

**National Guard  
Regulation 750-410**

**Maintenance of Supplies and Equipment**

**Army National Guard  
Aviation  
Nondestructive  
Testing Program**

**Department of Defense  
National Guard Bureau  
Arlington, VA 22202-1382  
28 February 2019**

**UNCLASSIFIED**

# ***SUMMARY of CHANGE***

NGR 750-410  
Army National Guard Aviation Nondestructive Testing Program  
28 February 2019

This is a revised Army National Guard (ARNG) regulation with the following major revisions:

- Task Specific Qualification (TSQ) Evaluators can administer vision screenings. (Para 3-1. b. (1).
- Establishes minimum NDT refresher training requirements and frequency. (Para 3-3. c.)
- Adds Bond Testing TSQ.
- Eliminates the “Grandfather Clause”.
- Removes Radiography (X-ray) Testing method.
- Removes outdated and obsolete task specific inspections.

Maintenance of Supplies and Equipment

Army National Guard Aviation Nondestructive Testing Program

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By Order of the Secretary of the Army:

**TIMOTHY J. KADAVY**  
Lieutenant General, USA  
Director, Army National Guard

Official:

  
**Charles P. Baldwin**  
Deputy Chief of Staff

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**History.** This regulation supersedes NGR 750-410, dated 26 February 2016.

**Summary.** This regulation establishes the minimum requirements for the qualification and certification (Commander appointment) of Army National Guard (ARNG) and government aviation maintenance related personnel involved in the application of Nondestructive Testing (NDT) methods, Nondestructive Inspection (NDI), or Nondestructive Evaluation (NDE) of ARNG aircraft and aircraft components IAW AR 750-1, TM 1-1500-335- 23, TM 1-1500-366-23, and applicable aircraft Technical Manuals (TM).

**Applicability.** This regulation applies to all ARNG and government aviation maintenance related personnel managing or performing NDT, NDI, or NDE methods, techniques and procedures on ARNG aircraft and aircraft components. This regulation is not applicable to mobilized ARNG personnel.

**Proponent and exception authority.** The proponent of this regulation is the Chief, Aviation Systems Readiness Branch (ARNG-AVL), Aviation and Safety Division, 111 S. George Mason Drive, Arlington, Virginia, 22204-1373. The proponent has the authority to approve exceptions to this regulation that are consistent with controlling law and regulations.

**Management control process.** This regulation is subject to the requirements of Army Regulation (AR) 11-2 and identifies key management controls that must be evaluated.

**Supplementation.** Supplementation of this regulation is prohibited without the approval from the Chief, Aviation Systems Readiness Branch (ARNG-AVL), Aviation and Safety Division, 111 S. George Mason Drive, Arlington, Virginia, 22204-1373.

**Suggested improvements.** Users are invited to submit comments and suggested changes on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the Chief, Aviation Systems Readiness Branch (ARNG-AVL), Aviation and Safety Division, , 111 S. George Mason Drive, Arlington, Virginia, 22204-1373.

**Distribution:** Special (AG, SAAO, POTO, AATS, AASF, AAFA, TASMG, Aviation Units).

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# Chapter 1

## General Provisions

### Section I Introduction

#### 1-1. Purpose

a. This regulation provides the policies and procedures for the establishment, management and operational maintenance of the ARNG Aviation Nondestructive Testing (NDT) Program.

b. This regulation establishes the minimum requirements for the qualification and certification (Commander appointment) of ARNG and government aviation maintenance related personnel involved in the application of NDT, Nondestructive Inspection (NDI), or Nondestructive Evaluation (NDE) on ARNG aircraft and aircraft components IAW AR 750-1, TM 1-1500-335-23, TM 1-1500-366-23, and applicable aircraft TMs. These requirements include documented formal training, experience, evaluations, and examinations. For the purposes of this regulation NDT, NDI, and NDE will be collectively referred to as NDT.

#### 1-2. References

References used in this regulation are found listed in appendix A.

#### 1-3. Explanation of Abbreviations and Terms

Abbreviations and special terms used in this regulation are explained in the Glossary.

#### 1-4. Policy and Objectives

- a. Improve aviation safety through enhanced NDT training, inspection procedures and equipment use.
- b. Increase aircraft readiness rates and operational availability.
- c. Increase the probability of detection of faults in aircraft and aircraft components.
- d. Decrease supply demands due to replacement of components erroneously identified as having faults.
- e. Qualify ARNG personnel utilizing NDT equipment, techniques, procedures and inspections.
- f. Qualify, certify (appoint), and maintain an appropriate number of NDT trained and task specific qualified (TSQ) personnel at each ARNG aircraft maintenance location, i.e., Theater Aviation Sustainment Maintenance Group (TASMG), Army Aviation Support Facility (AASF), and Army Aviation Training Site (AATS).
- g. Appoint and maintain an appropriate number of TSQ Evaluators to support TSQ evaluation requirements (approximately 16 TSQ Evaluators – 4 per TASMG).
- h. Establish each TASMG as the NDT and TSQ coordinator for their respective supported States.

### Section II Responsibilities

#### 1-5. Director, Army National Guard (DARNG)

The Director, Army National Guard establishes policy and provides resources necessary to implement and maintain the program.

#### 1-6. Chief, Aviation and Safety Division (ARNG-AV)

The Chief, Aviation and Safety Division has staff responsibility for monitoring the program and to identify the resources necessary to effect NDT policy and standards throughout the ARNG aviation community.

#### 1-7. Chief, Aviation Systems Readiness Branch (ARNG-AVL)

The Chief, Aviation Systems Readiness Branch shall:

- a. Program, acquire, manage and distribute resources in support of the program.
- b. Develop and publish program guidance.
- c. Exercise operational control over the program.
- d. Provide the personnel and funding resources necessary to manage and maintain the program.
- e. Review the program annually.
- f. Establish specific personnel qualification and certification (appointment) goals based on the objectives in paragraph 1-4.
- g. Appoint a Program Manager (PM).

## **1-8. Program Manager, ARNG Aviation NDT Program (ARNG-AVL)**

The Program Manager shall manage the ARNG Aviation NDT Program IAW this regulation.

## **Chapter 2**

### **Program Overview**

#### **2-1. Applicability**

a. This regulation applies to all categories of non-mobilized ARNG aviation maintenance related personnel, and government employees, using NDT methods to process, or evaluate for acceptance, ARNG aircraft systems, subsystems, or components, or materials, products, subsystems, or components of aircraft systems or subsystems.

b. Aviation maintenance related personnel are individuals who are required to possess aircraft maintenance skills, knowledge, and abilities in order to perform their duties. Personnel must be qualified in an aviation maintenance related area in one of the following categories:

- (1) Military Occupational Specialty (MOS) in Career Management Field (CMF) 15 – Aviation.
- (2) Aviation Branch 15.
- (3) Equivalent aviation maintenance related government classification.

(4) The NDT PM may add any additional levels of qualification and certification (appointment), that are appropriate; however, in no manner shall any ARNG aviation organization eliminate or reduce the minimum requirements of this regulation in its qualification and certification (appointment) procedures. Any reference within this regulation regarding ARNG approval for certifications (appointments), waivers, NDT sources, etc. shall be in writing from the NDT PM.

#### **2-2. Common NDT Methods**

a. This regulation contains detailed requirements for the applicable training, experience, and examinations for the following common NDT methods:

- (1) Liquid Penetrant Testing (PT)
- (2) Magnetic Particle Testing (MT)
- (3) Eddy Current Testing (ET)
- (4) Ultrasonic Testing (UT)

b. The requirements for personnel training, experience, and examinations for other NDT methods not listed above shall be as directed by the NDT PM.

#### **2-3. Levels of NDT Qualification and Certification (Commander Appointment)**

a. The levels of qualification established by this regulation are:

- (1) Trainee
- (2) Task Specific Qualification (TSQ)
- (3) Level I
- (4) Level II
- (5) Level III
- (6) Instructor
- (7) NDT Auditor
- (8) TSQ Evaluator

b. The levels of Certification (Commander Appointment) established by this regulation are:

