Properly orient and place devices.
Interpret manufacturer recommendations.

2.3.10 Conduct pipe-puff and pressure tests.**Knowledge:**

Pipe thread sealant application methods
Sources of leakage that typically impact testing

Skills:

Conduct tests in accordance with NFPA 11, 12, 12A, 16, 17, 750, 2001, and 2010.
Operate a source of pressurized air or nitrogen.
Attach and read pressure gauges.
Apply the specified test pressures and pneumatically test to determine the integrity of the piping.
Take readings in the correct time periods required as per code and AHJ requirements.
Identify leakage sources or other conditions that may influence the test results.

2.3.11 Verify air transport times and suction pressures of an air-aspirating high-sensitivity smoke detection system.**Knowledge:**

Components of an air-aspirating high-sensitivity smoke detection system and their functions
Methods for performing smoke testing for air sampling detectors
Smoke transport-time testing procedures
Manometer functions and operation

Skills:

Visually inspect piping system for signs of damage or configuration changes.
Verify testing requirements with local AHJ.
Interpret plans and specifications to determine smoke transport times.
Use manometer to verify sample hole suction pressure.
Record transport times and suction pressures on test report.
Read and interpret air-sampling pipe network calculations.
Determine whether transport time is in compliance with NFPA 72 and AHJ requirements.

**2.3.12 Perform a sequence-of-operations test at commissioning.****Knowledge:**

NFPA 170

Detector types and functions

System functions and interfaces and their relationships

Control panel programming procedures

System controls arming and disarming procedures

Single-detector, crosszone, verified, and counting zone detection schemes

Typical auxiliary functions

Emergency control functions and interfaces

Differences between single device testing and end-to-end testing

Skills:

Interpret plans, specifications, as-built drawings, and sequence-of-operations matrices.

Organize testing procedures.

Safely activate detectors in their installed environment.

Interpret manufacturer recommendations and guidelines.

Verify first alarm and check for time delays.

Check for proper emergency control functions and interfaces.

Check for proper releasing functions.

Operate selector valves and lock-out valves according to procedures in appropriate NFPA standard.

Test system functions and interpret results in accordance with NFPA 11, 12, 12A, 16, 17, 17A, 72, 90A, 750, 2001, and 2010.

Interpret test results and recommend corrective actions.

Download a control panel history.

Complete an NFPA Record of Completion.

2.3.13 Perform a final acceptance test (other than concentration) for an AHJ.**Knowledge:**

System device types and system operation

Enclosure integrity test procedures

Pipe integrity test procedures

System operation

Source of flow testing and testing requirements

Skills:

Follow system acceptance procedures according to NFPA 11, 12, 12A, 13, 16, 17, 69, 72, 90A, 101, 170, 750, 2001, 2010.

Interpret system plans, specifications, and as-built drawings.

Interpret specifications and standards to identify the system's objectives

Interpret a sequence-of-operations matrix.

Coordinate with other trades on site.

Communicate with AHJs, project engineers, the owner, and insurance personnel on-site.

Conduct a room integrity test.

Notify occupants, monitoring company, and emergency responders prior to testing.

Determine the existence of interfaces with other interlocked systems.

Operate system devices and interfaced functions.

Document results, including record-of-completion forms and redline and/or as-built drawings.

2.3.14 Install wiring for a special hazards system.**Knowledge:**

Wire types and their physical characteristics

Types of connections/terminations, and their limitations

Skills:

Use NFPA 70 Chapter 9, Table 2 to determine the acceptable bend radius for conduit and tubing.

Determine installation requirements for clean agent system wiring per NFPA 2001: 4.3.1.3

Determine installation requirements for special hazards system wiring per NFPA 72.

Determine insulation compatibility requirements for raceways and junction and termination boxes per NFPA 70: Article 760.

Use power tools, saws, and pulling machine to cut and pull wire.

Use wire pulling devices.

2.3.15 Confirm installation of products to maintain room integrity.**Knowledge:**

Products that maintain room integrity, their purpose, functions, and physical characteristics

Skills:

Follow the manufacturer's instructions for installing products that maintain room integrity.

Communicate with other trades to ensure that room integrity is maintained.

Conform to UL listings and NFPA 75, 101, and 2001:

Appendix C to maintain fire ratings when installing products that maintain room integrity.

2.4 System Design and Configuration Tasks*(Approximately 11-17% of the exam)***2.4.1 Determine wiring and protection requirements for fire protection circuits.****Knowledge:**

NFPA 2001: Section 4.3

Wiring connection requirements for basic electronic components in NFPA 70

Circuit functions of switches, relays, and transformers

Detection circuit types

Notification/sound circuit types

Skills:

Use NFPA 70: Article 760 to determine wire types and their ratings and construction.

Perform ohms law calculations for DC circuits.

Identify potential sources of noise/interference and mitigate their effects on specific cable types.

Provide for grounding and transient protection for fire protection circuits as referenced in NFPA 70: Article 760 and NFPA 72: Chapter 12.

Interpret manufacture specifications to identify RS232 and RS485 data circuit limitations.

Interpret manufacturer specifications to identify optical fiber limitations.

Interpret manufacturer specifications to identify notification/sound circuit type limitations.

Determine the wiring and protection requirements for installation of automatic special hazards systems.



Special Hazards Systems

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2.4.2 Conduct a site survey.

