



**NATIONAL WIRELESS  
SAFETY ALLIANCE**

# **CANDIDATE HANDBOOK**

## **■ TELECOMMUNICATIONS TECHNICIAN**

- **Telecommunications Tower Technician 1 (TTT-1)**
- **Telecommunications Tower Technician 2 (TTT-2)**

*This handbook and application packet for the NWSA Computer-Based Tests (CBT) and Practical Examinations contains important information related to your certification requirements. Please read this handbook carefully and retain it for reference throughout the certification process.*

**Do not discard this document.**

*The National Wireless Safety Alliance (NWSA) does not discriminate on the basis of race, color, religion or creed, gender, gender expression, age, national origin or ancestry, disability, marital status, sexual orientation, or military status, in any of its activities or operations. These activities include, but are not limited to, the employment of staff, selection of volunteers and vendors, and provisioning of services. The NWSA is committed to providing an inclusive and welcoming environment for all staff members, volunteers, subcontractors, vendors, certification applicants, and certificants.*

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***This NWSA certification program was created in alignment with the certification industry's most rigorous accreditation requirements.***

Dear Telecommunications Technician Certification Candidate:

Welcome to the National Wireless Safety Alliance (NWSA) telecommunications technician certification program.

The NWSA is a nonprofit organization founded in 2015 to establish a fair and independent evaluation of telecommunications technician knowledge and skills. Key to this industry-led effort was the development of the NWSA Computer-Based Tests (CBT) and Practical Examinations. These nationally recognized certification programs are the culmination of diligent hard work by experts representing various industry stakeholders that use and understand the services of telecommunications technicians.

The NWSA Telecommunications Tower Technician (TTT) Task Force that developed this certification program was made up of experts from all segments of the telecommunication industry—tower technicians, carriers, tower owners, contractors, trainers, manufacturers, and suppliers—who together represent many thousands of hours of related experience. These volunteers gave freely of their time and expertise with the primary goal of improving the safety of all whose work brings them into contact with communication structures and related equipment.

To ensure NWSA examinations are—and remain—valid measurements of technicians' proficiency, NWSA teamed up with the National Commission for the Certification of Crane Operators (NCCCO) for its exam development expertise and with the TTT Task Force for its knowledge and experience. In addition to guiding the development of new examinations, NWSA continually analyzes the performance of its exams and reports to the Exam Management Committees. To be able to provide fair and independent assessments, NWSA does not conduct training, nor does it provide training materials.

NWSA, as a third-party certification body, is fully committed to, and understands the importance of, delivering all certification activities on a foundation of impartiality. All policies and procedures are established in an objective manner and ultimately strive to achieve fairness throughout all activities. NWSA prevents any conflicts of interest through detailed policies and procedures observed by staff, governing body representatives, and those involved in CBT and practical exam administration.

***This candidate handbook has been developed to provide you with comprehensive information about the NWSA CBT tests and Practical Examinations leading to certification. NWSA recognizes the commitment you are about to make and will do everything it can to make your experience a positive and successful one. If, after reading this handbook, there is anything you do not fully understand, please call NWSA at 703-459-9211 or e-mail [nwsa@nws-a.org](mailto:nwsa@nws-a.org). NWSA staff will guide you through any element of the program that you would like explained in greater detail.***

Thank you for your interest—and good luck with your efforts to become NWSA-certified!

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# Introduction

## PROGRAM DESCRIPTION

The National Wireless Safety Alliance (NWSA) is an independent, nonprofit organization formed to set standards for fairly measuring the knowledge and proficiency required for safe operations during the performance of wireless telecommunications work. NWSA currently administers a nationwide program of certifications for technicians within the telecommunications industry.

Based on extensive discussions with representatives from all segments of business and industry who recognize the impact of safety issues, NWSA has identified the following potential benefits of telecommunications technician certification:

- Fewer accidents, injuries, and fatalities
- Reduced risk of loss
- Increased knowledge and skill of the technicians
- Assurance of telecommunications technicians' abilities
- Less property damage
- Improved safety records
- Enhanced public image of telecommunications technicians

The representatives initially defined two levels of telecommunications tower technicians for crew members who perform general construction activities with an emphasis on tower system installation, modification, maintenance, and inspection of support structures used in telecommunications, including personal wireless communications, public safety communications, utility networks, and broadcast. These two levels were defined as:

- **Telecommunications Tower Technician 1:**  
An individual who can safely perform tasks on telecommunication sites under direct supervision.
- **Telecommunications Tower Technician 2:**  
An individual who can safely perform tasks on telecommunication sites and is capable of supervision of TTT-1 technicians and trainees.

All candidates are required to pass both CBT tests and Practical Examinations to be certified. A separate CBT test and practical examination are required for each certification designation.

The initial certification period is for five years, after which a certificant is required to recertify.

## NWSA EXAMINATION DEVELOPMENT

The first step in the development of an objective test is to measure what is required for safe telecommunications work. A job analysis study identified the knowledge and skills necessary for safe operations at job sites. A representative number of telecommunications technicians then validated that the knowledge recommended by the experts was vital to safe operations. The test blueprints and content specifications were then generated from the validation study.

Development of the *Telecommunications Tower Technician CBT Tests* involved a task force of industry content experts who worked with NWSA to write and review all questions used in the examination. Each examination contains a unique combination of questions from the question bank. Questions are selected for examinations on the basis of the content areas and specialties defined by the test blueprints.

The *NWSA Telecommunications Tower Technician Practical Examinations* were developed as fair and objective assessments of the essential skills a telecommunications technician needs to perform selected operations safely. The exams are organized into discrete tasks that assess a variety of telecommunications technicians' skills.

NWSA teamed up with the National Commission for the Certification of Crane Operators (NCCCO) for its exam development expertise and with the task force for its knowledge and experience. NWSA and NCCCO guided the task force in establishing key elements of the program, including identifying essential skills, selecting tasks, standardizing test conditions, developing the scoring process, establishing reliability among tests, and creating flexible application and scheduling procedures.

In concert with the task force, NWSA also helped design the Practical Examiner Accreditation Program whereby NWSA instructs and accredits NWSA-certified technicians to administer NWSA Practical Examinations.

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# Certification Policies

## TELECOMMUNICATIONS TECHNICIAN

### ELIGIBILITY

To be eligible for certification, candidates must:

#### For TTT-1

- Be certified in First Aid and CPR, and
- Have successfully completed an OSHA Construction 10-hour course delivered by an OSHA-authorized trainer.

#### For TTT-2

- Be NWSA-certified at the TTT-1 level, including all TTT-1 prerequisites.

### PHYSICAL CAPABILITY

Candidates for NWSA certification must attest to their physical capability to safely accomplish the NWSA Practical Examinations.

### NWSA CBT TESTS

The TTT-1 CBT test has 75 four-option multiple-choice questions. Candidates are allowed one-and-one-half (1.5) hours to complete this examination.

The TTT-2 CBT test has 90 four-option multiple-choice questions. Candidates are allowed two (2) hours to complete this examination.

The CBT tests are offered only at approved computer-based testing locations. See page 5 for details regarding the CBT process.

### NWSA CERTIFICATION TIME FRAMES

Candidates must pass a CBT test and a Practical Exam for the designation(s) for which they seek certification. Candidates may take their CBT test and Practical Exam in either order.

Candidates have 12 months after they pass their first exam (CBT or Practical) to pass the corresponding CBT test or Practical Exam(s) for the same designation(s). For example, a candidate passing the CBT test for TTT-1 in January 2017 has until the end of January 2018 to pass the Practical Exam for TTT-1.

If a certificiant subsequently becomes certified with an additional designation by taking the appropriate CBT test and practical exam, the certification period for the additional designation expires at the same time his/her original

certification (i.e., all TTT designations expire on the same date, regardless of when in the five-year certification period the candidate passed them). If the new designation is added within the final 24 months of his/her certification period, the certificiant is exempt from recertifying for the new designation after five years; after that, however, certificiants must recertify for all designations during the 12 months prior to their certifications' expiration date. This ensures that all of the certificiant's designations maintain the same expiration date.

### RECERTIFICATION REQUIREMENTS

The TTT-1 and/or TTT-2 certifications are valid for five years.

The specific recertification requirements have not yet been finalized but will be announced when completed.