- (1) TSQ
- (2) Level I
- (3) Level II
- (4) Level III

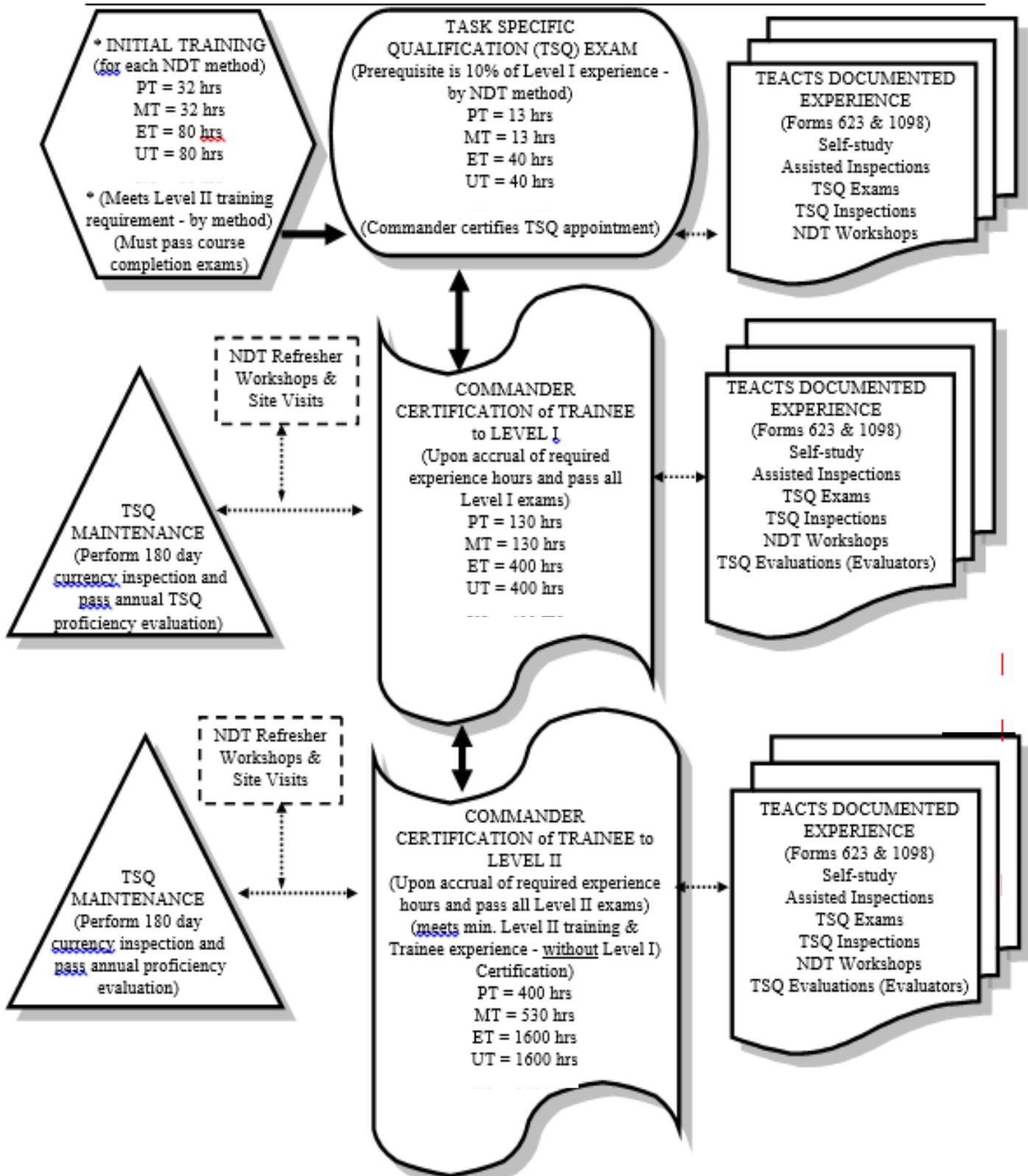


Figure 2-1. ARNG Aviation NDT Program Overview

## Chapter 3 Qualification Requirements

### 3-1. General Qualification Requirements

a. Qualification: To qualify as NDT Trainee, TSQ, Level I, Level II, or Level III, in a particular NDT method, an individual shall meet established MOS qualifications, technical qualifications, and vision prerequisites, as well as complete sufficient organized training to become proficient with the principles and practices of the applicable NDT method and techniques. The training shall be conducted in accordance with a detailed course outline approved by a responsible Level III (an NDT PM approved source). The training shall cover basic principles, products, equipment operating procedures, techniques, applicable specifications, codes and instructions used by the ARNG aviation community.

b. Qualification Screenings and Examinations: The screenings and examinations needed to verify the visual acuity and technical qualifications of NDT personnel being tested shall consist of vision screenings, a general knowledge examination, a specific knowledge examination and a practical (hands-on) examination. The general and specific knowledge examination questions shall only be made available to examinees during administration of the qualification examinations. All examinations given, to include the practical examinations, shall be administered and approved by the PM, or an NDT PM approved source.

(1) Vision Screenings: The vision screenings shall ensure that the individual's near vision and color perception meet the requirements specified below. Near vision screenings shall be administered annually and color perception screenings shall be administered prior to certification (appointment) or recertification (reappointment). The vision screenings can be administered by appointed TSQ Evaluators.

(a) Near Vision Requirements: Pass the near vision test chart (Jaeger #1) at not less than 12 inches, or 20/25 (Snellen) at 16" ±1", as required by TM 1-1500-335-23. Individuals must meet requirements with at least one eye, either natural or corrected. Individuals failing near vision screening shall be tested by qualified medical personnel and present documentation stating the near vision requirement has been met.

(b) Color Perception Requirements: Distinguish and differentiate between the colors used in the method for which certification (appointment) is sought. Limitations in color perception shall be evaluated and documented by the responsible Level III, through the individual's Commander to NDT PM, or an NDT PM approved source, prior to certification (appointment).

(2) General Knowledge Exam: The general knowledge examination for all levels shall be a closed book examination consisting of questions that cover the cross-section of the applicable NDT method at the appropriate level. A minimum of 40 questions shall be used for the general examination at each level. For the Level III, the general knowledge examination questions will address the general knowledge of other methods as well as the method for which certification (appointment) is sought. Individuals in possession of a current American Society for Nondestructive Testing (ASNT) NDT Level III certificate, or equivalent certificate, may be satisfactory evidence that the general knowledge examination requirement is satisfied.

(3) Specific Knowledge Exam: The specific knowledge examination for all levels shall be a closed book examination and shall cover the requirements and use of the specifications, codes, equipment, operating procedures, and test techniques that the individual may use in the performance of their duties. A minimum of 30 questions shall be used for the specific knowledge examination at each level. The examination will be administered by a Level III, or an NDT PM approved source.

(4) Practical (hands-on) Exam: The practical examination shall consist of a demonstration of proficiency in performing tasks that are typical of those to be accomplished in the performance of the individual's duties. If the individual is required to process product, as well as interpret the results, proficiency shall be demonstrated using test samples which may include actual hardware. If the individual does not perform the actual NDT process (such as generating x-ray images), and is only required to interpret the test results, proficiency may be demonstrated using processed material (images) for evaluation. Written checklists covering the topics detailed in the sub-paragraphs below shall be developed by the responsible Level III or NDT PM approved source to ensure adequate coverage and to assist in the administration and grading of the examination. The examination will be administered by a Level III or NDT PM approved source.

(a) TSQ Practical Exam (TSQ Evaluation): The individual shall demonstrate proficiency by processing and examining at least one test sample for each technique for which TSQ certification (appointment) is sought. The test samples shall be representative of the specific product, i.e., aircraft, aircraft component or subcomponent, to be encountered by the individual in the performance of their duties. The individual shall interpret, evaluate and document the results of the examination of the test samples. The TSQ Checklist(s) used shall include proficiency in the use and standardization of equipment and materials, adherence to procedural details, and the accuracy and completeness of interpretation and evaluations of indications. (See appendix C)

(b) Level I Practical Exam: The individual shall demonstrate proficiency by using the appropriate method to examine at

least one test sample for each technique (example for ET: material sorting and crack detection) for which certification (appointment) is sought. At least two test samples shall be evaluated for each method. The test samples shall be representative of the products to be encountered by the individual in the performance of their duties. The checklist [IAW paragraph 3-1.b. (4)] shall address proficiency in the use of the equipment and materials, adherence to procedural details and the documentation of the results:

(c) Level II Practical Exam: The individual shall demonstrate proficiency by using the appropriate method to examine at least one test sample for each technique (example for ET: material sort and crack detection) for which certification (appointment) is sought. At least two test samples shall be evaluated for each method. The test samples shall be representative of the products to be encountered by the individual in the performance of their duties. The individual shall interpret, evaluate and document the results of the examination of the test samples. The checklist [IAW paragraph 3-1.b. (4)] shall include proficiency in the use of equipment and materials, adherence to procedural details, and the accuracy and the completeness of interpretation and evaluation of indications.

(d) Level III Practical Exam: The individual shall demonstrate proficiency by preparing an NDT procedure appropriate to their mission requirements. In the event that the individual has already developed satisfactory procedures, then it is not necessary to develop another one for the practical examination. Procedures developed for a previous organization may be used to satisfy this requirement if their adequacy can be verified and documented. When the individual's duties will include inspection or evaluation of products, then proficiency in performance of such tasks shall be demonstrated to the requirements of paragraph 3-1.b. (4) (c). The checklist [IAW paragraph 3-1.b. (4)] shall address the practical and technical adequacy of the interpretation and evaluation of indications. The results of the practical examination shall be documented. (See paragraph 3-4.c)

c. Administration: A certified Level III in the method for which the examinations are given, or an approved NDT PM source knowledgeable and familiar with the specifications, standards, codes, techniques and products associated with the ARNG, shall be responsible for the administration of all qualification examinations. The administration and grading of those examinations using multiple choice or true/false type questions can be delegated by the Level III. If an outside agency is used to provide this function, then the PM shall ensure that the individual who performs the administration of the examinations is fully qualified. In no case shall an examination be self-administered or administered by a subordinate.

d. Grading: The individual seeking certification (appointment) must achieve a minimum grade of 70% on the general knowledge and specific knowledge qualification examinations. The individual must detect all discontinuities or conditions specified by the Level III during the practical (hands-on) examination and achieve a minimum score of 70%. The individual must have an average score (of all three exams) of no less than 80% in order to be eligible for certification (appointment). All examination scores shall be of equal weight in determining the average score. Scores for third party exams where grading is a pass/fail, the value of pass used for the average score shall be 80%.

e. Re-Examination: Individuals failing any examination, (general, specific or practical) shall receive additional training from a Level III, or NDT PM approved source, before attempting re-examination of the failed exam. The additional training shall be documented and shall address those areas found deficient in the individual's skills or knowledge. The re-examination shall not utilize the same tests or specimens that were used in the initial examination.

f. Approval of Instructors: Instructors shall be approved by the Level III, in coordination with the NDT PM or an NDT PM approved source, and shall meet at least one of the following criteria:

(1) Be certified to Level III in the method for which they will be designated an instructor.

(2) Possess the equivalent of a B.S. in engineering, physical science or technology and have adequate knowledge in the method for which they will be designated as an instructor.

(3) Possess an associate's degree in physical science or technology and have a minimum of 2 years' experience, or equivalent, as a Level II in the method for which they will be designated as an instructor.

(4) Possess a minimum of 4 years' experience as a Level II, or equivalent, in the method for which they will be designated as an instructor.

g. Approval of NDT Auditors: Personnel performing audits, surveys or assessments shall be approved in writing by the NDT PM.