Knowledge:

Basic geometry
Basic building features, structural elements, and materials
Construction types and features and their impact on system layout
Basic fire protection device placement, support, and connection requirements
Electrical clearance requirements for electrical panel and other components per NFPA 70

Skills:

Interpret plans/symbols.
Measure dimensions.
Determine which dimensions are required for a protected area and system type per NFPA 11, 12, 12A, 13, 16, 17, 68, 69, 72, 75, 76, 90A, 101, 170, 750, 2001, 2010.
Document enclosure measurements and the areas and elevations of openings.
Record closure mechanisms and process/enclosure construction.
Identify and record air flow pathways and exchange rates.
Record structural and infrastructural features that could be useful to, or obstruct fire protection system layout.
Record any existing process interlocks and their manufacturer.
Record equipment interface locations.
Investigate and record information related to worksite access for project personnel and equipment.
Record observations and measurements in writing and in field sketches.
Obtain site information from the facility owner and/or occupants.
Obtain MSDS sheets for any chemicals that will be protected by the system.
Identify construction features that are suitable for seismic bracing.
Record number of rings on storage tanks per NFPA 11.
Obtain samples for combustibility testing per NFPA 68 and 69.
Recognize asbestos.
Document locations of existing equipment in other building systems.
Document structural components' construction and fire ratings.

2.4.3 Determine spacing and placement requirements for a site's fire protection system components.

Knowledge:

NFPA standards that apply to specific hazard systems and their devices
Basic building features
Site characteristics and conditions that require increased or decreased spacing of devices
American Disabilities Act (ADA) requirements for equivalent facilitation, equipment access, and system initiation and notification
Audibility and intelligibility requirements per NFPA 72: Annex D
Requirements for emergency notification systems

Skills:

Use a site survey report and NFPA 11, 12, 12A, 16, 17, 17A, 72, 750, 2001, and 2010 to determine device spacing requirements, including all necessary adjustments for ambient conditions.
Interpret manufacturer specifications for discharge devices. Interpret manufacturer specifications for detection devices.
Comply with AHJ requirements that exceed the minimum requirements of the standards.

2.4.4 Select and lay out piping and restraints.

Knowledge:

Pipe specifications, their composition, and their applications
Fitting types and their ratings
Pipe bracing systems and their applications
Types and significance of static loads placed on pipes, and dynamic loads on piping systems during discharge

Skills:

Select acceptable type of pipe to meet system needs.
Identify static and dynamic forces likely to be present during the life of the system or during a discharge of the system.
Use NFPA 11, 12, 12A, 16, 17, 17A, 750, 2001, and 2010 to select, size, and lay out pipe based on flow calculations prepared for the project; select mechanical fasteners, hangers, and braces; determine requirements for hanging and bracing pipe; and determine mounting and supporting pipe components:

2.5 Work Management Tasks

(Approximately 2-8% of the exam)

2.5.1 Prepare Requests For Information.

Knowledge:

Principles of standard business communication
Purpose of formal RFIs
Proper RFI distribution

Skills:

Recognize conditions that warrant the preparation and distribution of an RFI.
Propose a resolution to the situation or problem addressed by the RFI; forward the RFI to the project manager for review and submittal.
Communicate in writing with accuracy and correct grammar.

2.5.2 Compile submittal documents.

Knowledge:

Documents required for a project submittal and purpose of each
Submittal document reviewers and their roles in the approval process

Skills:

Obtain and organize submittal documentation.

2.5.3 Obtain permits.

Knowledge:

The role of local building or fire codes in construction
Information typically required for permit applications

Skills:

Identify municipal or state administrative codes that pertain to construction permits.

(Task 2.5.3 continued on next page)



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(Task 2.5.3 Skills continued)

Determine which permits and licenses are required for a project in the site's jurisdiction.

Identify occupancy groups, building types and use groups according to IBC and IFC.

2.5.4 Coordinate system installation work with other trades on-site.

Knowledge:

Types of building systems installed by other trades, and their interactions or potential conflicts with fire suppression systems

Skills:

Apply NFPA 72: Chapter 21 to fire protection installation work.

Identify other contractors' field changes that can impact the suppression system work.

Communicate with job site contractors.

2.5.5 Prepare for work tasks

Knowledge:

Suppression system tasks that require owner/occupant/AHJ notification according to NPFA standards

Skills:

Notify owners/occupants, monitoring company, AHJs when necessary.

Evaluate a task's goals and needs; select the proper tools and components for the task.

2.5.6 Prepare project close-out documentation.

Knowledge:

Closeout documentation materials and their purpose

Skills:

Prepare O&M manuals

Prepare as-built drawings

Compile and organize closeout documentation materials.

2.6 Safety Tasks

(Approximately 5-11% of the exam)

2.6.1 Recognize dangers associated with specific special hazard suppression system types.

Knowledge:

Electrical safety in accordance with NFPA 70E

Injuries related to pressurized cylinder/gas handling, chemical reactions/interactions, agent exposure (breathing and/or ingesting), arc flash, and explosive actuator charges

Agent discharge velocities and proximities to non-secured objects

Need for cylinder and piping restraint

Sources of information about the special hazard suppression system.

Potential for reduced visibility during discharge.

Potential for agent migration to areas that are occupied/occupiable

Potential for agent discharge high-decibel sound and frequency

OSHA requirements (per 1910.95 Table G.16) for hearing protection at various decibel levels

Potential for frostbite burns to the skin due to direct exposure to agent discharge in the vicinity of the discharge point.

Skills:

Determine whether agent discharge nozzle is positioned in accordance with NFPA standards and manufacturer requirements.

Determine whether pressure venting is provided.

Select and use appropriate personal protective equipment (PPE) for testing and recharge tasks.

Verify that enclosure volume and agent concentration conforms to system design documents.

Interpret the agent manufacturer's specifications and cautions.

Identify and resolve potential hazards prior to conducting agent flow or discharge acceptance testing.

2.6.2 Practice special safety precautions for CO₂ discharge testing and inert agent discharge testing.

Knowledge:

CO₂-related hazards to personnel in NFPA 12

Injuries related to pressurized cylinder/gas handling, chemical reactions / interactions, agent exposure (breathing and/or ingesting), arc flash, and explosive actuator charges

Potential for agent migration to areas that are occupied/occupiable.

Skills:

Provide supplementary signage per NFPA 12 to warn about the potential of injury and fatality during and shortly after performance of discharge test.