### CODE OF ETHICS

NWSA candidates and certificiants must comply with NWSA's Code of Ethics during their certification, as set forth below:

*In my occupation, I will conduct myself in a manner:*

- So as to place the safety and welfare of others associated with my work above all other considerations;*
- So as to protect and preserve nearby general public property and the environment; and*
- So as to be free of bias with regard to religion, ethnicity, gender, age, national origin, and disability.*

*Furthermore, in connection with my work and in my dealings with NWSA, I will:*

- Make management and appropriate personnel aware promptly if I have any safety concerns relating to the work that I am performing or with which I am involved;*
- Not knowingly violate any safety-related regulations, warnings, or instructions set forth by OSHA, recognized safety standards, prevailing jurisdictions, or equipment manufacturers; and,*
- Not mislead, misrepresent or knowingly deceive others concerning my experience or the capabilities of myself or the equipment I am operating or with which I am working.*

*In addition, in my dealings with NWSA, I will:*

- vii. *Provide accurate and complete information and abide by NWSA's policies and procedures, including this Code of Ethics, as they may be updated from time to time;*
- viii. *Cooperate fully and completely with any administrative inquiries or investigations by NWSA; and,*
- ix. *Not misrepresent or misuse any NWSA card, or the NWSA or NWSA acronyms and logos, or any registered trademark or other intellectual property of NWSA; and I understand that I must return the card to NWSA immediately if required to do so.*

NWSA certified personnel who intentionally or knowingly violate any provision of the Code of Ethics will be subject to action by the Ethics and Discipline Committee, which may result in suspension or revocation of certification.

More details on NWSA's Code of Ethics and related policies and procedures can be found at [www.nws-a.org](http://www.nws-a.org).

## **DISCIPLINARY POLICY**

NWSA's Ethics and Discipline Committee is responsible for establishing and implementing standards of conduct, such as ethical standards, as well as policies and procedures for disciplinary action.

Grounds for sanctions, including revocation of certification status, shall include, but not be limited to, the following:

1. Period of certification exceeded without renewal.
2. Evidence of falsification of any information on any documents submitted to NWSA or its agents.
3. Evidence of culpability in an accident during certification period.
4. Evidence of non-compliance with the Code of Ethics.

In general, NWSA's Ethics and Discipline Committee considers matters as presented and/or recommended by NWSA Staff, which is empowered to issue temporary suspensions and take other interim action pending action and/or decision by the Ethics and Discipline Committee. If a certificant fails to request a hearing before the Ethics and Discipline Committee, after reasonable notice, NWSA Staff's recommendations to the Committee shall assume full force and effect.

As set forth in NWSA's Appeals Policy and Procedures, NWSA has established policies and procedures by which certificants may appeal sanctioning decisions by the Ethics and Discipline Committee to the Board of Directors. Certificants who wish to appeal a sanction by the Committee, including revocation, must do so in

writing, stating the grounds for the appeal. This should be addressed to:

NWSA Board of Directors  
c/o Executive Director  
National Wireless Safety Alliance (NWSA)  
2750 Prosperity Avenue, Suite 501  
Fairfax, VA 22031

The decision of the NWSA Board of Directors is final.

## **CERTIFICATION CARDS**

NWSA-certified technicians receive a laminated photo ID card at no cost when they certify for the first time and when they complete the requirements for recertification.

Replacement cards, cards showing certification in an additional designation, or updated cards for candidates who retake and pass a designation they previously failed may be obtained from NWSA at a cost of \$25.

## **CHANGE OF ADDRESS**

Certificants who change their address must notify NWSA as soon as possible. Failure to do so may cause important updates on NWSA's programs to be missed that could affect a certificant's stature. It is solely the certificant's responsibility to ensure their contact information is kept current and that changes of address are sent to NWSA. They must be in writing but may be sent via email to [nwsa@nws-a.org](mailto:nwsa@nws-a.org).



# Computer-Based Testing Process

## TELECOMMUNICATIONS TECHNICIAN

### COMPUTER-BASED TESTING (CBT)

Candidates will take the CBT test at a location operated by PSI Services LLC (PSI). Additional information can be found at [www.nws-a.org](http://www.nws-a.org) including links to a directory of over 450 PSI locations throughout the U.S. and Canada as well as the online application form.

Online applications may be completed and submitted at any time. Candidates should apply to take CBT test(s) as soon as possible, but no later than five business days before their preferred exam date. Please note that site availability is not guaranteed on the preferred exam date, and availability can only be confirmed when scheduling the appointment.

After the candidate completes and submits the online application (with payment), an authorization email will be sent within 48 hours. **After receiving the authorization email, the candidate will receive a scheduling email from [support@psionline.com](mailto:support@psionline.com) with scheduling instructions.** Then using PSI's online scheduling system, an appointment may be scheduled. Once scheduled, PSI will send an appointment confirmation email. The candidate must then go to the selected test center at the scheduled date and time.

### CBT Examination Fees

Candidates must pay the appropriate CBT fees when they apply online. A credit card (VISA, MasterCard, or American Express) must be used to pay online. CBT exam payments are valid for one year. If the candidate does not schedule and test within 12 months, he/she forfeits the fees. This does not affect the deadline(s) for certification or recertification as specified on page 3.

#### CBT/Retest Fees:

- Telecommunications Tower Technician 1 \$174
- Telecommunications Tower Technician 2 \$174

#### Other Fees:

An additional \$25 will be charged if a candidate:

- Needs a replacement certification card or score report

An additional \$30 fee will be charged if:

- An application form is incomplete (e.g., name misspelled or does not match name on valid photo ID)
- A credit card cannot be processed for any reason

- Any changes are requested after submitting the application

**NOTE: After the candidate has scheduled his/her appointment with PSI, no changes can be made. If the name for the scheduled appointment does not match that on the photo ID presented, all fees will be forfeited.**

### Rescheduling, Cancellation, or Withdrawal

CBT candidates may cancel and reschedule an examination appointment without forfeiting their fees if their cancellation notice is received at least 48 hours before the scheduled examination date. Candidates will NOT receive a refund if they no longer wish to take the test.

**All cancellation and reschedule requests must be submitted online at the PSI scheduling website: <https://candidate.psiexams.com>.**

### Missed Appointment or Late Cancellation

A candidate's registration will be invalidated and the examination fee(s) will be forfeited if he/she:

- Does not cancel the appointment more than 48 hours before the scheduled examination date
- Does not appear for his/her examination appointment
- Does not arrive 30 minutes prior to the CBT test start time
- Does not present proper identification

### Identification at the Test Site

Candidates must bring photo identification to the CBT site on the day of the test administration. Candidates will be required to sign the CBT site roster upon entry to the testing area.

Acceptable forms of photo identification for computer-based tests are a current:

- Passport
- U.S. government- or state-issued driver's license
- Military identification card
- U.S. government-issued alien registration card

**NOTE: Candidates without appropriate identification documents will NOT be admitted to take NWSA CBT test(s) and all fees will be forfeited.**

## Materials to Bring to the CBT Site

Each candidate must bring the following items to the CBT site:

- Valid photo identification
- Confirmation email from PSI (recommended)

**NOTE: No books, scratch paper, calculators, reference materials, beepers, cellular phones, or other personal items will be allowed in the examination room.**

## Score Reporting

Candidates receive their test results immediately following their exams and should retain these score reports for their records.

## TEST SITE INFORMATION

### Test Security

For the purpose of test security, candidates who sit for NWSA examination(s) acknowledge that they understand the following:

- This examination is the exclusive property of NWSA.
- This examination and the questions contained therein are protected by federal copyright law.
- No part of the examination(s) may be copied or reproduced in part or whole by any means whatsoever, including memorization.
- Theft or attempted theft of an examination or any of its contents is punishable as a felony.
- While at the CBT site, candidates are considered professionals and shall be treated as such. In turn, candidates must conduct themselves in a professional manner at all times. While at the site, they shall not use words or take actions that are vulgar, obscene, libelous, or that would denigrate the staff or other candidates.
- No conversing or any other form of communication among the candidates is permitted once they enter the examination area.
- No smoking, eating, or drinking is allowed at the examination site.
- Candidate participation in any irregularity during the examination, such as giving or obtaining unauthorized information or aid, as evidenced by observation or subsequent statistical analysis, may be sufficient cause to terminate participation, invalidate the results of the examination, or other appropriate remedy.

- Prior to starting the exam, a candidate must confirm that the candidate has read and understands the conditions under which the exam is to be administered.