### **3-2. Specific Qualification Requirements**

a. Trainee: An NDT Trainee is an individual who is participating in this qualification program for an NDT method and is not yet certified (appointed). An NDT Trainee shall:

(1) Obtain work experience under the supervision of a Task Specific Qualified individual or certified Level I (on that specific task), Level II or Level III in the same method. However, as the situation dictates, a trained individual may accrue hours of experience by performing the tasks as outlined in (2) below, when qualified individuals are unavailable.

(2) Obtain and document experience while performing process control checks, practice inspections using test samples or condemned aircraft components, and continuing education approved by an NDT PM approved source.

(3) Not independently conduct tests or perform any other NDT function. Trainees shall not make 'accept/reject' decisions.

b. Task Specific Qualification (TSQ): Trainees and Level I personnel may be certified (appointed) by their Commander to perform task specific NDT inspections, after passing a TSQ evaluation administered by an appointed TSQ Evaluator. Commanders, through their appointed certifier, are responsible to ensure that documentation and records are maintained for all personnel that are Task Specific Qualified. The minimum hours of training required prior to a TSQ evaluation will not be less than the training hours required for Level II in the appropriate method (See paragraph 3-3, table 3-1). The minimum hours of experience required prior to a TSQ evaluation shall not be less than 10% of the experience hours required for Level I in the appropriate method (See paragraph 3-4, table 3-2). Personnel undergoing initial TSQ or TSQ requalification shall reference appendix C for additional requirements. The TSQ certified (Commander appointed) individual shall:

(1) Perform specific NDT inspections on specific materials, parts, part features, or assemblies.

(2) Make 'accept/reject' decisions only on task(s) for which TSQ appointed.

(3) Personnel who have successfully completed formal training per table 3-1, and have obtained the necessary experience hours per table 3-2, will be required to pass the visual screenings, general knowledge, specific knowledge and Practical (hands-on) examinations prior to being recommended for Commander Certification (Appointment).

c. Level I: The Level I individual shall:

(1) Have the skills and knowledge to process parts and perform equipment standardization.

(2) Be knowledgeable of any necessary preparation of parts before or after inspection.

(3) Be able to follow procedures in the techniques for which certified.

(4) Receive guidance or supervision from a Level II or III individual when necessary.

(5) Make 'accept/reject' decisions only on task(s) for which TSQ appointed.

d. Level II: The Level II individual shall:

(1) Have the skills and knowledge to set up and standardize equipment, conduct tests, interpret, and evaluate for acceptance or rejection, and document results in accordance with procedures approved by the NDT PM approved Level III source.

(2) Be thoroughly familiar with the scope and limitations of the method in which they are certified and as directed, be capable of providing the necessary guidance to Trainees and Level I personnel.

(3) Be familiar with the codes, standards, and other governing documents that control the method as utilized by the ARNG.

(4) Be capable of developing procedures for approval by a Level III.

(5) When required by aviation safety or maintenance messages, Level II personnel will be Task Specific Qualified.

(Example: AH-64 Strap Pack Outboard Bolt inspection)

e. Level III: The Level III individual shall:

(1) Have the skills and knowledge to interpret codes, standards, and other governing documents that control the method as utilized by the ARNG aviation community.

(2) Be capable of selecting the method and technique for a specific inspection.

(3) Prepare and verify the adequacy of NDT procedures.

(4) Approve NDT procedures and other NDT related work instructions for technical adequacy in the method to which they are certified.

(5) Have general knowledge of all other NDT methods utilized by the ARNG aviation community.

(6) Be capable of conducting or directing the training and examination of personnel in the method certified.

(7) Conduct NDT for the acceptance of parts only when a demonstration of proficiency in this capability was included in the practical examination during certification testing.

f. Instructors: Instructors shall have the skills and knowledge to plan, organize, and present classroom, laboratory, or on-the-job training programs of instruction, in accordance with approved course outlines.

g. Specialist Personnel [Subject Matter Expert (SME)]: With the exception of specialist personnel, training shall be presented by an instructor or a Level III qualified to NGR 750-410 requirements. Specialist personnel not qualified to NGR 750-410 requirements may be used to provide instruction on highly specialized topics (i.e., Radiological Safety Course). Selection of specialist personnel must be approved by the NDT PM, or NDT PM approved source.

h. NDT Auditor: An NDT Auditor shall have the education, training, skills and knowledge to understand the processes and procedures utilized in the application of NDT processes. The individual shall be familiar with the applicable codes, standards, and other governing documents that control the method.

i. TSQ Evaluator: A TSQ Evaluator is an individual appointed by the NDT PM to perform TSQ evaluations. TSQ Evaluators shall meet the following minimum qualifications:

- (1) Successfully complete Level II formal training.
- (2) Be Level I certified (appointed) in at least two methods.
- (3) Successfully complete TSQ Evaluator training and testing, as approved by the NDT PM.
- (4) Receive written appointment from the NDT PM as a TSQ Evaluator.

### 3-3. Training Requirements

a. Individuals seeking a Commander’s Certification (Appointment) as a Level I or Level II shall complete sufficient organized training to become proficient with the principles and practices of the applicable test method and techniques. The training shall be conducted in accordance with a detailed course outline approved by the responsible Level III, or NDT PM approved source. The training shall cover basic principles, products, equipment operating procedures, techniques, applicable specifications, codes and instructions used by the ARNG aviation community.

b. Minimum Required Training Hours. The minimum training hours for Levels I and II are given in table 3-1 for the specified NDT methods. The minimum training hours for those methods not covered by table 3-1 shall be as determined by the responsible Level III, or NDT PM approved source. NGR 750-410 or SNT-TC-1A may be used as a guideline for those methods not included in paragraph 2-2.a. There are no additional training requirements to transition from Level II to Level III, nor can an individual have sufficient training to allow certification (appointment) to Level III without prior certification (appointment) as a Level II or performance equivalent to a Level II.

c. Minimum Required Refresher Training and Frequency: Due to the complexity of the subject matter and the necessity to maintain technically competent personnel, individuals obtaining TSQ certification are required to obtain a minimum of sixteen (16) hours of NDT refresher training every thirty-six (36) months. Refresher training shall be documented via memorandum and on the individuals’ NDT Form 1098. Acceptable forms of refresher training are:

- (1) Documentation of self-study (up to a maximum of 8 hours within a 36 month period).
- (2) Attend refresher training locally hosted by a TASMG, AASF, AATS, or on Redstone Arsenal. All refresher training outlines shall be pre-approved by NDT PM.
- (3) Re-attend Level II formal training classes from an NDT PM approved source.
- (4) Individuals who have completed the U.S. Army Training and Doctrine Command (TRADOC) MOS 15D (Powertrain Repairer) Advanced Individual Training (AIT) are required to obtain Level II formal training hours in method to meet the minimum formal training hours per this regulation, prior to requesting a TSQ evaluation.

d. Previous Training: Previous training shall be documented and reviewed for acceptability by the NDT PM on a case-by-case basis. For personnel credited with prior NDT training and not Task Specific Qualified or certified within 12 months of their training, additional NDT training must be completed. Additional NDT training may be conducted by an NDT PM approved source. The additional NDT training shall cover the following subjects with the depth of coverage of each subject determined by the Level III or NDT PM approved source responsible for the program:

- (1) Set-up and standardization.
- (2) Safety.
- (3) Operation of applicable test or inspection equipment.
- (4) Specific test or inspection procedures.
- (5) Interpretation and evaluation of test or inspection results.
- (6) Applicable codes, standards and specification.

**Table 3-1 Minimum Formal Training Hours - Level I, Level II, And Level III**

<b>Hours</b>			
<b>Method</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
Penetrant	16	32	N/A
Magnetic particle	16	32	N/A
Eddy Current	40	80	N/A
Ultrasonic	40	80	N/A

### 3-4. Experience Requirements

a. Experience: Individuals seeking a Commanders’ Certification (Appointment) as TSQ, Level I, II or III shall have sufficient practical experience to ensure they are capable of performing the duties of the level for which certification (appointment) is sought. The minimum requirements for TSQ, Level I, II and III are in table 3-2.

b. Previous Experience: An individual’s experience with a previous employer may be accepted by NDT PM only if that experience is documented.

- c. Equivalent Experience: For personnel certified under previous revisions of this document or other qualification/certification programs, the equivalency of their previous experience to the requirements of table 3-2 will be determined and documented by the Level III or NDT PM approved source.
- d. Experience Accrual During NDT Refresher Training. Personnel attending NDT refresher training shall be allowed to document hours of experience for each method covered. Experience hour accrual shall not exceed 25% of the individual method block of refresher. (Example: 4 hour block of eddy current refresher = 1 hour experience accrued). This same rule applies to re-attending formal training classes conducted on Redstone Arsenal.
- e. Experience Accrual Performing Process Control Checks. Experience hours from process control checks SHALL be limited to 10% of the experience hours required for the certification level sought. (For example, TSQ certification in MT requires 13 hours experience. Experience accrued from process control checks SHALL NOT exceed 1.3 hours).
- f. Equivalency of the work experience shall be determined and documented by the Level III, or NDT PM approved source responsible for the program. Experience in multiple methods may be accumulated simultaneously.

**Table 3-2 Minimum Experience Requirements**

<b>Experience</b>						
<b>METHOD</b>	<b>TSQ<sup>1</sup></b>	<b>Level I<sup>2</sup></b>	<b>Level II<sup>3</sup></b>	<b>Level III<sup>4</sup></b>	<b>Level III<sup>5</sup></b>	<b>Level III<sup>6</sup></b>
Penetrant	13hrs	130hrs	400hrs	4yrs	2yrs	1yr
Mag particle	13hrs	130hrs	530hrs	4yrs	2yrs	1yr
Eddy Current	40hrs	400hrs	1600hrs	4yrs	2yrs	1yr
Ultrasonic	40hrs	400hrs	1600hrs	4yrs	2yrs	1yr

<sup>1</sup> TSQ, minimum experience hours in method for TSQ.