Perform post-agent-discharge removal or exhaust in accordance with OSHA, EPA, state and local requirements.

Follow safety precautions for a CO₂ discharge.

Evacuate test area; control area access and post

trained personnel at each access point and migration location to assure that no one enters the test location during testing; keep the area clear until the tested space is verified safe to re-enter.

Control access to the area through which the agent will be evacuated after the test.

Recognize potential for CO₂ exposure to cause injury or death according to NFPA 12.



Special Hazards Systems

Level III Certification Content Outline

Standard Model Program with Computer-Based Testing

The candidate for NICET certification as a Level III Special Hazards Systems technician should have the knowledge and experience to:

Design gaseous, dry, and wet agent systems; prepare submittals, estimates, and project reports; manage a special hazards project; and inspect, maintain, repair, install, and test complex systems.

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.

3.1 Inspection, Testing, and Maintenance Tasks

(Approximately 2-8% of the exam)

3.1.1 Conduct a low-pressure CO₂ partial flow test.

Knowledge:

Frequencies for testing in NFPA 12
Proper room ventilation techniques

Skills:

Follow test procedures in manufacturer specifications.
Properly prepare area before testing, including identifying the agent exhaust pathway.
Identify valves that must be adjusted during test.

3.2 Repair and Recharge Tasks

(Approximately 15-21% of the exam)

3.2.1 Replace control panel components.

Knowledge:

Antistatic procedures as defined in NFPA 77
Control panel components and their functions

Skills:

Interpret panel sequence of operations matrix.
Confirm hardware and firmware compatibility.
Confirm upward and/or backward compatibility of field devices with replaced components
Obtain and follow manufacturers' procedures for replacing system components.
Use VOM (volt-ohmmeter) to test control panel circuits.
Perform functional testing of the control panel to verify proper operation.
Perform functional testing in compliance with NFPA 72.
Properly operate control panel components in accordance with manufacturer's instructions.
Follow manufacturer's methods for uploading the panel's configuration into the CPU.
Follow manufacturer's instructions for arming and disarming system controls.

3.2.2 Re-load the original programming configuration to a control panel after a repair.

Knowledge:

Computer/device connections, interfaces, and I/O port assignments

Skills:

Connect a computer to the panel and use software to upload the panel configuration.
Interpret manufacturers' design, operation, and maintenance manuals.
Follow manufacturer's instructions for arming and disarming system controls.
Conduct reacceptance testing of the system in compliance with NFPA 72: 14.4.2.

3.2.3 Conduct a discharge investigation.

Knowledge:

Control panel functions
Firmware-to-control panel interfaces
Control panel programming

Skills:

Use manufacturer software to upgrade device firmware.
Document firmware updates.
Test system to ensure proper operation after firmware update.

3.3 Installation Tasks

(Approximately 16-22% of the exam)

3.3.1 Perform complex programming for multi-zone, multi-hazard, networked systems with directional valves, soak systems, or remote access over internet.

Knowledge:

System signaling functions
Internet terminology, access, and addressing

Skills:

Interpret sequence-of-operations matrices.
Revise sequence-of-operations matrices as required for site conditions and complying with NFPA 72.

(Task 3.3.1 continued on next page)



Special Hazards Systems

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(Task 3.3.1 Skills continued)

- Determine compatibility of systems using network protocols such as BACNET, MODBUS, Token Ring, and manufacturers' proprietary protocols
- Set a static IP address for a device.
- Interface systems operating with different network protocols.
- Link various control panel types and nodes on a system.
- Access control panels remotely over the Internet.
- Interpret manufacturers' specifications for control panels.
- Use manufacturer's programming software.

3.3.2 Perform foam proportion accuracy test.

Knowledge:

- Test methods described in NFPA 11: Section 11.6, Annex A.3.3.2, Annex D
- Test methods described in NFPA 16: Chapter 8.4 and Annex B
- Types of foam and their characteristics
- Foam concentration requirements
- Foam system operation
- Environmental rules and regulations for collecting, containing, and disposing of foam solutions
- Alternative test methods used to prove proportioning accuracy
- Percent thresholds for various concentrates

Skills:

- Analyze foam solution samples and test results using the methods outlined in NFPA 11: Annex D and NFPA 16: Annex B.
- Use graduated cylinders to accurately mix the reference samples.
- Use a handheld refractometer to measure solution's refractive index.
- Use a handheld conductivity meter to measure solution's electrical conductivity.
- Use a flow meter/pitot gauge.
- Use liquid measuring devices and scales.
- In absence of hydraulic placard, determine flow rate.
- Organize testing procedures and preparation of protected area to avoid damage during testing.
- Calculate flow rates in order to determine the quantity of discharge outlets, header size, hose size/quantity.
- Collect, contain, and dispose of test solution.
- Determine whether foam solution is within acceptable threshold range according to NFPA 16.
- Graph the solution concentration line as a relation of solution's percentage to its refractive index or conductivity according to NFPA 16: Figures Annex B.3 (a), (b), and (c).
- Interpret results.
- Prepare a test report.

3.3.3 Conduct clean agent discharge and concentration final acceptance tests.

Knowledge:

- Enclosure and pipe integrity procedures
- Significance of interlocks for system functioning

Skills:

- Interpret system plans, specifications, and as-built drawings.
- Identify system interlocks.
- Use NFPA 12, 12A, and 2001 to determine system acceptance procedures.
- Use NFPA 12, 12A, and 2001 to determine flow testing and discharge testing requirements.
- Use NFPA 12, 12A, and 2001, along with AHJ requirements, to determine protected height, discharge duration, and required hold time (if total flood).
- Interpret a system sequence-of-operations matrix.
- Develop the test schedule, chain of command during testing, and attendance list.
- Verify notification occupants, monitoring company, and emergency responders prior to testing.
- Calibrate, use, and read an extinguishing agent concentration meter as per the manufacturer's instructions.
- Interpret manufacturers' literature to determine the timeframe for reconditioning and requirements for recharging or resupplying discharged agent.
- Document results.