## Candidate Question Comment Forms

Candidates can comment on the examination(s) as a whole or on specific items within an examination by writing their comments in the “Comments” field that appears with each question. Examination comments are reviewed by NWSA content experts on a regular basis.

**NOTE: Only comments provided in the “Comments” field will be considered for review.**

## TEST SCORING INFORMATION

NWSA CBT exams are criterion-referenced examinations; i.e., the passing score is set beforehand, and candidate performance on the examination is not compared to the performance of others taking the examination. In a criterion-referenced examination, a candidate must obtain a score equal to or higher than a predetermined passing score to pass the test. The passing scores represent absolute standards and are determined by panels of NWSA content experts using a psychometrically accepted standard-setting methodology.

In reporting the examination results to candidates, statistical procedures are used to convert raw scores (i.e., the number of test questions answered correctly) to scaled scores, which are equivalent for all administrations of the examination(s). The scaled score is not a number-answered-correctly score.

Candidate results for both the TTT-1 and TTT-2 CBT tests are reported as a scaled score, with a score of **70** out of 100 representing the minimum passing score for this test. Please note that this is **not** a percentage score. CBT score reports include a strength and weakness report by content domain.

## RETAKE THE EXAMINATION(S)

Candidates who fail an examination(s) may retake the examination(s). Candidates will need to reapply and pay all corresponding retest fees. CBT candidates may reapply any time after taking their exam(s); however, the new authorization email will be delayed pending the receipt of the exam results from PSI, which can take up to 72 hours.

## **INFORMATION RELEASE POLICY**

NWSA releases information pertaining to individuals who have successfully passed one or more NWSA examinations according to its Information Release Policy found in this handbook.



# Computer-Based Test Outline

## TELECOMMUNICATIONS TOWER TECHNICIAN 1

The Telecommunications Tower Technician 1 (TTT-1) CBT tests the following knowledge areas relating to the telecommunications technician:

### Domain 1: Job Logistics

- Approximately 19% of test

### Domain 2: Climbing

- Approximately 30% of test

### Domain 3: Hoisting Equipment and Rigging

- Approximately 11% of test

### Domain 4: Structures

- Approximately 10% of test

### Domain 5: Appurtenance Installation and Maintenance

- Approximately 17% of test

### Domain 6: Equipment/Special Operations

- Approximately 13% of test

## DOMAIN 1: JOB LOGISTICS

1. Understand the activities and hazards of the worksite, including:
  - a. Vehicle Traffic
  - b. Energized Power Lines
  - c. Structure Height
  - d. Trip Hazards
  - e. Job Hazard Assessment (JHA)
2. Know and understand the requirements for daily meetings and forms, including:
  - a. Site Authorization
  - b. Site Security Requirements
  - c. Job Hazard Assessment (JHA)
  - d. Emergency Action Plan
3. Awareness of ongoing site conditions, including:
  - a. Housekeeping
  - b. Fire protection
  - c. Unsafe Conditions
4. Know how to orient, read and interpret assembly drawings.
5. Awareness of basic RF radiation.
6. Know how to inspect, care for, and use the appropriate PPE.
7. Awareness of traffic control requirements and equipment for work on or near a roadway.

## DOMAIN 2: CLIMBING

1. Understand the requirements and use of fall protection in telecommunications.
2. Understand the basic knowledge and skills required to perform rescue at height, including:
  - a. Assisted Rescue
  - b. Self-Rescue
3. Understand the standards regarding climbing facilities, such as anchorages and attachment points.
4. Know the requirements for the safe use and inspection of stairs and portable ladders.
5. Ability to identify tools and hazards associated with controlled descent.

## DOMAIN 3: HOISTING EQUIPMENT AND RIGGING

1. Know the requirements for the inspection and use of a base mounted hoist.
2. Know the requirements for the inspection and use of a capstan hoist.
3. Know the requirements for the inspection and use of a man-rated hoist and requirements and regulations for personnel lifting.
4. Know the elements of personnel platform operation, including:
  - a. Roles and Responsibilities of Crew Members
  - b. Equipment Operation
  - c. Loading
  - d. Rigging
  - e. Inspection and Testing Intervals
  - f. Pre-Lift Safety Planning
5. Know requirements for tower-specific rigging operations, including:
  - a. Rigging Techniques
  - b. Equipment
  - c. Fall Zones
  - d. Hand Signals
6. Know how the rigging affects the structure, including:
  - a. Placement/Location
  - b. Loading
  - c. Shock Loading
7. Know how to identify and apply ropes and knots in the appropriate application required for the job.
8. Know the requirements for the inspection and use of gin poles.

## **DOMAIN 4: STRUCTURES**

1. Know how to safely approach communication structures and perform a job hazard assessment prior to climbing.
2. Know how to identify the types and characteristics of structures including:
  - a. Guyed
  - b. Self-Supporting
  - c. Monopole
3. Awareness of the tools, means and methods for routine maintenance tasks.
4. Awareness of the tools, means and methods for tower modification tasks.
5. Awareness of applicable standards and specifications for the visual inspection of structures.
6. Awareness of potential discrepancies in foundations.
7. Awareness of construction drawings, including the ability to identify materials by:
  - a. Types
  - b. Size
  - c. Quantity
  - d. Sequence of assembly
8. Awareness of grounding systems.

## **DOMAIN 5: APPURTENANCE INSTALLATION AND MAINTENANCE**

1. Know how to prepare, assemble and install antenna/microwave equipment.
2. Know how to install antenna mounts.
3. Know how to prepare, assemble, and install working facility.
4. Know how to identify the components of tower lighting systems.
5. Know how to install connectors on cable/fiber.
6. Know how to utilize hoisting grips.
7. Awareness of methods used to isolate and locate faults in various components and connectors.
8. Know how to properly adjust the tilt and azimuth of dishes and antennas.
9. Know how to identify and determine the tools, material and methods necessary to remove and install weatherproofing on various types of cables and connectors.
10. Know how to identify and use the tools and materials necessary for the installation of ground systems.

11. Understand the hazards and electrical safety requirements of AC and DC electricity.
12. Awareness of the type, purpose and maintenance requirements of Tower Mounted Equipment (TME).
13. Know how to identify coax color coding and its purpose.

## **DOMAIN 6: EQUIPMENT/SPECIAL OPERATIONS**

1. Know how to safely work in and around aerial work platforms.
2. Know how to identify harmful sources of energy and how to apply lockout/tagout on the job.
3. Know how to identify, safely handle and transport batteries.
4. Know how to safely work in and around forklifts and other equipment.
5. Know and understand the types of equipment used and know the safety procedures related to tower demolition.
6. Know and understand the equipment, procedures and techniques associated with welding, cutting and other hot work.
7. Know how to identify the requirements of the exothermic welding process.
8. Know and understand the type of equipment used and know the safety procedures related to appurtenance decommissioning.
9. Knowledge of jumper support and spacing.
10. Know how to properly use RF monitors.



# Computer-Based Test Outline

## TELECOMMUNICATIONS TOWER TECHNICIAN 2

The Telecommunications Tower Technician 2 (TTT-2) CBT tests the following knowledge areas relating to the telecommunications technician:

### Domain 1: Job Logistics

- Approximately 11% of test

### Domain 2: Climbing

- Approximately 9% of test

### Domain 3: Hoisting Equipment and Rigging

- Approximately 32% of test

### Domain 4: Structures

- Approximately 17% of test

### Domain 5: Appurtenance Installation and Maintenance

- Approximately 15% of test

### Domain 6: Equipment/Special Operations

- Approximately 17% of test

## DOMAIN 1: JOB LOGISTICS

1. Understand and direct the activities of the worksite and the mitigation of hazards (Job Hazard Assessment), including:
  - a. Vehicle Traffic
  - b. Energized Power Lines
  - c. Hazard Communications
  - d. Housekeeping
  - e. Fire protection
2. Recognize and perform the requirements for daily meetings and forms, including:
  - a. Site Security Requirements
  - b. Site Client/Owner Notification
  - c. Emergency Action Plan
3. Know how to orient, read and interpret construction/assembly drawings.
4. Understand the RF radiation exposure limits and how to monitor and interpret RF readings.
5. Know how to identify, evaluate, select, and supervise the appropriate use of PPE.
6. Know how to identify and implement traffic control requirements.