<sup>2</sup> Trainee, total NDT experience for Level I. Experience in method must be at least half this time.

<sup>3</sup> Trainee, total NDT experience for direct certification (appointment) to Level II. Experience in method must be at least half this time. Applies when remaining time is in other NDT methods when approved by the responsible Level III or NDT PM approved source.

<sup>4</sup> Level II or equivalent experience required for Level III with no technical college degree. Experience in multiple methods may be accumulated simultaneously.

<sup>5</sup> Level II or equivalent experience required for Level III with technical associate degree. Experience in multiple methods may be accumulated simultaneously.

<sup>6</sup> Level II or equivalent work experience required for Level III with technical bachelor's degree. Experience in multiple methods may be accumulated simultaneously.

### **3-5. Commander Certification (Appointment)**

a. General: Nondestructive inspections require application by trained, experienced and proficient personnel. The reliability of these inspections is dependent upon the NDT methods employed, equipment utilized, and the proper interpretation of the inspection results. The proficiency of NDT trained personnel can only be maintained by allocating sufficient time for theoretical study and practicing hands-on application. Commanders and supervisors shall provide adequate time and resources for NDT trained personnel to attend required refresher training, practice with NDT equipment to accrue experience, and maintain technical proficiency.

b. Certification (Appointment) Procedures: Individuals with certified documentation showing that they possess the appropriate hours of formal training and experience, passed the required examinations and evaluations IAW this regulation, and are recommended by a TSQ Evaluator or a designated Level III (as appropriate), are eligible for certification (appointment) by their Commander.

(1) Commander certification (appointment) is not required for personnel who are designated as instructors or NDT Auditors.

(2) Personnel not receiving TSQ Certification (appointment) within 36 months of attending formal training in a given method shall be required to re-attend the formal training course prior to being allowed to be task qualified.

c. Responsibilities:

(1) Individuals shall maintain documentation (personal log) of all NDT formal and refresher training hours, experience hours, completed evaluations, recommendations for NDT certifications (appointments), and copies of certification (appointment) orders. Appropriate documentation shall be verified by a certifier.

(2) Instructors and TSQ Evaluators shall maintain appropriate documentation on the Training Experience and Certification Tracking System (TEACTS) database for individuals to which they have provided NDT formal training hours,

completed evaluations, and recommendations for NDT certifications (appointments).

(3) Certifiers shall verify their NDT personnel's TEACTS data quarterly with the NDT Center of Excellence (NDT CoE) TEACTS database administrator. Certifiers shall submit monthly updates when there are any changes.

(4) Commanders may certify (appoint) individuals who have the appropriate certified documentation and recommendations IAW this regulation.

d. Certifiers: Commanders, or their appointed certifier, shall ensure all verified documents (see e. & f. below) are submitted and maintained on the TEACTS database for their NDT personnel for as long as their certification (appointment) is in effect. Certifiers do not need to be NDT trained, but shall be knowledgeable of the program requirements. Certifiers shall not be under the supervision of NDT personnel whose records they verify.

e. Records: The records shall be maintained for a minimum of 3 years after certification (appointment) is terminated (See appendix B for guidance on forms and records). As a minimum the records shall include:

- (1) Name of the individual.
- (2) Level, method, and techniques for which individual is certified.
- (3) Method and techniques for which individual is Task Specific appointed.
- (4) Date and expiration of current certification (appointment). (i.e. orders)
- (5) Training history to include dates of training and course hours.
- (6) Experience hours by method.
- (7) Results of the current visual acuity screening or testing.

f. Forms: The following forms shall be used to record personnel information:

- (1) NDT Form 623: NDT Experience Log. (See appendix B)
- (2) NDT Form 1098: Special Task Certification and Recurring Training. (See appendix B)
- (3) NDT Forms 1098-1 to -8: NDT Task Specific Qualification Checklists. (See appendix E)
- (4) Memorandum for Recommendation of NDT Task(s) Specific Qualification (TSQ). (See appendix B)
- (5) Memorandum for Duty Appointment Order. (See appendix B)

g. Loss of Certification (Appointment): Certification (appointment) may expire, be suspended, or be revoked. Certification (appointment) shall expire when NDT responsibilities are terminated, or when the certification (appointment) interval has lapsed with no recertification (reappointment) issued. (See h & i below for loss of TSQ and TSQ Evaluator Certification)

(1) Certification (Appointment) shall be suspended when the visual acuity screening or testing is overdue, the individual does not perform in the method certified for at least 12 consecutive months, or the individual's performance is found to be deficient in any manner, or directed by the Commander, or the NDT PM. This includes failure of any recertification examinations or proficiency evaluations.

(2) Certification (Appointment) shall be revoked when the individual does not perform in the method certified (appointed) for at least 24 consecutive months, the individual's conduct is found to be unethical or incompetent, or directed by the Commander.

(3) Individuals not performing in the method certified for at least 36 consecutive months shall be required to re-attend formal training for the method.

(4) Reinstatement of Certification (Appointment): Certifications (Appointments) that have been suspended may be reinstated when the cause for the suspension has been corrected. Certifications (Appointments) that have expired or been revoked may not be reinstated except by requalification (proficiency) evaluation.

Loss of TSQ Certification. If inspections are not performed within the 180 day currency period the TSQ is suspended and a requalification (proficiency) evaluation will be required.

h. Loss of TSQ Evaluator Certification: If at least two TSQ evaluations are not performed annually, the TSQ Evaluator is suspended and a requalification (proficiency) evaluation by the NDT PM approved source will be required.

i. Certification/Qualification Maintenance (Recertification/Requalification)

(1) TSQ: TSQ personnel shall recertify annually, not to exceed the end of the month of their original appointment.

(2) TSQ recertification is not applicable while an individual is mobilized, but recertification must be accomplished NLT 90 days from post-mobilization.

(3) TS(2)Q Evaluator: TSQ Evaluators shall recertify every three years, not to exceed the end of the month of their original appointment. TSQ Evaluator recertification is not applicable while an individual is mobilized, but recertification must be accomplished NLT 90 days from post-mobilization.

(4) Level I and Level II: Level I and Level II personnel shall recertify at intervals not to exceed three years. The general knowledge, specific knowledge and practical (hands on) examinations, equivalent to those required for initial qualification, shall be required. Additionally, the certifier shall be responsible for ensuring technical currency (TEACTS database) is maintained for their Level I and Level II personnel. Documentation of proficiency maintenance shall be the responsibility of

the Commander, or their designated certifier.

(5) Level III: Level III personnel shall recertify at intervals not to exceed three years. Recertification, including the practical examination, may be accomplished by documented experience or by re-examination. If equipment operation or accepting production hardware is required on a regular basis as a primary part of their duties, a practical examination equivalent to initial certification (appointment) shall be administered. Revoked Level III certifications (appointments) shall be reinstated only by examination equivalent to initial qualification.

(6) Certification (Appointment)/Qualification Extensions:

(a) TSQ: An extension of the certification (appointment) may be granted with the approval of the responsible Level III, through the Commander to NDT PM, or NDT PM approved source. TSQ extensions shall not exceed 30 days from the end of the month of their current certification (appointment).

(b) TSQ Evaluator: An extension of the certification (appointment) may be granted with the approval of the responsible Level III, through the Commander to NDT PM, or NDT PM approved source. Extensions shall not exceed one (1) year from the end of the month of their current certification (appointment).

(c) Level I, Level II, and Level III: An extension for the general, specific, and practical portions of the certification may be granted with the approval of the responsible Level III, through the Commander to NDT PM, or NDT PM approved source. Extensions shall not exceed one (1) year from the end of the month of their current certification (appointment).

(d) Outside Agency: NDT PM may utilize an outside agency to develop a qualification program, train and examine NDT personnel and perform any other Level III function. An outside agency can only recommend personnel for certification (appointment). NDT PM shall approve the suitability of any outside source selected to perform any function to meet the requirements of this regulation. The documentation provided by the outside source shall be of sufficient detail to verify/validate that the outside agency is capable of performing the required Level III functions.

## **Appendix A References**

### **Section I Required Publications**

This section contains no entries

### **Section II Related Publications**

#### **AR 750-1**

Army Materiel Maintenance Policy

#### **DA Pam 738-751**

Functional Users Manual for the Army Maintenance Management System-Aviation (TAMMS-A)

#### **ATP 3-04.7**

Army Aviation Maintenance

#### **TC 3-04.71**

Aviation Maintenance Training Program

#### **NAS 410**

NAS Certification & Qualification of Nondestructive Test Personnel

#### **TM 1-1500-335-23**

Nondestructive Inspection Methods

#### **TM 1-1500-344-23-1 thru 4**

Aircraft Weapons Systems Cleaning and Corrosion Control

#### **TM 1-1520-273-23**

Nondestructive Inspection Procedures for CH/MH-47 Helicopter Series

#### **TM 1-1520-264-23**

Nondestructive Inspection Procedures for AH-64A Helicopter Series

#### **TM 1-1520-265-23**

Nondestructive Inspection Procedures for H-60 Helicopter Series

#### **TM 1-1500-366-23**

Nondestructive Inspection General Procedures and Process Controls

#### **TM 1-1500-345-23**

Painting and Marking of Army Aircraft

#### **American Society for Nondestructive Testing (ASNT)**

Recommended Practice No. SNT-TC-1A - Personnel Qualification and Certification in Nondestructive Testing

### **Section III Prescribed Forms**

This section contains no entries

### **Section IV Referenced Forms**

#### **NDT Form 623**

NDT Experience Log

#### **NDT Form 1098**

Special Task Certification and Recurring Training

#### **NDT Form 1098-1 to -11**

NDT Task Specific Qualification Record (TSQ Checklists)

## **Appendix B**

### **Training Experience and Certification Tracking System (TEACTS)**

#### **B-1. Scope**

To detail the documentation and record keeping required by paragraph 3-5c. and d. of NGR 750-410. The documentation and records required shall be maintained in two separate folders (paper and/or electronic files are acceptable), one by the NDT individual and the other by a certifier appointed by the Commander.