3.4 System Design and Configuration Tasks

(Approximately 69-75% of the exam)

3.4.1 Determine an appropriate system type and agent for the site's hazard(s).

Knowledge:

- Basic principles of fire ignition, and factors that affect the speed and direction of propagation
- Classes of fires
- Interactions (chemical and physical) between various extinguishing agents and fires, protected equipment and materials, and potential occupants
- Pressure venting requirements
- Hazardous materials, activities/processes, and conditions
- SNAP list, EPA, AHJ, and insurance restrictions

Skills:

- Determine the applications and limitations of various agents specified in NFPA 11, 12, 12A 13, 16, 17, 17A, 68, 69, 79, 70, 72, 750, 2001, and 2010.
- Determine if the site conditions warrant the use of a particular system type.
- Identify relevant site features, hazards, and conditions that impact system/agent selection.
- Comply with allocated space and remote location requirements for agent storage containers as listed in the manufacturer's specifications.
- Perform pressure venting calculations.
- Identify protected process materials and quantities.
- Run simple hydraulic calculations to determine the infrastructure needs and determine the feasibility of using such system.

3.4.2 Select and lay out detection devices.

Knowledge:

- Detection device types, their functions and limitations

(Task 3.4.2 continued on next page)



(Task 3.4.2 Knowledge continued)

Impact of Underwriters Laboratory (UL) or National Recognized Testing Laboratory (NRTL) listings on device locations, spacing, and ratings
Impact of heat, type of smoke, smoke movement, and stratification on device types, locations and spacing
Impact of types of flame, as dictated by fueling agent, on detector selection

Skills:

Comply with detection device requirements in NFPA 72: Chapter 17, and requirements of the AHJ.
Select device types, quantities, and placement.
Obtain installation and design data from the manufacturer of the device.
Determine device's area coverage.
Confirm UL or NRTL listings of various detection devices.
Select the proper device for the hazard(s) and conditions.

3.4.3 Select and lay out power supply devices.**Knowledge:**

Formula for battery load calculations

Skills:

Apply system alarm and standby power requirements as defined in NFPA 72: 10.6.7, or as required by the local AHJ.
Obtain relevant information from manufacturers' literature.
Based on manufacturers' specifications, determine the current draw for each circuit.
Understand the use of the battery calculation forms in NFPA 72.
Determine the maximum power output supplied by the control panel.
Determine the system alarm and standby power requirements of the local AHJ.
Select, size, and lay out power supply devices.
Determine ADA candela ratings and quantities for each NAC circuit.
Recognize when booster power is necessary.

3.4.4 Select and lay out cables, conduit, and raceways.**Knowledge:**

Raceway materials and their applications
Ohm's law

Skills:

Apply NFPA 70: Article 760, and NFPA 72: Chapter 12 and Annex F to the layout of cables, conduit, and raceways.
Select cable and wire types appropriate for the application.
Calculate the maximum anticipated current loads and voltage drops.
Select, size, and lay out conduit, junction boxes, and raceways to suit the application and environment.
Select appropriate and NEC-approved support methods for conduits, junction boxes, and raceways.
Read and interpret wiring schematics.
Determine total length and type of wire used for each notification appliance circuit (NAC) from project plans and specifications.

Use NFPA 70: Chapter 9, Table 8, or the wire manufacturer's specifications to determine a wire's DC resistance value.

Perform basic electrical calculations to determine the voltage drop of each NAC.

Lay out electrical pathways for hazardous and non-hazardous classifications.

Apply intrinsically safe barriers where appropriate.

Use an architectural scale to determine wire lengths between devices.

Maintain fire ratings at wiring penetrations.

Determine requirements for electrical classifications per NFPA 70: Chapter 5.

3.4.5 Develop a programming matrix for a special hazards system.**Knowledge:**

Role of protocols in the communication with other fire protection and building control systems

Control panel components and their functions

System interfaces and their functions

Types of detection/releasing schemes

Skills:

Develop and format sequence-of-operations matrices in accordance with NFPA 72: Annex A.14.6.2.4.

Select required components for controls and interfaces.

Ensure interface compliance with NFPA 72: Chapter 21.

Develop a list of control panel components.

Interpret manufacturers' specifications to determine which detection/releasing scheme will satisfy the application parameters.

3.4.6 Select and lay out discharge devices.**Knowledge:**

Types of discharge devices appropriate for various extinguishing agents

Ambient conditions that could affect the discharge device

Types of clearance required for various types of discharge devices

Skills:

Use a site survey report and NFPA 11, 12, 12A, 16, 17, 17A, 750, 2001, and 2010 to determine discharge device layout requirements.

Determine manufacturer and listing requirements for discharge device.

Read and interpret flow calculation results pertaining to the discharge devices.

Select number of discharge devices based on pounds-per-second requirements.

Calculate volumetric discharge rate for high-expansion foam generators.

Interpret manufacturer specifications to determine maximum and minimum discharge device coverage heights and throws.

Determine minimum number of foam chambers based on the diameter of the flammable liquid storage tank per NFPA 11: Chapter 5.

Apply spacing requirements for discharge devices per NFPA 11: Chapter 5.

(Task 3.4.6 continued on next page)



(Task 3.4.6 Skills continued)

Mitigate potential facility impacts of a discharge with a particular device, including sound, agent velocity, and pressure.

Select, size, and lay out discharge devices.

3.4.7 Select and lay out actuating/releasing devices.**Knowledge:**

Actuating/releasing device types their functions, and limitations

Skills:

Determine type of actuation/releasing device the system requires.

Determine whether the actuation/releasing device is to be manually or automatically activated.

Determine whether an automatic device requires a separate manual override.

Determine actuating/releasing devices' compatibility (by type and quantity) with control equipment.