## DOMAIN 2: CLIMBING

1. Understand and assist in the use of fall protection in telecommunications, including:
  - a. Anchorage selection
  - b. Attachment points

- c. Equipment selection (lanyards, harnesses, connection devices)
  - d. Climbing techniques
2. Knowledge and mastery of advanced skills and techniques used for rescue, including:
    - a. Assisted Rescue
    - b. Self-Rescue
    - c. Planning
    - d. Response
  3. Understand the standards regarding climbing facilities, including:
    - a. Ladders
    - b. Stairs
    - c. Step bolts
    - d. Inspection
  4. Ability to develop a controlled descent plan.

## DOMAIN 3: HOISTING EQUIPMENT AND RIGGING

1. Know the requirements for the inspection and use of base mounted hoists.
2. Know the requirements for the inspection and use of a capstan hoist.
3. Know the requirements for the inspection and use of a man-rated hoist and requirements and regulations for personnel lifting.
4. Know the elements of personnel platform operation, including:
  - a. Roles and Responsibilities of Crew Members
  - b. Equipment Operation
  - c. Loading
  - d. Rigging
  - e. Inspection and Testing Intervals
  - f. Pre-Lift Safety Planning
5. Know requirements for tower-specific rigging operations, including:
  - a. Rigging Techniques
  - b. Equipment Selection
  - c. Equipment Inspection
  - d. Fall Zones
  - e. Hand Signals
  - f. Rigging Plans
6. Know how the rigging affects the structure, including:
  - a. Placement/Location
  - b. Loading
  - c. Shock Loading



7. Know how to identify and apply ropes and knots.
  - a. Knot types
  - b. Rope materials
8. Know the minimum requirements for the use of gin poles.

#### **DOMAIN 4: STRUCTURES**

1. Know how to perform a pre-climb inspection.
2. Know how to identify the types and characteristics of structures including:
  - a. Guyed
  - b. Self-Supporting
  - c. Monopole
3. Knowledge of the tools, means and methods of routine maintenance tasks.
4. Awareness of tower modification tasks.
5. Know how to perform a visual inspection of a structure and the applicable standards for inspection.
6. Understand construction drawings, including the ability to identify materials by types, size, quantity and sequence of assembly.
7. Knowledge of grounding systems.

#### **DOMAIN 5: APPURTENANCE INSTALLATION AND MAINTENANCE**

1. Know how to prepare, assemble, install and decommission appurtenances, including:
  - a. Tool selection
  - b. Antennas (Dish, Omni-Directional, Directional, etc.)
  - c. Mounts
  - d. Grounding
  - e. Electrical (AC/DC)
  - f. Transmission lines (Identification, support)
  - g. Other tower-mounted equipment
2. Know how to install, repair and maintain tower lighting systems.
3. Know the correct application of hoisting grips.
4. Know how to isolate and locate faults in various components and connectors.
5. Know how to properly adjust antenna tilt and azimuth.

#### **DOMAIN 6: EQUIPMENT/SPECIAL OPERATIONS**

1. Know how to safely work in and around suspended personnel platforms.
2. Application of lockout / tagout.
3. Battery safety and precautions.
4. Know how to safely work in and around forklifts and other mobile equipment.
5. Understand the procedures and protocols for working around helicopters, including:
  - a. Approaching the Craft
  - b. Positioning and Duties of the Signalman
  - c. Carrying Tools
  - d. Proper Rigging of Loads
  - e. Hearing Protection
6. Awareness of operations and safety procedures required for tower demolition.
7. Know and understand the equipment, procedures and techniques associated with welding, cutting and other hot work.
8. Know how to identify the requirements of the exothermic welding process.
9. Know how to identify and understand safety precautions regarding confined spaces.



# Reference List

## TTT-1 AND TTT-2

TTT-1 and TTT-2 examination questions were written by NWSA's subject matter experts. The following list was among reference materials cited as the basis for the exam questions.

Candidates are strongly advised to become familiar with industry standards, practices and relevant manufacturers' instructions in preparing for the NWSA certification examinations.

### TTT-1 REFERENCE MATERIALS

#### Primary References:

1. **ANSI/ASSE A10.48-2016 Criteria for Safety Practices with the Construction, Demolition, Modification and Maintenance of Communication Structures**  
*Order by Internet:* <http://www.asse.org/ansi/asse-a10-48-2016-criteria-for-safety-practices-with-the-construction-demolition-modification-and-maintenance-of-communication-structures/>
2. **Occupational Safety and Health Administration, U.S. Department of Labor, Code of Federal Regulations, Parts 1910 and 1926**  
*Download from Internet:* <http://www.osha.gov/>
3. **ANSI/ASSE Z359 Fall Protection Code**  
*Order by Internet:* <http://www.asse.org/ansi/asse-z359-fall-protection-code-version-3-0-/>
4. **FCC OET Bulletin 65 - Evaluating Compliance With FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields**  
*Order by Internet:* <https://www.fcc.gov/general/oet-bulletins-line>
5. **IEEE C95.7-2014 - IEEE Recommended Practice for Radio Frequency Safety Programs, 3 kHz to 300 GHz**  
*Order by Internet:* <https://standards.ieee.org/findstds/standard/C95.7-2014.html>
6. **ANSI/TIA 222 Revision G: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS**  
*Order by Internet:* <http://www.tiaonline.org/standards/buy-tia-standards>

#### Secondary References:

1. **Motorola Publication R56 – Standards and Guidelines for Communication Sites**  
*Download from Internet:* [www.nws-a.org](http://www.nws-a.org)
2. **NATE - RF Awareness Booklet**  
*Order by Internet:* <https://natehome.com/safety-education/1893-2/>
3. **NFPA 70E: Standard for Electrical Safety in the Workplace**  
*Order by Internet:* <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=70e&tab=editions>
4. **ANSI/ASSE A10.32-2012 Personal Fall Protection Used in Construction and Demolition Operations**  
*Order by Internet:* <http://www.asse.org/ansi/asse-a10-32-2012-personal-fall-protection-used-in-construction-and-demolition-operations/ansi/asse-a10-32-2012-personal-fall-protection-used-in-construction-and-demolition-operations/>

## TTT-2 REFERENCE MATERIALS

### Primary References:

1. **ANSI/ASSE A10.48-2016 Criteria for Safety Practices with the Construction, Demolition, Modification and Maintenance of Communication Structures**  
*Order by Internet:* <http://www.asse.org/ansi/asse-a10-48-2016-criteria-for-safety-practices-with-the-construction-demolition-modification-and-maintenance-of-communication-structures/>
2. **Occupational Safety and Health Administration, U.S. Department of Labor, Code of Federal Regulations, Parts 1910 and 1926**  
*Download from Internet:* <http://www.osha.gov/>
3. **Occupational Safety and Health Administration, U.S. Department of Labor, Compliance Directive CPL 02-01-056 (2014)**  
*Order by Internet:* [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=DIRECTIVES&p\\_id=5994](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=5994)
4. **Motorola Publication R56 – Standards and Guidelines for Communication Sites**  
*Download from Internet:* [www.nws-a.org](http://www.nws-a.org)
5. **ANSI/ASSE Z359 Fall Protection Code**  
*Order by Internet:* <http://www.asse.org/ansi/asse-z359-fall-protection-code-version-3-0-/>
6. **ANSI/ASME, B30.26 (2015) – Rigging Hardware**  
*Order by Internet:* <https://www.asme.org/products/codes-standards/b3026-2015-rigging-hardware>
7. **ANSI/TIA 222 Revision G: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS**  
*Order by Internet:* <http://www.tiaonline.org/standards/buy-tia-standards>