#### **B-2. Responsibility**

The responsibility of maintaining TEACTS documentation is as follows:

- a. NDT Individual: Responsibilities include documenting inspections performed on NDT Form 623.
- b. NDT Supervisor/Certifier –
  - (1) Responsibilities include tracking personnel training, experience, levels of qualification, certification (appointment) and Task Specific Qualifications (TSQ). Records shall be maintained on NDT Form 623 and NDT Form 1098.
  - (2) Certifiers shall verify their NDT personnel's TEACTS data quarterly with the NDT Center of Excellence (NDT CoE) TEACTS database administrator. Certifiers shall submit monthly updates when there are any changes.
  - (3) Initiates and maintains Commander's orders for qualifications, certification (appointment) and TSQ.

#### **B-3. NDT Experience Record, NDT Form 623 (as NDT Individual Log)**

*(Expanded explanation of sample Form 623 - see sample 1 Form 623 below)*

- a. NAME – Last, First, Middle Initial.
- b. ORGANIZATION - (example, AASF #1, Columbus, OH or A Co, 8/101<sup>st</sup>, Ft. Campbell, KY).
- c. IND - NDT Individual tracking form, mark appropriate box.
- d. NDT METHOD - Mark NDT test method being logged, one method per page only. \_
- e. DATE - DD/MMM/YY.
- f. TASK ID - Record TM/TB and paragraph number or SOF/ASAM/MIM to include item inspected nomenclature i.e., T/R pitch beam.
- g. HOURS - Time, logged in half hour increments required to accomplish a task.
- h. T/HRS - Total (accumulated) experience hours acquired in an individual test method.
- i. CERTIFIER – Certifier's signature validating the entry.
- j. REMARKS – As needed.

*Note.* Successive page numbers shall be numbered *per method*, example: Method ET, Page 1 to be followed by Method ET, Page 2 etc.

#### **B-4. NDT Experience Record, NDT Form 623 (NDT Supervisor/Certifier Log)**

*(Expanded explanation of sample Form 623 - see sample 2 Form 623 below)*

- a. NAME – Last, First, Middle Initial.
- b. ORGANIZATION - (example, AASF #1, Columbus, OH or A Co, 8/101<sup>st</sup>, Ft. Campbell, KY).
- c. CERTIFIER - Mark appropriate box.
- d. NDT METHOD - Mark NDT test method being logged, one method per page only.
- e. DATE - DD/MMM/YY.
- f. TASK ID – (optional for certifier) Record TM/TB and paragraph number or the SOF, ASAM, MIM number along with the component inspected nomenclature i.e., T/R pitch beam.
- g. HOURS – Monthly total verified from individuals NDT Form 623.
- h. T/HRS - Total (accumulated) experience hours acquired in an individual test method.
- i. CERTIFIER – Certifies technician data has been updated on TEACTS database.
- j. REMARKS – As needed.

*Note.* Individual NDT records should be verified monthly and updated on the TEACTS database at the end of each calendar month.

### **B-5. NDT Form 1098 – Special Task Certification and Recurring Training**

*(Expanded explanation of sample Form 1098 - see sample 3 Form 1098 below)*

- a. TASK or RECURRING TRAINING – Enter TM, ASAM, SOF, MIM number along with the component inspected nomenclature.
- b. DATE PERFORMED - Enter date certification/training was performed.
- c. PRINT/SIG. of CERTIFYING OFFICIAL – Printed name and signature of Instructor/TSQ Evaluator.
- d. PID of TRAINEE – Acknowledging certification/training has been conducted.
- e. SCORE – Pass/Fail grade.
- f. TYPE – Method of NDT utilized (ET, UT, MT, PT).
- g. FREQUENCY- Enter interval for certification/training.
- h. DUE DATE – Calculate date based on current date plus frequency requirement. Personnel not successfully accomplishing a certification and/or training assessment SHALL receive additional training as prescribed by the Commander, NDT PM, NDT Level III or an NDT PM approved source.
  - i. Last, First, Middle Initial.
  - j. Individuals PID.
  - k. Organization.

*Note.* Personnel re-qualifying on a TSQ shall enter the requalification date as a new entry.

### **B-6. Sample TSQ Recommendation Memo**

See example for required information and format

### **B-7. Sample TSQ Appointment Order**

See example for required information and format

### **B-8. NDI Folders**

All additional forms required by paragraph 3-5. NGR 750-410 shall be included in the folders maintained by the NDT Certifier (example, training certificates, test scores etc.).







**TSQ Recommendation Memo Letter Head (Sample 4)**

OFFICE SYMBOL:

DATE:

MEMORANDUM FOR RECORD

SUBJECT: Completion of NDT Task(s) Specific Qualification (TSQ) REFERENCES: NGR 750-410

1. The following individual has successfully completed Task Specific Qualification (TSQ) in accordance with NGR 750-410 and has met the physical/technical requirements as verified on the TSQ Checklist.

<b>Personnel Information</b>				
State-Facility:	TN-AASF #1			
Rank:	SGT			
Name:	Elvis Presley			
Phone:	(901) 108-1935			
E-mail:	Elvis.a.presley.mil@mail.mil			
<b>TSQ Information</b>				
Task	Pass	Fail	Verified Process Controls	Experience Hours
PT - Portable	X	<input type="checkbox"/>	Yes X No <input type="checkbox"/>	26.6
UT – H-60 Spindle Lug	X	<input type="checkbox"/>	Yes X No <input type="checkbox"/>	55.0
<b>Vision</b>				
Corrective Lenses:	Yes X	No <input type="checkbox"/>		
Near Vision: Snellen 20/25	Pass X	Fail <input type="checkbox"/>	Due Date:	DD MMM YY
Color Perception: Ishihara	Pass X	Fail <input type="checkbox"/>	Due Date:	DD MMM YY

2. Recommend appointment in the Task(s) above in accordance with NGR 750-410, Para 3-2.b.
3. Proficiency and currency requirements will be maintained IAW NGR 750-410, Para 3-5.h.
4. TSQ hours will count toward the individual’s total certification (appointment) time.
5. POC for this TSQ Evaluation is TSQ EVALUATOR, DSN: XXX-XXXX; COMM: XXX-XXXX, E-Mail: first.MI.last.mil@mail.mil.

TSQ EVALUTOR ORGANIZATION TITLE

Facility Commander Unit Certifier  
 Individual  
 NDT CoE (Attn: TEACTS manager)

**TSQ Appointment Order Letter Head (Sample 5)**

**OFFICE SYMBOL**

**Date**

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Duty Appointment order # xxxxx

1. Effective DD/MMM/YY, the following personnel are appointed as (Method & Level, Task Specific Qualification [TSQ]) inspectors:

MSG Jane Doe SSG John Smith  
SPC Orville Oatmeal

2. Authority: NGR 750-410, ARNG Aviation Nondestructive Testing Program.

3. Purpose: To perform (Method and Level, Task(s) Specific Qualification [TSQ]) inspections on aircraft structures, panels and components.

4. Period: (DD/MMM/YY) through (DD/MMM/YY).

5. Special Instructions: Maintain appointment IA/W NGR 750-410.

Commander's signature block

DISTRIBUTION:  
(as required)

## **Appendix C**

### **Task Specific Qualification (TSQ) and Evaluation Process**

#### **C-1. Scope**

To describe the requirements of the Task Specific Qualification (TSQ) and requalification evaluation process in paragraph 3-2.b. of NGR 750-410. This appendix provides checklists for assessing and documenting the proficiency of NDT personnel performing common NDT tasks.

#### **C-2. Responsibility**

TSQ Evaluators, appointed by the NDT PM, will be responsible for administering TSQ evaluations. Personnel administering TSQ evaluations shall receive TSQ Evaluator instruction and pass applicable TSQ Evaluator exams, prior to performing TSQ evaluations. TSQ Evaluators shall be active members of the NG Technician program.

##### a. TSQ Evaluator responsibilities:

- (1) Verifies TSQ Evaluator Checklist requirements are met prior to TSQ evaluation. (Ref: appendix C, TSQ Evaluator Checklist, table C-2)
- (2) Conducts, grades and records TSQ evaluation(s) on applicable NDT Form 1098-1 thru -11.
- (3) Completes and forwards to the Commander the memorandum of recommendation.

##### b. Unit/Facility Certifier responsibilities:

- (1) Tracks personnel training, experience, levels of qualification, certification, and Task Specific Qualifications (TSQ).
- (2) Records data on NDT Form 623 and NDT Form 1098.
- (3) Monitors the currency and proficiency of TSQ individuals IAW NGR 750-410.
- (4) Submits monthly updates to the TEACTS database Administrator.
- (5) Initiates and maintains appointment orders for qualifications, certification and TSQ.
- (6) Provides TSQ Evaluator with checklist documents prior to individual being TSQ evaluated.

#### **C-3. Equipment**

TSQ evaluations shall only be conducted using equipment approved by NDT PM, or NDT PM approved source. Equipment process control checks shall be addressed within each TSQ Checklist. Refer to table C-3 for required equipment.

#### **C-4. Task Specific Qualification Methods/Inspections**

TSQ may be conducted for Trainee and Level I personnel. When required by NDT PM, Level II personnel shall TSQ on specific methods/inspections. Currently the following methods of NDT or specific applications of NDT methodologies (MT, PT, UT, ET) shall have TSQ evaluations performed. Recurring NDT inspections with specialty kits shall also be assessed and TSQ evaluated (i.e. AH-64 Apache Curvic Coupling Kit). Preferably TSQ should be conducted at the unit facility. TSQ shall be maintained IAW the TSQ Currency and Proficiency Maintenance Table, table C-1.