Comply with actuation device requirements in NFPA 11, NFPA 12, NFPA 12A, NFPA 16, NFPA 17, NFPA 17A, NFPA 750, NFPA 2001, and NFPA 2010.

Interpret manufacturer specifications to determine requirements for releasing components.

3.4.8 Select and lay out agent storage equipment.**Knowledge:**

Various schemes for storage/distribution

Factors that impact the required storage capacity

Storage tank location and loading requirements

Formulas for volumetric, concentration, and leakage calculations

Skills:

Read and interpret project drawings, specifications, and site survey data to confirm mounting locations.

Obtain relevant information from the manufacturer's design manual for the extinguishing agent.

Perform simple volumetric, concentration, and leakage calculations and apply temperature and altitude corrections to determine agent quantity.

Determine the type of storage equipment, the capacity required, and the storage distribution scheme.

Select, size, and lay out the storage units.

Determine storage temperature limitations from the manufacturer's specifications.

Determine the feasibility of storage tank installation and service.

Locate storage containers in compliance with NFPA 11, 12, 12A, 16, 17, 17A, 750, 2001, and 2010.

3.4.9 Layout and calculate air sampling systems.**Knowledge:**

Factors that influence airflow

Skills:

Interpret manufacturers' installation, design, and testing recommendations.

Interpret system drawings, specifications, and sequence of operations matrix to determine system configuration/setting thresholds.

Use air sampling detector manufacturer's software to perform calculations.

Manipulate pipe configuration and hole balance to meet transport time requirements.

Lay out an air sampling system in accordance with NFPA 72 Chapter 17.7.3.6.

3.4.10 Use software to calculate system flow for gaseous agents (including high-pressure CO₂).**Knowledge:**

Geometry

Trigonometry of right triangles

Significant New Alternatives Policy (SNAP) list, Lowest Observable Affect Level (LOAL), and No Observed Affect Level (NOAL) limitations

One-, two-, and three-phase flow and its effect on agent delivery

Fittings' orientation and flow-split ratio requirements

Skills:

Apply NFPA 12, 12A, 17, and 2001 to system flow.

Use project plans and specifications to determine distribution/delivery system limitations, desired flow per nozzle, and quantity of nozzles per hazard.

Determine pressure loss for system valves, selectors, checks, lockouts, hoses, and other accessories.

Use system manufacturer software to calculate agent distribution and discharge time.

Use system manufacturer design data to determine system nozzle coverage, heights, and limitations.

Interpret software output to establish minimum pressure vent area.

Confirm that calculation results meet system design requirements.

3.4.11 Use software to hydraulically calculate low-expansion foam water systems.**Knowledge:**

Factors that influence waterflow and their relationships to each other

Supply and demand calculations and their variables.

Normal, total, and velocity pressures and their impact on calculations

Hydraulic calculation formulas for density-area and orifice-pressure as defined in NFPA 13, Chapters 11 and 22.

Skills:

Interpret UL listings and manufacturing specifications to determine minimum and maximum discharge device operating pressures.

Determine the hydraulically most demanding area or most remote devices.

Determine the minimum required water/low-expansion foam flow based on a density/area method or k-factor/pressure method.

Operate a calculator or a software package to perform hydraulic calculations.

Interpret thresholds and results on graphs.

Confirm that calculation results meet system design requirements.



Special Hazards Systems

3.5 Work Management Tasks

(Approximately 27-33% of the exam)

3.5.1 Procure materials for a special hazards system installation.

Knowledge:

Material take-off procedures

Skills:

Read and interpret suppression system plans and specifications to determine the types and quantities of devices, pipe, conduit, wire, etc. that will be required for the project.

Obtain technical, pricing, and ordering information from the manufacturer or supplier.

Prepare material procurement forms.

3.5.2 Prepare project documentation.

Knowledge:

Cost factors in special hazards work

Contract structure and terminology as defined in AIA standard forms

Skills:

Interpret project contracts to determine project requirements.

Identify site conditions that contradict the original contract documents—or previous changes—and that are likely to impact costs and project completion timeline.

Document proposed system modifications to accompany the change order request.

3.5.3 Plan acceptance testing and prepare associated documentation.

Knowledge:

System commissioning/acceptance test procedures, including pipe integrity pressure, room integrity, and flow, coverage and concentration test methods

Safety requirements for acceptance tests

Skills:

Create a commissioning plan based on the requirements in NFPA 11, 12, 12A, 13, 16, 17, 69, 72, 90A, 101, 170, 750, 2001, and 2010.

Obtain and read manufacturers' recommendations and guidelines.

Research any unique testing requirements of the local AHJ.

Coordinate with other trades to schedule personnel, resources, and facility access for testing activities.

Prepare a punch list.

Interpret results of preliminary acceptance test; adjust acceptance test procedures as necessary.

Determine what forms and test data must be retained for records and where.

Plan for facility/occupant impact.

Develop the test schedule, attendance list, etc.

Notify occupants and monitoring company

Plan for safety precautions for a discharge.

3.5.4 Evaluate final acceptance test results.

Knowledge:

System commissioning/acceptance test procedures, including pipe pressure, room integrity, and flow, coverage and concentration test methods

Skills:

Interpret system plans, specifications, and as-built drawings.

Interpret sequence-of-operations matrix.

Interpret the results of enclosure/hazard integrity tests.

Compare test results with project objectives.

Communicate clearly and accurately, both verbally and in writing.

Report test data from the field on appropriate forms and retain for records.

3.5.5 Develop, coordinate, and monitor a project schedule.

Knowledge:

Major roles on a large special hazards project

Factors that affect expected and actual completion times for various tasks

Gantt charts

Critical path method

Skills:

Use scheduling software to develop a project schedule. Create, read, and interpret Gantt Charts.

Schedule special hazards system work as part of a larger project.

Forecast labor and material requirements at various times during a project.

Obtain data from the field and organize to measure project progress.