### Secondary References:

1. **American Welding Society - D1.1/D1.1M:2015 STRUCTURAL WELDING CODE—STEEL**  
*Order by Internet:* <http://pubs.aws.org/p/1650/d11d1m2015-2nd-printing-structural-welding-code-steel>
2. **Federal Aviation Administration - AC 70/7460-1L - Obstruction Marking and Lighting**  
*Order by Internet:* [https://www.faa.gov/regulations\\_policies/advisory\\_circulars/index.cfm/go/document.current/documentNumber/70\\_7460-1](https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.current/documentNumber/70_7460-1)
3. **FCC OET Bulletin 65 - Evaluating Compliance With FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields**  
*Order by Internet:* <https://www.fcc.gov/general/oet-bulletins-line>
4. **U.S. Department of Transportation – Manual on Uniform Traffic Control Devices (2009) with Revisions 1 and 2, May 2012**  
*Order by Internet:* [http://mutcd.fhwa.dot.gov/kno\\_2009r1r2.htm](http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm)
5. **NATE - Hoist Operators Educational Requirements Manual**  
*Order by Internet:* <https://natehome.com/safety-education/1893-2/>
6. **NATE - RF Awareness Booklet**  
*Order by Internet:* <https://natehome.com/safety-education/1893-2/>
7. **NFPA 10: Standard for Portable Fire Extinguishers**  
*Order by Internet:* <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=10&tab=editions>
8. **ANSI/TIA-322, Loading Criteria, Analysis, and Design Related to the Installation, Alteration and Maintenance of Communication Structures (replaces ANSI/TIA 1019-A)**  
*Order by Internet:* <http://www.tiaonline.org/standards/buy-tia-standards>



# Sample Questions

## TTT -1 AND TTT-2 COMPUTER-BASED TESTS

The following are sample test questions typical of the style and content of the questions used in NWSA examinations:

### TTT-1 SAMPLE ITEMS

1. When erecting a new tower that has not yet been equipped with its safety climb system, what is a common temporary method used to ensure 100% fall protection over the height of the tower?
  - a. Vertical lifeline
  - b. Safety net
  - c. Horizontal lifeline
  - d. Guard rail system
2. What are the biological effects of RF Radiation?
  - a. Sterility
  - b. Radiation Sickness
  - c. Thermal effects
  - d. Cancer
3. What is the anchorage point strength requirement for a personal fall arrest system?
  - a. 3,500 lb. (15.5kN)
  - b. 4,000 lb. (19.5kN)
  - c. 4,500 lb. (8kN)
  - d. 5,000 lb. (22.3kN)

### TTT-2 SAMPLE ITEMS

4. Who is qualified to complete a pre-job gin pole inspection?
  - a. Competent Rigger
  - b. Authorized Climber
  - c. Project Manager
  - d. Hoist Operator
5. What is the MINIMUM required spacing between two 10 ft. ground rods?
  - a. 10 ft.
  - b. 15 ft.
  - c. 20 ft.
  - d. 25 ft.

C	5
A	4
D	3
C	2
A	1
<b>Answer</b>	<b>Question #</b>



# Practical Examination Process

## TELECOMMUNICATIONS TECHNICIAN

### ELIGIBILITY

Candidates must pass a Practical Exam to be certified. Candidates may take their CBT tests and Practical Exams in either order. Candidates have 12 months after they pass their first exam (CBT or Practical) in which to pass the corresponding CBT test or Practical Exam.

### SKILLS TESTED

#### Telecommunications Tower Technician 1 Practical Exam

The Practical Examination comprises six (6) main tasks. Candidates' skills are tested in demonstrating ability to follow assembly instructions, proper tool use, donning of harness, climbing techniques, signaling, performing work at height (installation of an antenna on a tower and routing a jumper connection), weather proofing, and tying knots. Candidates are allowed two (2) hours to complete the exam.

#### Telecommunications Tower Technician 2 Practical Exam

The Practical Examination comprises five (5) main tasks. Candidates' skills are tested in demonstrating a complete PPE inspection, setup of a capstan hoist, hoisting operations using different rigging configurations (trolley/tag system and heel block system), and selecting and installing all components associated with a guy wire. Candidates are allowed one-and-one-half (1.5) hours to complete the exam.

### SCHEDULING A TEST

Candidates for the Practical Examinations should contact a Practical Examination Test Site Coordinator to determine the date of the next scheduled Practical Exam. Alternatively, candidates may contact NWSA for this information. A list of available practical examination locations is available on the NWSA website at [www.nws-a.org](http://www.nws-a.org).

Candidates must bring their completed Candidate Application forms with them to their scheduled examination, along with any required supporting materials.

### MATERIALS TO BRING TO THE PRACTICAL TEST SITE

Each candidate must bring the following items to the practical test site on the day of their exam:

- Completed practical exam candidate application form, including method of payment
- Valid photo identification. Acceptable forms of photo identification are a current:
  - Passport
  - U.S. government- or state-issued driver's license
  - Military identification card
  - U.S government-issued alien registration card
- Personal Protective Equipment (PPE): see PPE section for details.
- Proper apparel for the specific site conditions

For exams, candidates will be required to remove all tools and materials from person and also remove all electronic devices prior to exam beginning.

### PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

All candidates shall comply with Practical Examination Site requirements concerning personal protective equipment as outlined by NWSA. Candidates are required to wear the following items:

- Full body tower harness (ANSI Z359 compliant)
- Twin leg fall arrest lanyard (ANSI Z359 compliant)
- Positioning device
- Hard hat (ANSI Z89)
- Eye protection/safety glasses (ANSI Z87)
- Work boots
- Gloves (TTT-1 optional; TTT-2 required)

### PRACTICAL SCORING

Candidate performance on the Practical Examinations is recorded by Practical Examiners accredited by NWSA.

The testing procedure has been developed to provide the highest degree of standardization and reliability. The Examiner's task is primarily to record the performance of the candidate.

Candidates may lose points through operational errors in both Practical Exams. The scoring of candidates' performances is done off site by NWSA's Testing Services provider, NCCCO.

## **PRACTICAL SCORE REPORTING**

All candidates receive a score report of their performance. Examination results are mailed to candidates approximately 12 business days after the receipt of the Practical Examination score sheets by NWSA.

Please note that while Practical Examiners are encouraged to expedite the submission of score sheets after each test administration, they may batch score sheets from several test administrations over a number of days. This means that candidates may receive their score reports from NWSA more than three weeks after their test administration.

Both the Practical Examination and the scoring system have been validated and verified by NWSA's pilot testing program. A score of **68** out of 100 represents the minimum passing score for the TTT-1 Practical Exam. A score of **74** out of 100 represents the minimum passing score for the TTT-2 Practical Exam.

*Candidate scores cannot be given over the telephone.*

## **PRACTICAL EXAMINATION FEES**

Candidates must pay the appropriate practical examination fees when filling out the Practical Examination Candidate Application. A credit card (Visa, MasterCard, or American Express), check, or money order can be used. These fees can be paid by the individual candidate or by the Test Site Coordinator.

### Practical Examination/Retest Fees:

- Telecommunications Tower Technician 1      \$100
- Telecommunications Tower Technician 2      \$100

### Other Fees:

An additional \$25 will be charged if a candidate:

- Needs a replacement certification card or score report

An additional \$30 fee will be charged if:

- An application form is incomplete (e.g., incomplete mailing address)
- A credit card cannot be processed for any reason
- Any changes are requested after submitting the application

Please note that practical exam test sites and Practical Examiners are permitted to charge additional fees for the use of their facilities and their time in coordinating and administering practical exams. NWSA has no involvement in setting these fees and none of these fees are collected by NWSA.



# Practical Examination Outline

## TELECOMMUNICATIONS TOWER TECHNICIAN I

The following is an outline of the practical testing procedure, as provided to candidates at the time of testing.

### CANDIDATE INFORMATION AND INSTRUCTIONS

Candidates must report to the Test Site at the scheduled time. The Test Site Coordinator is responsible for setting the testing schedule. During the Practical Exam, candidates are under the direction of the Practical Examiner and must follow the Practical Examiner's directions at all times.

The following sections describe the specific tasks that candidates will be performing when taking the TTT-1 Practical Exam. It is important that candidates understand these instructions. If there is anything that they do not understand, candidates should request clarification from the Practical Examiner.

### TASKS

The TTT-1 Practical Exam tasks are:

- **Task 1: Assemble a 4' antenna mount on ground**
- **Task 2: Prepare to work at height and climb into position to work**
- **Task 3: Mount a 4' antenna to a tower**
- **Task 4: Install jumper connection from antenna to a feed line connection**
- **Task 5: Perform a weather proofing exercise**
- **Task 6: Tie three common knots**

Candidates will be required to complete all phases of the exam in sequence.

### TIME LIMIT

There is a two (2) hour time limit for the TTT-1 Practical Examination. Timing begins immediately before Task 1. If a candidate does not complete the exam in 2 hours, the exam ends and the candidate will receive credit for the tasks (or sub-tasks) completed. At the conclusion of each task, the Practical Examiner will announce the candidate's overall time remaining. Also final 15-, 5-, and 1-minute warnings will be provided.