##### a. Penetrant Testing (PT).

(1) Method B / D, (Stationary equipment). TSQ: The examinee shall properly perform all aspects of the penetrant inspection process. Two different test articles shall be evaluated during the examination. One test article may be a process control panel, and the other shall be representative of an aircraft component to be encountered by the examinee during the performance of their duties. The examinee shall determine the acceptability of the test articles.

(2) Method C, (Portable). TSQ: The examinee shall properly perform all aspects of the penetrant inspection process. Two different test articles shall be evaluated during the examination. One test article may be a process control panel, and the other shall be representative of an aircraft component to be encountered by the examinee during the performance of their duties. The examinee shall determine the acceptability of the test articles.

##### b. Magnetic Particle Testing (MT).

(1) Stationary (wet bath). TSQ: The examinee shall properly perform all aspects of the magnetic particle inspection process. Two different test articles shall be evaluated during the examination. One test article may be a process control standard, and the other shall be representative of an aircraft component to be encountered by the examinee during the performance of their duties. The examinee shall determine the acceptability of the test articles.

(2) Portable (yoke/coil). TSQ: The examinee shall properly perform all aspects of the magnetic particle inspection process. Two different test articles shall be evaluated during the examination. Two different test articles shall be evaluated for each TSQ evaluation. The test articles shall be representative of an aircraft component to be encountered by the examinee during the performance of their duties. The examinee shall determine the acceptability of the test articles.

##### c. Eddy Current Testing (ET).

###### (1) Eddy Current (general) TSQ:

(2). Material Sorting, 50-500 kilohertz (kHz). The examinee shall properly perform all aspects of the eddy current calibration and inspection process. The individual shall be able to identify the material type of an aircraft component which would be encountered by the examinee during the performance of their duties.

(a) General inspection, 50-500 kilohertz (kHz). The examinee shall properly perform all aspects of the eddy current calibration and inspection process. Two different test articles shall be evaluated for each TSQ examination. Test samples shall be representative of aircraft components to be encountered by the examinee during the performance of their duties. The examinee shall determine the acceptability of the test article.

(b) General inspection, 2 Megahertz (MHz). The examinee shall properly perform the calibration of the eddy current instrument. The TSQ may require the performance of a test article inspection.

d. Ultrasonic Testing (UT).

(1) AH-64 Strap Pack OTBD Bolt Ultrasonic Inspection (Use of special kit required). TSQ: The examinee shall properly perform all aspects of the ultrasonic calibration and inspection process. The examinee shall determine the acceptability of the test article or be observed performing the inspection of all four on-aircraft strap pack OTBD bolts.

(2) UH-60 Spindle Lug Inspection (Use of special kit required). TSQ: The examinee shall properly perform all aspects of the ultrasonic calibration and inspection process. The examinee shall determine the acceptability of the test article or be observed performing the inspection of four spindles.

**Table C-1  
TSQ Currency and Proficiency Maintenance**

NDT Method	Currency Maintenance (180 days)			Proficiency Maintenance [4]
	[1]	[2]	[3]	
<b>Penetrant (PT)</b>				
Method B / D	1 inspection			Annual review
Method C	1 inspection			Annual review
<b>Magnetic Particle (MT)</b>				
Wet bath (Stationary)	1 inspection			Annual review
Yoke/Coil (Portable)	1 inspection			Annual review
<b>Eddy Current (ET)</b>				
General	1 inspection			Annual review
AH-64 Curvic Coupling	1 inspection			Annual review
AH-64 Lead Lag Link Liner	1 inspection			Annual review
CH-47 Rotating Ring	1 inspection			Annual review
<b>Ultrasonic Testing (UT)</b>				
AH-64 Strap Pack Bolt	1 inspection			Annual review
UH-60 Spindle Lug	1 inspection			Annual review
Bond Testing Pitch-Catch Swept Mode (General)	1 inspection			Annual review

[1] Task verified by certifier, entries made on individuals NDT Form 623.

[2] Inspections performed shall utilize the specific inspection application technique as required by maintenance manuals, SOF, ASAM or for just cause.

[3] If inspections are not performed within the 180 day period the TSQ is suspended and a requalification (proficiency) evaluation will have to be conducted.

[4] NDT 1098 entry required.

### C-5. TSQ Evaluator Checklist

The TSQ Evaluator Checklist requirements will be verified by the TSQ Evaluator prior to arrival at the requesting facility.

**Table C-2  
TSQ Evaluator Checklist**

Pre-TSQ Requirements		
Requirement	Description	Available (Yes/No)
Training Certificate (FAX'd)	Does the individual have initial training certificate for NDT method	
Documented Experience (FAX'd)	Does the individual have 10% of the Level I hours in NDT method	
Current Eye Examination (FAX'd) (Note: TSQ Evaluators can do vision screening on-site)	Near Vision and Color Perception	
NDT Equipment	Available and operational	
Process Control Equipment	Available and operational	
Aircraft or TSQ Evaluator Kit Available	TSQ is optimized when performed on-aircraft – but not required	
Publications/Manuals/ Procedures	Current publications/procedures for inspection and equipment, i.e. Maintenance Manuals, NDT Manual (TM 1-1500-335-23), Aircraft NDT Manuals	
On-Station Requirements		
Requirement	Description	Available (Yes/No)
NDT Equipment	Available, operational and adequate, i.e. PT Method D vs A; Type 1 vs Type 2	
Process Control Equipment	Available and operational	
Publications/Manuals /Procedures	Current procedures for inspection and equipment, i.e. Maintenance Manuals, NDT Manual (TM 1-1500-335-23), Aircraft NDT Manuals	
Forms	Proper forms being used for documenting Process Control and Component Inspection	

### C-6. Unit Equipment Requirement Checklist

Unit equipment requirements are mandatory process control items which must be locally purchased prior to TSQ evaluation being conducted for the applicable test method.

**Table C-3  
Unit Equipment Requirement Checklist**

Item	Qty	NSN or P/N	Method	Usage
Cracked Chrome Panel	1*	6635-01-626-5116	PT	Stationary/Portable
PSM-5	1*	5895-01-225-5532	PT	Stationary
Black/White Light Radiometer	1*	6695-01-434-5112	PT/MT	Stationary/Portable
Dead Weight w/QQI	1	N/A	MT	Portable
Magnetic Field Indicators	2	6635-00-391-0058	MT	Stationary/Portable
Applicable Probe/Transducer Kits	1	As required	UT/ET	Portable

\*NOTE: One is required, but two is highly recommended.

### C-7. Task Specific Qualification (TSQ) Checklist

The TSQ Checklist shall be filled out by the TSQ Evaluator. An "X" shall be entered in either the PASS or FAIL column for each evaluation checkpoint. Evaluation points not applicable to the TSQ being performed shall be filled in with "N/A". Specific areas of the TSQ Checklist are shaded in and contain an asterisk (\*), these areas are talking points. The TSQ evaluator should discuss the topic with the examinee, sharing knowledge as well as querying the examinee's knowledge and understanding of the specific requirement. Checkpoints containing a double asterisk (\*\*) are automatic failure points and require retraining. (See appendix E for TSQ Checklists)

### C-8. TSQ Example Checklist

The checklist below is provided as an example of a completed TSQ evaluation. It is recommended the evaluator have the examinee sign the form in the comments section to provide acknowledgement of the documented results on the TSQ.

TASK SPECIFIC QUALIFICATION/ ULTRASONIC (H-60 SPINDLE LUG)					
NAME	PVT Oatmeal	ORGANIZATION	B Co., 193rd AVN	Pass	Fail
DATE	5 June 2019	TSQ EXPIRES	5 June 2020		
<b>Inspection/Instrument Preparation:</b>					
1. Did examinee select the proper standard and transducer(s)? **				X	
2. Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500-344-23 and inspection procedure?				X	
<b>Calibration:</b>					
1. Were the correct instrument settings entered into the UT instrument?				X	
2. Examinee's overall familiarity with test instrument.				X	
3. Was the RH EDM notch located IAW the inspection procedure?				X	
4. Proficiency of the examinee performing the RH calibration.				X	
5. Was the electronic GATE positioned IAW the inspection procedure?				X	
6. Was the LH EDM notches located IAW the inspection procedure?				X	
7. Proficiency of the examinee performing the LH calibration.				X	
<b>Inspection Process:</b>					
1. Was adequate couplant applied to the lug surface?				X	
2. Did the examinee provide inspection coverage of all applicable lug surface utilizing the RH transducer?				X	
3. Was the gain adjusted to compensate for variances in the LH and RH transducers and EDM notches?				X	
4. Did the examinee provide inspection coverage of all applicable lug surfaces utilizing the LH transducer?				X	
<b>Interpretation/Evaluation:</b>					
1. Did the inspection performed exhibit excessive signal noise possibly from couplant or paint variances?				*	*
2. Was the examinee capable of discerning relevant signal responses from non-relevant indications? **				X	
3. Did the examinee detect and correctly interpret all relevant indications? **				X	
<b>Documentation:</b>					
1. Were inspection results documented IAW DA Pam 738-751?				*	*
*Shaded evaluation areas are talking points with examinee.				*	*
**Automatic failure points that require retraining before reevaluation					
Examiner: /Evaluator Signature/		Date: 5 June 2003		Pass	Fail
Comments: PVT Oatmeal displayed a thorough understanding of the inspection procedure					
/Signed PVT Oatmeal/					

NDT Form 1098-7

# XX ARNG

## Non-Destructive Testing SOP



This document is intended to be a guide for organizations to develop or enhance their own SOP. Aviation Units should modify this document to meet organizational needs.

Date:

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**D-1. Applicability:**

- a. This SOP applies to all persons performing or responsible for the performance of nondestructive testing (NDT) and/or safety related activities associated with the utilization of nondestructive methodologies within (*Enter Unit's Name*).
- b. Deviation from the guidelines set forth by this SOP may only be authorized by the Unit Commander.