Design forms for data gathering and reporting.

Communicate work schedule information with job site contractors.

Manage subcontractors and attend project meetings.

Use electronic media to communicate with project team members while coordinating and documenting tasks.

Prepare work progress reports.

3.5.6 Prepare maintenance plans.

Knowledge:

Frequencies for inspection, testing, and maintenance tasks in NFPA 25, NFPA 72, and system-specific standards

Cost factors in periodic inspection, testing, and maintenance activities

Role of the inspector according to NFPA standards

Skills:

Communicate clearly and accurately, both verbally and in writing.

Interpret inspection, testing, and maintenance summary tables and charts in NFPA standards.

Estimate costs and itemize recurring inspection, testing, and maintenance tasks specific to various types of systems.

Analyze risks and potential liabilities.

Prepare cost estimates based on site equipment and conditions.

Complete simple contract forms requiring frequencies and cost estimates.



3.5.7 Conduct end-user training.

Knowledge:

Written and verbal communication skill

Skills:

Present technical information clearly, accurately, and professionally to technical or non-technical audiences, either individually or in groups.

Prepare and conduct end-user and operator training.

Interpret owner's requirements for end-user training and O&M documentation.

Create proof-of-training records.

3.6 Safety Tasks

(Approximately 2-8% of the exam)

3.6.1 Prepare and implement project-specific safety plans based on site conditions.

Knowledge:

OSHA workplace safety regulations

Powered Platforms for Building Maintenance - Operations Training 1910.66(i), (ii) and (ii)(A) through (E), and (iii) through (v)

Hearing Protection Training Program 1910.95(k)(1) through (3)(i) through (iii)

Personal Protective Equipment 1910.132(f)(1)(i) through (v); (2), (3)(i) through (iii) and (4)

Respiratory Protection 1910.134(k)(1)(i) through (vii); (2), (3), and (5)(i) through (iii)

Permit Required Confined Spaces 1910.146(g)(1) and (2)(i) through (iv)(3) and (4) and (k)(1)(i) through (iv)

The Control of Hazardous Energy (lockout/tagout) 1910.147(a)(3)(ii); (4)(i)(D); (7)(i)(A) through (C); (ii)(A) through (F); (iii)(A) through (C)(iv) and (8)

OSHA record keeping requirements

Sources of information about CO₂ suppression systems.

Skills:

Obtain and implement the owner and/or contractor's workplace safety plan for the facility.

Identify the work-site-specific safety hazards that may impact the work planned for the facility.

Plan training, PPE and safety related equipment requirements, and work procedures to avoid accidents.

Identify other site contractors' hazards that will impact the safety plan.

Train employees to recognize work site safety hazards and follow the reporting procedures.

Monitor adherence to the safety plan by team members.

Apply NFPA 70E requirements to the worksite safety plan.



Special Hazards Systems

Level IV Certification Content Outline

Standard Model Program with Computer-Based Testing

The candidate for NICET certification as a Level IV Special Hazards Systems technician should have the knowledge and experience to:

Design systems involving unique applications of agents/devices, and/or explosion prevention; troubleshoot complex systems; and manage multiple project teams; interpret and negotiate contracts.

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.

4.1 Inspection, Testing, and Maintenance Tasks

No tasks at this level.

4.2 Repair and Recharge Tasks

No tasks at this level.

4.3 Installation Tasks

No tasks at this level.

4.4 System Design and Configuration Tasks

(Approximately 42-48% of the exam)

4.4.1 Communicate with NFPA committee regarding standards.

Knowledge:

Structure of NFPA standards
Terminology used in standards and codes
NFPA revision process
NFPA revision publications.
Role of the NFPA standards council
Procedures for requesting a formal interpretation

Skills:

Interpret standards' language and identify ambiguities.
Identify elements of plans, specifications, and AHJ statements that could be subject to competing interpretations of a standard.
Track status of request for formal interpretation.
Propose changes to a standard.

4.4.2 Design a complex foam system.

Knowledge:

High-expansion and medium-expansion foam and their applications
Foam concentrate proportioning methods
Foam concentrate storage and delivery equipment
Foam recovery and containment methods

Skills:

Apply requirements of total flooding and local applications according to NFPA 11 6.12 and 6.13.
Determine the required foam and water supply volume.
Select a foam proportioning method to comply with NFPA 11 and 16.
Size a foam pump.
Use manufacturer specifications to determine discharge device placement based on flow coverage patterns.
Hydraulically balance multiple systems in simultaneous flow.

4.4.3 Implement protection of dust control system and/or equipment.

Knowledge:

Dust control devices and their characteristics
Combustible dust deflagration index (Kst) testing requirements
Risks associated with dust control equipment placement

Skills:

Apply electrical equipment classifications to system design according to NFPA 70 Chapter 5.
Select a protection technique as required by NFPA 654 and in accordance with NFPA 68 or 69.
Apply protection methods based on equipment locations. Confirm that vent location is acceptable according to NFPA 68.
Communicate with system manufacturers to select, size, and lay out explosion control/isolation system components.

4.4.4 Design a low-pressure CO₂ system.

Knowledge:

CO₂ protection schemes and their requirements
Restrictions for normally-occupied enclosures
Carbon-dioxide-related hazards to personnel
Low-pressure CO₂ system characteristics
Floor-loading requirements
CO₂ Refrigeration equipment and its requirements
Discharge components and their functions.
Venting requirements for purging CO₂ from protected areas and areas where the agent is likely to settle

(Task 4.4.4 continued on next page)



Special Hazards Systems

(Task 4.4.4 continued)

Skills:

- Apply NFPA 12 protection requirements to CO₂ applications.
- Implement NFPA 12 safety requirements in total-flood CO₂ applications.
- Oversee full-discharge test and acceptance test for AHJ.
- Evaluate hazards and determine the required area/volume of CO₂ application.
- Determine the duration of discharge based on agent supply, discharge rate, and piping.
- Evaluate potential of CO₂ migration outside of the protected hazard area and its impact on occupants.