### SAFETY BRIEFING

Prior to beginning the exam, the Practical Examiner will provide the candidate a safety briefing. It outlines the primary hazards associated with the practical exam and how

to mitigate risks of injury. Additionally, the candidate will be provided with the emergency procedures, rescue plan and the location of the first aid kit and emergency exits. At this point the candidate is allowed to walk around the test site and inspect the tower to ensure he/she is comfortable to climb it. The candidate is permitted to ask questions and get clarification from the Practical Examiner.

### EXAM RULES

Following the safety briefing, the Practical Examiner will provide the candidate with the general exam rules associated with the specific exam they are taking. The intent is to inform the candidate of how the practical exam will flow, when to start and stop specific tasks, and any other information that will allow them to successfully attempt the practical exam. The candidate is permitted to ask questions and get clarification from the Practical Examiner.

#### Simulated Work at Height

For the safety and security of all those involved in testing, and to reduce the burden of administering this exam at normal working heights, this exam will be conducted close to the ground. For the purposes of this exam, the candidate should assume that the starting height (ground level) is at 200 ft. To that end, the candidate's shock absorbing lanyards must be connected before stepping on the tower.

#### Improper Tool Use/Damage to Materials

At all times candidates should properly use tools and avoid damage to all materials. Improper tool use or damage as a result of improper tool use may result in point deductions impacting the candidate's overall score.

#### Starting and Stopping Tasks

To help break up the exam into sections, tasks and sub-tasks have been created that will allow for the Practical Examiner to record candidate performance and then provide instructions for the next task. To ensure an orderly flow of the exam, the candidate must wait for a "start" signal from the Practical Examiner to begin a task. When completing a task, the candidate will most often indicate to the Practical Examiner when he/she is done by verbally stating "done". This will indicate to the Practical Examiner that your performance on that specific task can be recorded. After the candidate has said "done", he/she will not be permitted to make any adjustments.

## Candidate Self-Disqualification

If at any time the candidate decides he/she is not able to proceed with the test, the candidate must communicate this to the Practical Examiner immediately. Candidates will be required to sign the score sheet in the designated place.

Candidates who are disqualified for any reason (including self-disqualification) will be required to reschedule and pay the required fees.

## Unsafe Acts Performed by Candidate

If at any time during the test, a candidate commits an unsafe act, he/she will be disqualified from continuing with the exam and will be required to sign the score sheet in the designated place.

Unsafe acts include but are not limited to the following:

- Unprofessional conduct
- Improper use of personal fall arrest system (PFAS)

Candidates who are disqualified for any reason (including unsafe act) will be required to reschedule and pay the required fees. If a candidate is disqualified due to an unsafe act, he/she will not be permitted to test again on that day.

## Testing Material or Equipment Problems

If the test is interrupted due to testing materials or equipment problems the Practical Examiner and Practical Test Site Coordinator will work together to correct any issues as soon as possible. The following procedures apply for restarting the exam:

- If able to restart on the same day, the candidate resumes the test at the beginning of the task he/she was performing at the time of the interruption.
- If the testing is delayed to a different day, the test must be restarted from the beginning.

## CANDIDATE ID AND SIGNATURE

Following the reading of the exam rules, and prior to beginning the examination, the Practical Examiner will ask the candidate for an approved photo identification.

The Practical Examiner will confirm if the candidate has read the Candidate Information and Instructions and will answer any questions. The Practical Examiner will have the candidate sign the score sheet indicating that the candidate understands the conditions under which the practical exam will be administered.

## TASK 1: ANTENNA MOUNT ASSEMBLY ON GROUND

- The candidate will assemble a 4-foot antenna to a pipe mount following the detailed instructions and drawings provided.
- All the materials and hardware to assemble the antenna and mount will be provided.
- The candidate will be presented with a set of tools on a table they may use for the mount assembly.
- The entire assembly should be safe to hoist before indicating you are done. All hardware needs to be tight prior to completing task.
- The antenna will be installed at a centerline of a simulated 208 ft. elevation as marked on the tower leg. The candidate will be permitted to take measurements of the tower to ensure the mount will fit properly.
- The antenna centerline will be clearly marked and the mechanical down-tilt required will be listed.
- The antenna and mount need to be installed on the same plane.

## TASK 2: PREPARE FOR WORK AT HEIGHT AND ACCESS WORK LOCATION

- All tools and materials will be laid out and the candidate can put selected items into hoist bucket or pouches.
- The antenna will be installed at a centerline of a simulated 208 ft. elevation as marked on the tower leg.
- The antenna centerline will be clearly marked and the mechanical down-tilt required will be listed.
- The candidate will also need to connect the jumper to a feed line.
- The candidate will gather all tools and materials necessary to mount the antenna to the tower and connect the jumper.
- The candidate will then be asked to don his/her PFAS and describe to the Practical Examiner the process to go through to ensure proper harness fit.
- The candidate will not be required to re-inspect his/her PPE as this was done immediately before the exam began.
- During this time, the Practical Examiner will rig the antenna for lifting operations.
- Once the PFAS is properly donned and checked by Practical Examiner, the candidate will ascend the tower.



- The Practical Examiner will connect a Self-retracting device (SRD) to the candidate for safety reasons. For testing purposes, the candidate should act as if the SRD was not present.
- Proper climbing techniques, including 100 percent tie off, must be used at all times.
- For the purposes of this exam, the candidate should assume that the starting height (ground level) is at 200 ft. To that end, the candidate's shock-absorbing lanyards must be connected before stepping on the tower. Improper use of your PFAS will result in an unsafe act and your exam will end.
- Once in position, the candidate will provide verbal communication to the Practical Examiner to safely hoist the load to the simulated 208 ft. centerline mark.
- The Practical Examiner and candidate will agree on what signals will be used.

### **TASK 3: MOUNT ANTENNA TO TOWER**

- With the candidate at height and ready to work and the antenna hoisted to height requested by candidate, the candidate will mount the antenna to the tower leg. The pipe should be plumb. The antenna should be on centerline to the tower, have the proper mechanical down tilt set, and directly off the apex of the tower. Candidate will signal to the Practical Examiner to set azimuth.
- During installation, the candidate may ask the Practical Examiner to move the antenna/mount up or down one time.
- If the candidate does not select a tool and decides he/she needs it later, he/she may retrieve it at that time, by climbing down from the tower.

### **TASK 4: INSTALL JUMPER CONNECTION**

- While still on the tower, the candidate will now install the jumper connection from the antenna to the feed line.
- There will be instructional drawings provided to the candidate showing the requirements for proper jumper connection installation.
- If the candidate did not select a tool/material and decides he/she needs it later, he/she may retrieve it at that time, by climbing down from the tower.
- When candidate has completed this task, they will be permitted to descend tower and then remove PFAS.

### **TASK 5: WEATHER PROOF**

- At the weather proofing station (on the ground), candidate will perform a weather proofing exercise on a simulated feed line to hard line connection.
- There will be detailed instructions provided to the candidate showing the specific weather proofing requirements that must be followed for the weather proofing exercise.
- The candidate will be provided the weather proofing materials and tools.

### **TASK 6: TIE KNOTS**

- The candidate will then be asked to tie three common knots/hitches. Each knot/hitch must be properly tied, dressed, and set.
- The candidate will be provided a small length of rope for tying.
- After the last knot/hitch is tied, the exam has ended and timing will stop.

### **TEST MATERIALS BREAKDOWN**

Once the candidate has completed their exam he/she will assist the Practical Examiner in helping disassemble the antenna from the tower in preparation for the next candidate.

### **POST-TEST PROCEDURES**

Following the exam, the Practical Examiner will complete his review of the score sheet and ensure it is ready for processing by NWSA. Please note the following:

- The Practical Examiner does not know your overall performance, as he/she has simply recorded your performance. He/she is not permitted to show you your score sheet or discuss any element of the exam.
- The score sheets will be submitted to NWSA as soon as possible, and you will receive your results within 12 business days from the receipt of the score sheet by NWSA.
- If the candidate is scheduled to take another practical exam that day, he/she must return to the candidate waiting area.
- If all testing is completed for the day, the candidate must leave the test site and must not communicate with candidates who have yet to test that day.