**D-2. Purpose:**

- a. To define Nondestructive Testing standard operating procedures, responsibilities, qualification/certification policies, operational/process control procedures, and safety requirements for personnel performing nondestructive testing.
- b. To provide the guidelines necessary for active Army, National Guard and Reserve activities to support the requirements of Army Aviation Nondestructive Testing.
- c. Commanders SHALL ensure compliance with these requirements for all aviation resources under their control. All activities that perform nondestructive test methods shall prepare a written NDT plan.

**D-3. References:** Related publications are listed in appendix-A.

- a. AR 385-10, Army Safety Program
- b. NGR 750-410, Maintenance of Supplies and Equipment Army National Guard Aviation Nondestructive Testing Program
- c. TM 1-1500-335-23, Nondestructive Inspection Methods
- d. TM 1-1500-344-23, Aircraft Weapons Systems Cleaning and Corrosion Control
- e. TM 1-1500-345-23, Painting and Marking of Army Aircraft
- f. TM 1-1500-366-23, Nondestructive Inspection General Procedures and Process Controls

**D-4. Objectives:**

- a. To provide safe, fully mission capable aircraft to meet all training and tactical mission requirements.
- b. To ensure maximum operational readiness of equipment.
- c. To detect and correct early potential equipment failure.
- d. To enhance aircraft material readiness.
- e. To standardize process controls, personnel qualification, and applicable procedures.

**D-5. Revisions:** This SOP SHALL be reviewed and if necessary revised, each and every time a new or revised Department of Army (DA) publication that impacts the contents of this SOP is fielded. All personnel who are permanently assigned and/or attached to (*Unit Name*) may submit proposed changes to this document to the Commander (*Unit Name*).

**D-6. Responsibilities:**

- a. (*Enter Unit's Name*) Commander
  - (1) Overall responsibility for the supervision of an effective and safe NDT program.
  - (2) Responsible for overall function of NDT operations.
  - (3) Responsible for authorizing only trained and qualified personnel to conduct nondestructive inspections.
- b. NDT Supervisor (ARNG Only).
  - (1) NDT Supervisor or Powertrain Shop NCOIC.
  - (2) Supervise overall NDT Program to ensure compliance with all aspects of personnel qualification and equipment/material process controls per NGR 750-410, TM 1-1500-366-23, and TM-1500-335-23.

**D-7. Personnel:** NDT methods in the hands of a trained and experienced technician are capable of detecting flaws or defects with a high degree of accuracy and reliability. It is important NDT personnel are fully knowledgeable of the capabilities of each method but it is equally important they recognize the limitations of the methods. Personnel SHALL meet the minimum QUALIFICATIONS (formal training, on the job training, physical requirements).

- a. Active Army – Shall be qualified and certified IAW TM 1-1500-335-23.
- b. ARNG, AGR, M-DAY, SAD, ADSW, IDT, and AT Technicians - Shall be trained, qualified, and certified per the requirements of NGR 750-410 or NAS 410.
- c. On the job training (OJT). Hands-on training for the practical application of NDT disciplines should be received from personnel TSQ or Level II qualified and certified for the inspection being performed. However, as the situation dictates, a trained individual may accrue hours of experience by performing process control checks, practice inspections using test samples or condemned aircraft components, or continuing education approved by an NDT PM approved source. All OJT SHALL be documented on NDT Form 623.

**D-8. Physical Requirements.**

- a. NDT personnel SHALL receive a near vision acuity screening (Jaeger #1 not less than 12 inches or 20/25 Snellen at 16" ± 1") or its equivalent prior to initial certification and annually while certified. The near vision screening is required to be passed

for only one eye either natural or corrected.

NDT personnel SHALL receive a color perception screening prior to initial certification and recertification. Any limitations in color perception SHALL be evaluated by the responsible Level III or other responsible party. Limitations SHALL be entered in the individual's training records, and SHALL not interfere with the method being certified.

#### **D-9. NDT Qualification/Certification Maintenance**

a. Personnel qualified to perform inspection tasks per NGR 750-410 shall maintain task specific qualification IAW the requirements of NGR 750-410.

b. Personnel certified as NDT Level I, Level II, or Level III shall maintain certification IAW NGR 750-410 or NAS 410.

c. NDT trained personnel shall seek qualification/certification IAW developmental flow chart for NDT (see Paragraph D-16 below).

#### **D-10. Equipment**

a. All equipment SHALL be kept in good operating condition through periodic maintenance and routine inspections.

b. The use of "non-standard" (other than fielded by Pd AGSE) NDT equipment SHALL be coordinated and approved through the NDT CoE, Redstone Arsenal, AL.

c. Equipment purchased for specific weapon systems or other purposes SHALL NOT be used in lieu of Army issued equipment without the proper Item Manager/Engineering approval along with a written NDT Level III approved inspection procedures.

d. Equipment and material process control checks and system performance checks SHALL be performed and recorded at the appropriate intervals IAW TM 1-1500-366-23.

e. Eddy Current, Ultrasonic and Bond Testing instruments do not require calibration by TMDE but, SHALL be calibrated before use and at least at the conclusion of the inspection to a reference standard designed for the specific inspection procedure.

**D-11. Process Materials:** Materials used for NDT shall be initially qualified by reviewing the material certification and assuring that the material is listed in the latest revision of the associated Qualified Products List (QPL).

**D-12. Part Preparation:** All items submitted for inspection will be free of contaminants such as corrosion, grease, oil, carbon, dirt etc.

a. Access to surfaces and part preparation: Access to aircraft surfaces (e.g. panel removal) requiring Nondestructive Testing, SHALL be accomplished by maintenance personnel who have properly documented training and have experience in those particular specialties. Improper cleaning procedures/materials can cause severe damage to the material under inspection. Preparation of parts to include, but not limited to, paint removal and chemical etching SHALL be accomplished by maintenance personnel who are properly trained, and experienced in those particular specialties and are aware of the effects on the part/material due to the use of these chemicals and methods. Refer to TM 1-1500-344-23, TM 1-1500-345-23, and other applicable documents for further information.

b. Paint removal: All items requiring paint removal SHALL be performed IAW the applicable document. All fluorescent penetrant procedures SHALL have the paint and coatings removed. Mechanical and abrasive materials are prohibited unless permitted in writing by the responsible engineering authority. All magnetic particle inspection procedures SHALL NOT be performed over any coating measuring greater than 0.003 inch thick. All landing gear and critical rotating engine parts SHALL have the paint removed prior to magnetic particle inspections.

**D-13. NDT Operations:** Rarely should an NDI method ever be considered conclusive. An indication should be confirmed by another method, when practical, to determine its relevance.

a. Inspection. All NDT inspections SHALL be performed IAW an approved procedure through the appropriate TM, TB, SOF, ASAM, or other applicable publications. All procedures SHALL be followed completely. There SHALL be no deviation to any procedure without proper written authorization from the responsible NDT Level III.

b. Work Orders. Each item or component requiring NDT will be processed through the proper channels with a work order/job request as applicable. All work orders will reference the TM/TB/SOF/ASAM- page, paragraph or any other applicable document requiring the NDT procedure.

c. Disassembly. All components will be disassembled as required to perform the requested NDT procedure prior to inspection. If the capability or capacity does not exist for disassembly the item SHALL be work ordered through the appropriate shop or inspection activity.

**D-14. Disposition.** The NDT technician completing the inspection SHALL sign off on the appropriate forms, logs, and/or tags for proper disposition. The paper work being signed off only pertains to the NDT inspection performed. It does not guarantee a part has gone through all the required inspections (e.g. part meeting required thickness, bolt hole out of tolerance, maximum repairs performed, etc.)

**D-15. Safety:** The following are general safety precautions and instructions individuals must understand and apply during many phases of operation and maintenance to ensure personal safety, health and the protection of U.S. Army property. Additional safety precautions are contained in Army AR 385-10.

a. Warnings, Cautions, and Notes: WARNINGS and CAUTIONS used throughout nondestructive inspection manuals and inspection procedures are used to highlight operating or maintenance procedures, practices, conditions, or statements considered essential to the protection of personnel or equipment. NOTES may precede or follow the step or procedure, depending upon the information to be highlighted.

b. Hazardous Material Warnings: Consult Safety Data Sheets (SDS) Occupational Safety and Health Administration (OSHA) Form 20 or equivalent for specific information on hazards, effects, and protective equipment requirements.

**D-16 Resources.** Additional information is available from the following office:

Nondestructive Testing Center of Excellence

SFAE-AV-AS-AG

Bldgs. 7631 & 7103 NDT Lab, Redstone Arsenal, AL 35898 DSN 788-8211, Commercial (256) 842-8211

Email: [ndt-coe@amrdec.army.mil](mailto:ndt-coe@amrdec.army.mil)