4.4.5 Coordinate and implement the application of explosion prevention systems (other than dust control equipment).

Knowledge:

- Components of explosion prevention systems and their functions
- Materials which are susceptible to explosive combustion
- Types of explosion suppression systems and their functions
- Principles of explosion

Skills:

- Identify explosive hazards and evaluate their potential for explosion.
- Identify agents that can prevent explosion of a hazard.
- Communicate with manufacturer of explosion prevention system to select, size, and lay out the components of an explosion prevention system.

4.4.6 Develop installation specifications taking into account manufacturer's instructions and any site-specific requirements.

Knowledge:

- Formatting of standard industry specifications

Skills:

- Interpret field survey to determine site-specific protection requirements.
- Communicate with owner to determine fire protection objectives and goals.
- Apply NFPA standards, insurance requirements, and local building codes to the project.
- Create clear and organized written reports.

4.5 Work Management Tasks

(Approximately 40-46% of the exam)

4.5.1 Accommodate LEED (Leadership in Energy & Environmental Design) requirements.

Knowledge:

- Role of the Green Building Council

Skills:

- Interpret LEED rating system
- Determine the owner's/end user's objectives related to LEED certification.
- Recognize LEED requirements and procedures for the project.
- Select an agent and other components that are LEED-compliant with the project's objectives.
- Document compliance with LEED requirements.

4.5.2 Present performance-based design alternatives to engineers/AHJs.

Knowledge:

- Intent and applicability of NFPA 11, 12, 12A, 13, 16, 17, 69, 72, 90A, 101, 170, 750, 2001, 2010
- Significant New Alternatives Program (SNAP) list
- Lowest observable adverse level (LOAL)/No observable adverse level (NOAL)
- Written and verbal communication skills

Skills:

- Comply with performance-based design requirements in NFPA standards.
- Recognize applications that are outside the scope of standards' prescriptive methods.
- Present technical information clearly, accurately, and professionally to technical or non-technical audiences, either individually or in groups.
- Determine the interests and concerns of individuals in various roles related to a special hazards systems project.
- Prove the advantages of a performance-based special hazards system design over building-code mandated systems.

4.5.3 Educate AHJs and insurance authorities about special hazards work.

Knowledge:

- Written and verbal communication skills
- Roles of NFPA, FSSA, NAFED, SFPE, AFFA and their local chapters
- Intent and applicability of NFPA 11, 12, 12A, 13, 16, 17, 69, 72, 90A, 101, 170, 750, 2001, 2010
- Methods of presentation delivery
- The role of insurance companies in establishing criteria for suppression systems

Skills:

- Educate groups of AHJs about Special Hazards standards, system types, technology, and new products.
- Present technical information clearly, accurately, and professionally to technical or non-technical audiences, either individually or in groups.
- Prepare and deliver informational presentations.
- Coordinate meeting arrangements.

**4.5.4 Conduct cost and benefits research to determine the feasibility of using new agents and other products.****Knowledge:**

Sources of information about new products
Factors that affect the lifetime cost of various agents and devices
EPA and other regulatory agencies' effect on chemical suppression lifetimes
Training costs involved with using new products
Start-up costs involved with using a new product

Skills:

Research the characteristics of a new agent or device.
Analyze the benefits, detriments, and risks of an agent's characteristics in various applications.
Analyze the immediate and lifetime costs of the product, and how it might affect the overall costs of system installation and maintenance.
Analyze the fiscal budget and sales projections.

4.5.5 Negotiate and review project contracts.**Knowledge:**

Project contract structure and terminology as defined in the industry publications.
Types of expenses encountered in completing a project.

Skills:

Communicate clearly with owner's representative and other contractors.
Identify and evaluate the client's objectives, needs, concerns, constraints, and resources.
Develop an estimate of the cost of the project.
Interpret various types of potential or actual insurance requirements and costs.
Interpret indemnification requirements.
Interpret payment progress requirements.
Interpret tax requirements.
Interpret contract termination requirements.
Interpret change order requirements.
Interpret value engineering options.
Interpret consequences of penalty clauses for missed deadlines.
Interpret project's special requirements.

4.5.6 Develop a project budget.**Knowledge:**

Basic accounting procedures
Time management principles
Cost factors related to a special hazards system project
Sources of cost estimating information

Skills:

Calculate estimated profit.
Communicate clearly and accurately, both verbally and in writing.
Obtain expense- and revenue- related information from project contract documents, plans, and specifications.
Identify time constraints that can affect budget.
List and estimate expense items for a project.
Estimate material cost escalation.
Estimate manpower requirements for all phases including submittal and closeout.
Estimate manpower cost escalation.
Estimate costs involved in project submittal.
Estimate costs involved in project closeout.
Identify special equipment that will be needed for a project site.

4.5.7 Monitor project cost-control.**Knowledge:**

Basic accounting procedures
Project budget components
Cost factors

Skills:

Communicate clearly and accurately, both verbally and in writing.
Manage labor requirements.
Identify and monitor invoicing and payment deadlines.
Monitor and manage payments for equipment deliveries.
Manage account collections and subcontractor payments.
Process and track RFIs, RFPs, construction bulletins, change orders, and progress billing.
Monitor cashflow schedule.
Prepare and maintain schedule of values.
Manage project retainage.

4.6 Safety Tasks

(Approximately 4-11% of the exam)

4.6.1 Manage compliance with OSHA and insurance carrier (Bureau of Workers' Compensation) safety requirements.**Knowledge:**

OSHA training course recommendations
29 CFR Part 1910.132 -138
OSHA accident investigation procedures 29 CFR 1904
Purpose and significance of experience modification rates (EMR) and total recordable incident ratio (TRIR)
CFR 29 1904: Recording and Reporting Occupational Injuries and Illness

Skills:

Document personnel safety training, and track expiration dates.
Investigate accidents and document consequences or disciplinary actions.
Post OSHA Form 300A (Summary of work-related injuries) to document and report worksite injuries.
Maintain records of injuries.