# Practical Examination Outline

## TELECOMMUNICATIONS TOWER TECHNICIAN 2

The following is an outline of the practical exam procedure for the NWSA Telecommunications Tower Technician 2 (TTT-2) certification.

### CANDIDATE INFORMATION AND INSTRUCTIONS

Candidates must report to the Test Site at the scheduled time. The Test Site Coordinator is responsible for setting the testing schedule. During the Practical Exam, candidates are under the direction of the Practical Examiner and must follow the Practical Examiner's directions at all times.

The following sections describe the specific tasks that candidates will be performing when taking the TTT-2 Practical Exam. It is important that candidates understand these instructions. If there is anything that they do not understand, candidates should request clarification from the Practical Examiner.

### TASKS

The TTT-2 Practical Exam tasks are:

- Task 1: Conduct a PPE Inspection
- Task 2: Set Up a Capstan Hoist
- Task 3: Configure a trolley/tag system for hoisting a load
- Task 4: Configure a heel block system with straight tag for hoisting a load
- Task 5: Assemble and install a guy wire

Candidates will be required to complete all phases of the exam in sequence.

### TIME LIMIT

There is a one-and-a-half (1.5) hour time limit for the TTT-2 Practical Examination. Timing begins immediately before Task 1. If a candidate does not complete the exam in 1.5 hours, the exam ends and the candidate will receive credit for the tasks (or sub-tasks) completed. At the conclusion of each task, the Practical Examiner will announce the candidate's overall time remaining. Also final 15-, 5-, and 1-minute warnings will be provided.

### SAFETY BRIEFING

Prior to beginning the exam, the Practical Examiner will provide the candidate a safety briefing. It outlines the primary hazards associated with the practical exam and how

to mitigate risks of injury. Additionally, the candidate will be provided with the emergency procedures, rescue plan and the location of the first aid kit and emergency exits. At this point the candidate is allowed to walk around the test site and inspect the tower to ensure he/she is comfortable to climb it. The candidate is permitted to ask questions and get clarification from the Practical Examiner.

### EXAM RULES

Following the safety briefing, the Practical Examiner will provide the candidate with the general exam rules associated with the specific exam they are taking. The intent is to inform the candidate of how the practical exam will flow, when to start and stop specific tasks, and any other information that will allow them to successfully attempt the practical exam. The candidate is permitted to ask questions and get clarification from the Practical Examiner.

### Simulated Work at Height

For the safety and security of all those involved in testing, and to reduce the burden of administering this exam at normal working heights, this exam will be conducted close to the ground. For the purposes of this exam, the candidate should assume that the starting height (ground level) is at 200 ft. To that end, the candidate's shock absorbing lanyards must be connected before stepping on the tower.

### Improper Tool Use / Damage to Materials

At all times candidates should properly use tools and avoid damage to all materials. Improper tool use or damage as a result of improper tool use may result in point deductions impacting the candidate's overall score.

### Starting and Stopping Tasks

To help break up the exam into sections, tasks and sub-tasks have been created that will allow for the Practical Examiner to record candidate performance and then provide instructions for the next task. To ensure an orderly flow of the exam, the candidate must wait for a "start" signal from the Practical Examiner to begin a task. When completing a task, the candidate will most often indicate to the Practical Examiner when he/she is done by verbally stating "done", unless otherwise specified. This will indicate to the Practical Examiner that your performance on that specific task can be recorded. After the candidate has said "done", he/she will not be permitted to make any adjustments.

## Candidate Self-Disqualification

If at any time the candidate decides he/she is not able to proceed with the test, the candidate must communicate this to the Practical Examiner immediately. Candidates will be required to sign the score sheet in the designated place.

Candidates who are disqualified for any reason (including self-disqualification) will be required to reschedule and pay the required fees.

## Unsafe Acts Performed by Candidate

If at any time during the test, a candidate commits an unsafe act, he/she will be disqualified from continuing with the exam and will be required to sign the score sheet in the designated place.

Unsafe acts include but are not limited to the following:

- Unprofessional conduct
- Loss of load control
- Improper use of personal fall arrest system (PFAS)

Candidates who are disqualified for any reason (including unsafe act) will be required to reschedule and pay the required fees. If a candidate is disqualified due to an unsafe act, he/she will not be permitted to test again on that day.

## Testing Material or Equipment Problems

If the test is interrupted due to testing materials or equipment problems the Practical Examiner and Practical Test Site Coordinator will work together to correct any issues as soon as possible. The following procedures apply for restarting the exam:

- If able to restart on the same day, the candidate resumes the test at the beginning of the task he/she was performing at the time of the interruption.
- If the testing is delayed to a different day, the test must be restarted from the beginning.

## CANDIDATE ID AND SIGNATURE

Following the reading of the exam rules, and prior to beginning the examination, the Practical Examiner will ask the candidate for an approved photo identification.

The Practical Examiner will confirm if the candidate has read the Candidate Information and Instructions and will answer any questions. The Practical Examiner will have the candidate sign the score sheet indicating that the candidate understands the conditions under which the practical exam will be administered.

## TASK 1: PPE INSPECTION

- The candidate will conduct a complete PPE inspection.

- The candidate will describe in detail to the Practical Examiner the specific elements that he/she is inspecting.

## TASK 2: SETUP CAPSTAN HOIST

- The candidate will inspect and setup the capstan hoist.
- For testing purposes, the candidate will act as if the capstan hoist is mounted to the receiver of a truck and describe the process of securing the truck. A truck may or may not actually be present at the test site.
- The capstan hoist will be mounted, but will need to be aligned for hoisting off the apex of the tower leg.

## TASK 3: HOIST LOAD USING A TROLLEY/TAG SYSTEM CONFIGURATION

- Using the capstan hoist, the candidate will lift a load using a trolley/tag system configuration.
- For the purposes of the exam, the load is simulated as 300 lb.
- Using the rigging materials provided configure a trolley/tag system for hoisting the load.
- When tying knots, you are limited to using either a bowline or a figure 8 on a bight.
- Using the capstan hoist, the candidate will perform a lift to 6 ft.
- The Practical Examiner will work the tag line at the instruction of the candidate.
- The candidate will need to establish verbal communication signals and clarify them with the Practical Examiner.
- The Practical Examiner will signal to the candidate once the load has reached the 6 ft. mark.
- The candidate will then lower the load to the ground.

## TASK 4: HOIST LOAD USING A HEEL BLOCK CONFIGURATION

- Using the capstan hoist, the candidate will lift a load after reconfiguring the hoisting system with a heel block with a straight tag configuration.
- For the purposes of the exam, the load is simulated as 300 lb.
- Using the rigging materials provided configure a heel block system with a straight tag for hoisting the load.
- When tying knots, you are limited to using either a bowline or a figure 8 on a bight.
- Using the capstan hoist, the candidate will perform a lift to 6 ft.
- The Practical Examiner will work the tag line at the instruction of the candidate.

- The candidate will need to establish verbal communication signals and clarify them with the Practical Examiner.
- The Practical Examiner will signal to the candidate once the load has reached the 6 ft. mark.
- The candidate will then lower the load to the ground.

## **TASK 5: GUY WIRE ASSEMBLY AND INSTALLATION**

- The candidate will assemble a guy wire following the detailed instructions and drawings provided.
- All the materials and hardware to assemble the guy wire will be provided.
- The candidate will be presented with a set of tools on a table he/she may use for the guy wire assembly.
- For the purposes of this exam, the guy wire will not be tensioned.
- Once assembled, the candidate will connect the guy wire to the guy pull off mounted on the tower and to the anchor head secured to the ground.
- The candidate must then don his/her PFAS.
- The candidate will not be required to re-inspect his/her PFAS as this was done as part of the PPE Inspection.
- Once the PFAS is properly donned and checked by Practical Examiner, the candidate will ascend the tower.
- The Practical Examiner will connect a Self-retracting device (SRD) to the candidate for safety reasons. For testing purposes, the candidate should act as if the SRD was not present.
- Proper climbing techniques, including 100 percent tie off, must be used at all times.
- For the purposes of this exam, the candidate should assume that the starting height (ground level) is at 200 ft. To that end, the candidate's shock absorbing lanyards must be connected before stepping on the tower. Improper use of your PFAS will result in an unsafe act and your exam will end.
- The candidate will need to establish verbal communication signals and clarify them with the Practical Examiner.
- For the purposes of the exam, the candidate will not fully complete the dead end grip assembly. The last two wraps will be left undone. The cut point on the guy wire will be marked with tape per the drawing.
- After the installation of the guy wire is complete, the exam has ended and timing will stop.