Special Hazards Systems

Level I Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
NFPA 12	2011
NFPA 70	2011
NFPA 72	2013
NFPA 2001	2012

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a special hazards systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

29 CFR 1910: Occupational Safety and Health Standards.

CGA C-6 (2007): Visual Inspection of Steel Compressed Gas Cylinders, Compressed Gas Association

NFPA 13 (2010): Installation of Sprinkler Systems, National Fire Protection Association.

NFPA 170 (2012): Fire Safety and Emergency Symbols, National Fire Protection Association.

➤ This listing is not intended to be complete or representative.

April 29, 2014

**Special Hazards Systems****Level II Selected General References**

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
NFPA 11	2010
NFPA 25	2014
NFPA 70	2011
NFPA 72	2013

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

During the exam, the following titles will be available to candidates **on-screen only**:

<u>Title</u>	<u>Edition**</u>
NFPA 12	2011
NFPA 12A	2009
NFPA 16	2011
NFPA 17	2013
NFPA 17A	2013
NFPA 2001	2012

**The test questions are based on the editions listed above. These editions will be available to candidates during the test in PDF format. Hard copies of these publications will NOT be permitted in the test center.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a special hazards systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

OSHA 29 CFR 1926: Safety and Health Regulations for Construction.

OSHA 49 CFR 173: Transportation.

Construction Management Jumpstart. Barbara J. Jackson, Sybex.

Fire Alarm Signaling Systems. Richard W. Bukowski, National Fire Protection Association.

Fire Protection Handbook. Arthur E. Cote, National Fire Protection Association.

FSSA Pipe Design Handbook for Use with Special Hazards Fire Suppression Systems. Fire Suppression Systems Association.

International Building Code (2012). International Code Council (ICC).

International Fire Code (2012). International Code Council (ICC).

Ugly's Electrical References. George V. Hart, Jones & Bartlett Learning.

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- This listing is not intended to be complete or representative.

April 29, 2014



Special Hazards Systems

Level III Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
NFPA 11	2010
NFPA 13	2013
NFPA 70	2011
NFPA 72	2013

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

During the exam, the following titles will be available to candidates **on-screen only**:

<u>Title</u>	<u>Edition**</u>
NFPA 12	2011
NFPA 16	2011
NFPA 17	2013
NFPA 17A	2013
NFPA 75	2013
NFPA 76	2012
NFPA 750	2010
NFPA 2001	2012

**The test questions are based on the editions listed above. These editions will be available to candidates during the test in PDF format. Hard copies of these publications will NOT be permitted in the test center.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a special hazards systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

AIA Document A201. 2007 General Conditions of the Contract for Construction. American Institute of Architects.

Computerized Management of Multiple Small Projects: Planning, Task & Resource Scheduling, Estimating, Design Optimization, & Project Control. Kenneth K. Humphreys, Marcel Dekker.

Construction Management – Jumpstart. Barbara J. Jackson, Sybex.

Networking for Dummies. Doug Lowe, John Wiley & Sons.

Ugly's Electrical References. George V. Hart, Jones & Bartlett Learning.

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- This listing is not intended to be complete or representative.

May 23, 2014



Special Hazards Systems

Level IV Selected General References

Candidates are permitted to bring only the following references into the test center:

<u>Title</u>	<u>Edition*</u>
NFPA 11	2010
NFPA 12	2011
NFPA 70	2011
NFPA 2001	2012

*The test questions are based on the standard editions listed above; therefore, candidates are strongly urged to bring these editions to the exam. Note: candidates may bring older or newer editions—instead of the editions listed above—at their own risk.

Note: An NFPA Handbook will NOT be accepted as a substitute for any of the titles listed above.

Note: References must be bound or secured in a three-ring binder with a title page. They may have highlighted text and self-adhesive index tabs or dividers, however they must be permanently attached. No other additions or modifications to the references are allowed. References with loose paper or pages and freestanding tabs (e.g., repositionable sticky notes/tabs of any kind) are not permitted into the testing centers.

During the exam, the following titles will be available to candidates **on-screen only**:

<u>Title</u>	<u>Edition**</u>
NFPA 16	2011
NFPA 68	2013
NFPA 69	2014

**The test questions are based on the editions listed above. These editions will be available to candidates during the test in PDF format. Hard copies of these publications will NOT be permitted in the test center.

In addition to the references listed above, the following publications can provide some of the job knowledge required by a special hazards systems technician. While these books may help you prepare for the exam, they are NOT permitted in the test center.

AIA Document A201. 2007 General Conditions of the Contract for Construction. American Institute of Architects.

Construction Management – Jumpstart. Barbara J. Jackson, Sybex.

Cost Estimating. Rodney D. Stewart, John Wiley & Sons.

29 CFR: 1904, Recording and Reporting Occupational Injuries and Illnesses. OSHA.

➤ This listing is not intended to be complete or representative.

June 9, 2014

Exam Information

Special Hazard Systems Exam	
Level I Exam	100 questions, 140 min.
Level II Exam	160 questions, 170 min.
Level III Exam	103 questions, 200 min
Level IV Exam	60 questions, 140 min.

Fees

Standard Model/CBT Application

Level I	\$225
Level II	\$290
Level III	\$345
Level IV	\$400

Base Recertification Fee (includes one subfield)	\$200
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Incremental Fee (each additional subfield)	\$50
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ISO/IEC 17024 Standard for Personnel Certification

The Standards for Educational and Psychological Testing (AERA, APA, & NCME, 1999)

NCCA's Standards for the Accreditation of Certification Programs

The Principles of Fairness: An Examining Guide for Credentialing Boards (CLEAR and ICE 1993)

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