## **TEST MATERIALS BREAKDOWN**

Once the candidate has completed their exam he/she will assist the Practical Examiner in helping disassemble the materials from the tower in preparation for the next candidate.

## **POST-TEST PROCEDURES**

Following the exam, the Practical Examiner will complete his review of the score sheet and ensure it is ready for processing by NWSA. Please note the following:

- The Practical Examiner does not know your overall performance, as he/she has simply recorded your performance. He/she is not permitted to show you your score sheet or discuss any element of the exam.
- The score sheets will be submitted to NWSA as soon as possible, and you will receive your results within 12 business days from the receipt of the score sheet by NWSA.
- If the candidate is scheduled to take another practical exam that day, he/she must return to the candidate waiting area.
- If all testing is completed for the day, the candidate must leave the test site and must not communicate with candidates who have yet to test that day.



# Candidate Application

## PRACTICAL EXAMINATIONS—TELECOMMUNICATIONS TECHNICIAN

*Please type or print neatly.*

FULL LEGAL NAME <small>(as shown on valid photo ID)</small>		First	Middle	Last	Suffix (Jr., Sr., III)
NWSA CERTIFICATION NUMBER (if previously certified)		DATE OF BIRTH (MM/DD/YYYY)		CANDIDATE ID: <small>(if previously tested)</small>	
MAILING ADDRESS					
CITY				STATE	ZIP
PHONE				CELL	EMAIL
EMPLOYER/COMPANY				PHONE	
EMPLOYER/COMPANY MAILING ADDRESS					
CITY				STATE	ZIP
				COUNTRY	

### TEST SITE LOCATION AT WHICH YOU INTEND TO TAKE THE PRACTICAL EXAMINATION:

TEST SITE COORDINATOR NAME		NWSA PE SITE #:			
PHONE		CELL		EMAIL	
TEST SITE PHYSICAL ADDRESS					
CITY				STATE	ZIP
				COUNTRY	

### CANDIDATE ATTESTATION STATEMENT:

*I declare that the foregoing statements and those in any required accompanying documentation are true. I understand and agree that my failure to provide accurate and complete information or abide by NWSA's policies and procedures, including the Code of Ethics, shall constitute grounds for the rejection of my application, or denial or revocation of my certification. I understand that NWSA reserves the right to verify any information in this application or in connection with my certification. I consent to NWSA's release of any information regarding this application and my examination administration to third parties, consistent with NWSA's Information Release policy. I have received a copy of the NWSA Candidate Handbook, have read it, and agree to be bound by it. I also agree to be bound by all NWSA policies and procedures, as they may be amended from time to time, including without limitation those posted at nws-a.org. I further attest that I am physically and mentally capable of safely conducting the tasks on the day of the Practical Examination. I understand and agree that any personal injury and/or property damage resulting from or caused in any way by my participation in the NWSA Practical Examination is not and shall not be the responsibility of NWSA. I understand that if at any point during my certification period I fail to meet any of the requirements outlined above, or if matters arise that can affect my capability to continue to fulfill certification requirements, I must report it to NWSA immediately and agree to cooperate with any subsequent investigation regarding such matters.*

CANDIDATE SIGNATURE	DATE
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## CANDIDATE APPLICATION (CONT'D)

### PRACTICAL EXAMINATIONS—TELECOMMUNICATIONS TECHNICIAN

#### NWSA CERTIFICATION CARD

Candidates who meet all the requirements for certification in any one designation are issued a certification card at no charge. Replacement and updated cards are available for an additional fee; see panel below.

Please email a digital color photo (head and shoulders, without hat or sunglasses) to your Test Site Coordinator and label it with your full name and birth date.

A 1 $\frac{3}{8}$ " $\times$  1 $\frac{3}{4}$ " passport color photo may be substituted for a digital photo; if submitting a passport photo, please give it to your Test Site Coordinator.

#### PRACTICAL EXAMINATION FEES

Checks and money orders must be made payable to **NWSA**. Credit cards (Visa, Master Card, or American Express) may be used by completing the credit card information below.

Check the box(es) next to the Practical Exam type(s) for which you are registering.

##### Practical Examination Fees:

- Telecommunications Tower Technician 1: \$100
- Telecommunications Tower Technician 2: \$100
- Updated/replacement card: \$25

#### METHOD OF PAYMENT FOR CANDIDATE EXAMINATION FEES

*Do not send cash.*

<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/> Personal check enclosed	<input type="checkbox"/> Employer check enclosed	<input type="checkbox"/> Money order enclosed	<i>Please do not staple your check or money order.</i>
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**If paying by credit card, complete the following information:**

CREDIT CARD NUMBER	<input type="text"/>	EXPIRATION DATE	<input type="text"/>
NAME (Print as it appears on card)	<input type="text"/>	SIGNATURE (on card)	<input type="text"/>
		SECURITY CODE*	<input type="text"/>

\* Three- or four-digit code located on the card.

Checks and money orders should be payable to: **NWSA**

**Do not send this application to NWSA or NWSA Testing Services. Give this application, along with payment and all necessary documentation, to your Test Site Coordinator on test day.**



# NWSA Information Release Policy

## A. DEFINITIONS

1. "NWSA" means and refers to the National Wireless Safety Alliance acting through its staff and authorized agents and representatives.
2. "Releasable Information" means and refers to the following information: name, certification status, examination dates, certification dates, certification number(s), and designations.
3. "Third Party" means and refers to an employer, prospective employer, regulatory agency, or any other person or entity that makes an inquiry to NWSA.

## B. POLICIES

1. It shall be the policy of NWSA to provide Releasable Information pertaining to individuals who have successfully passed one or more NWSA examinations. It shall also be the policy of NWSA to provide Releasable Information pertaining to such individuals on its website using such protocols as may be established.
2. Releasable Information may be released to a Third Party who makes a written request, including by electronic correspondence. Generally, Releasable Information will be released within one business day from actual receipt of a written request.
3. If a Third Party requests information concerning an individual who has not taken or successfully passed an NWSA examination, NWSA may release a statement confirming that, as of a given date, the individual does not appear on NWSA's list of successful candidates in one or more categories of certification.
4. If an applicant or certificant is under formal sanction, suspension, or revocation by NWSA, then NWSA may release a statement to that effect to any persons and by any reasonable means, including by means of a list published on the NWSA website. In addition, if an individual applicant or certificant is under formal investigation, sanction, suspension, or revocation by NWSA, then NWSA may release a statement concerning the status of the applicant or certificant to any Third Party and to any jurisdiction that requires or accepts NWSA certification as a basis for satisfying requirements to work in the jurisdiction. Any such statement to a Third Party or jurisdiction may identify the applicant or certificant, the certifications affected, the actions taken, and the effective dates of any such actions.
5. If a Third Party seeks information other than the foregoing information, generally, absent a subpoena or similar legal process, such information will not be released. However, in the course of business, as circumstances reasonably warrant, NWSA reserves the discretion to release information other than the foregoing information.
6. Certain situations may require or warrant the immediate verbal confirmation of an individual's certification status or other Releasable Information in response to a written or verbal request. Under such circumstances, NWSA may provide such immediate verbal confirmation, at its discretion. When such a verbal confirmation is provided, it shall be NWSA's policy to follow up with a written confirmation.
7. It shall be the policy of NWSA to discuss score-related and test-specific matters only with a candidate or a candidate's authorized legal representative.
8. NWSA will release Releasable Information about an individual upon receipt of a written request (including electronic correspondence) from that individual. NWSA may release information other than Releasable Information about an individual, at its discretion, upon receipt of a signed, notarized, written request from that individual. In addition, NWSA will release information other than Releasable Information about an individual when required by a legal authority of competent jurisdiction under a duly-issued subpoena, subject to any objection, or as otherwise required by law.

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## **IMPORTANT CONTACT INFORMATION**



### **NATIONAL WIRELESS SAFETY ALLIANCE**

2750 Prosperity Avenue, Suite 501  
Fairfax, VA 22031-4312

Phone: 703-459-9211

Fax: 703-459-9124

Email: [nwsa@nws-a.org](mailto:nwsa@nws-a.org)

Website: [www.nws-a.org](http://www.nws-a.org)



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