D-16. ARNG Aviation NDT Program Overview. Overview of ARNG Aviation NDT Program

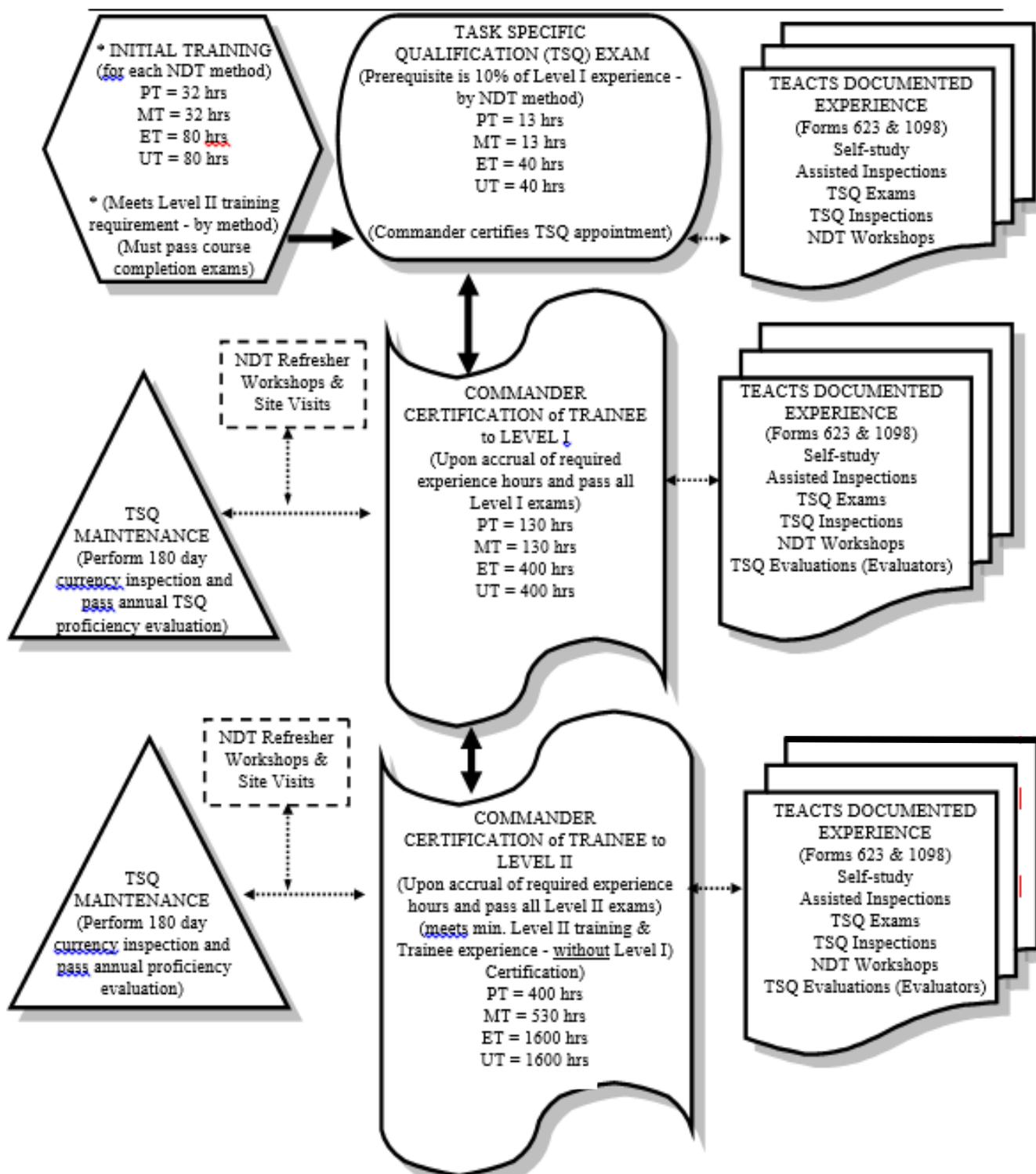


Figure 2-1. ARNG Aviation NDT Program Overview

Appendix E  
 TSQ Checklists: NDT Forms 1098-1 through -11

TASK SPECIFIC QUALIFICATION/ EDDY CURRENT (GENERAL)				
NAME	ORGANIZATION	PASS	FAIL	P1/P2
DATE	TSQ EXPIRES			
<b>Sorting</b>				
1. Did examinee select the proper standards and probes? **				
2. Was the inspection procedure followed correctly?				
3. Did the instrument accurately display the conductivity curve?				
4. Was the examinee able to determine the material type of the test article?				
<b>General 50-500 kHz</b>				
<b>Set Up and Calibration</b>				
1. Did examinee select the proper standards and probes? **				
2. Were the appropriate instrument inspection parameters selected IAW the inspection procedure?				
3. Did the calibration screen display meet the inspection procedure criteria (horizontal lift off, 5 screen division vertical deflection from the .040" EDM notch)?				
4. Examinee's overall familiarity with instrument functions and operation.				
<b>Pre-Cleaning:</b>				
Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500-344-23 and the inspection procedure?				
<b>Coating Compensation (Examinee to establish 0.002", 0.005", and 0.010" reference pts</b>				
1. Did examinee correctly demonstrate the ability to measure and compensate for nonconductive coatings?				
<b>Inspection:</b>				
1. Did examinee re-null on the test piece prior to beginning the inspection?				
2. Did the examinee take into consideration the effects of paint on the test part and its effect on crack detectability when performing the instrument calibration?				
3. Was the examinee knowledgeable of the inspection requirements (i.e. area of interest)?				
4. Did the examinee cover the inspection area thoroughly?				
5. Was the examinee able to identify non-relevant indications (edge effect, lift off and conductivity changes)?				
<b>Interpretation/Evaluation:</b>				
1. Is the examinee knowledgeable of the potential types of discontinuities peculiar to the part being inspected?				
2. Did the examinee detect all the required discontinuities? **				
3. Did the examinee accurately interpret the eddy current indications? **				
<b>Post Inspection Standardization</b>				
Was post inspection standardization performed?				
<b>Documentation:</b>				
Were inspection results documented IAW DA Pam 738-751?		*	*	
*Shaded evaluation areas are talking points with examinee.		*	*	
**Automatic failure points that require retraining before reevaluation				
Examiner:	Date:	Pass	Fail	
Comments:				

NDT Form 1098-1

TASK SPECIFIC QUALIFICATION/PENETRANT (PORTABLE)					
NAME		ORGANIZATION		PASS	FAIL
DATE		TSQ EXPIRES			
<b>Set-Up:</b>					
1. Is the radiometer calibration current?					
2. Verification of black light intensity. **					
3. Verification of ambient light intensity. **			*	*	
<b>Pre-Cleaning:</b>					
1. Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500- 344-23 and inspection procedure?					
2. Verification that abrasive mechanical methods were not employed in the pre-cleaning operation, unless detection is required because of abrasive operations?			*	*	
<b>Penetrant Application/Dwell:</b>					
1. Was the specimen temperature between 60 - 100 degrees (Temperatures outside the standard operating range require additional considerations; refer to TM 1-1500-335-23)?					
2. Was the penetrant applied properly? **					
3. Was the area of inspection completely covered with penetrant?					
4. Was the appropriate dwell time utilized?					
<b>Penetrant Removal:</b>					
1. Was the removal process conducted under a black light?					
2. Was the specimen wiped clean with a lint free dry rag or towel by making a single pass? Were successive passes performed by folding the rag or towel to provide fresh surface for each succeeding wipe?					
3. When the surface penetrant was reduced to a minimum, was a rag or towel moistened lightly with solvent remover utilized to remove the remaining penetrant?					
4. Was a final dry wipe performed prior to developer application?					
<b>Developer Application/Dwell:</b>					
1. Was the solvent remover allowed to completely evaporate from the part surface prior to applying the developer?					
2. Was the nonaqueous developer applied in a fine spray or mist?					
3. Was the metallic luster of the base material apparent through the developer coating? <i>If not, developer coating is too thick, reprocess part.</i>			*	*	
4. Was the appropriate developer dwell time utilized (verify minimum)?					
<b>Interpretation/Evaluation:</b>			*	*	
1. Was candidate knowledgeable of potential types of discontinuities peculiar to the part being inspected?			*	*	
2. Was candidate familiar with the appearance of penetrant indications?			*	*	
3. Did the examinee wait the proper time for dark room adaption?			*	*	
4. Did candidate accurately interpret penetrant indications? **					
5. Was the "bleed back" technique employed and performed properly? **					
<b>Post-Cleaning/Documentation:</b>					
1. Was the component thoroughly post-cleaned IAW TM 1-1500-335-23 and TM 1-1500-344-23?					
2. Were the inspection results documented IAW DA Pam 738-751?			*	*	
*Shaded evaluation areas are talking points with examinee.			*	*	
**Automatic failure points that require retraining before reevaluation					
Examiner:		Date:		Pass	Fail
Comments:					

NDT Form 1098-2

TASK SPECIFIC QUALIFICATION/PENETRANT (STATIONARY)					
NAME		ORGANIZATION		PASS	FAIL
DATE		TSQ EXPIRES			
<b>Set-Up:</b>					
1. Is the radiometer calibration current?					
2. Verification of black light intensity. **					
3. Verification of ambient light. **			*	*	
4. Verification of material performance.					
4a. Verification of remover performance/contamination check.			*	*	
4b. Verification of dryer temperature.			*	*	
4c. Verification of water content (hydrophilic) test.			*	*	
4d. Verification of wash nozzle check.			*	*	
4e. Verification of penetrant wettability/surface wetting.			*	*	
<b>Pre-Cleaning:</b>					
1. Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500-344-23 and inspection procedure?					
2. Verification that abrasive mechanical methods were not employed in the pre-cleaning operation, unless detection is required because of abrasive operations.			*	*	
<b>Penetrant Application/Dwell:</b>					
1. Was the area of inspection or component completely covered with penetrant? **					
2. Was the specimen temperature between 60 - 100 degrees (Temperatures outside the standard operating range require additional considerations; refer to TM 1-1500-335-23)?					
3. Was the appropriate penetrant dwell time used?					
4. Was the part rotated during the dwell time to minimize pooling?					
<b>Penetrant Removal:</b>					
<b>1. Lipophilic Process-</b>					
1a. Was the test area or component adequately covered with the emulsifier for the entire dwell time?					
1b. Was the part rotated during the dwell time to minimize pooling?					
1c. Was the prescribed dwell time closely adhered to?					
<b>2. Hydrophilic Process-</b>					
2a. Was an adequate pre-rinse performed prior to application of the emulsifier?					
2b. Was the test area or component completely covered with emulsifier and agitated the entire dwell time?					
<b>3. Lipophilic and Hydrophilic Processes-</b>					
3a. Was the removal process conducted under a black light (Applicable for Lipophilic and Hydrophilic processes)?					
3b. Was the background fluorescence acceptable after the final rinse? **					
<b>Developer Application/Dwell:</b>					
1. Was the area of interest or component completely dry before application of developer (non-aqueous or dry developer)?					
2. Did the application of the developer adequately cover the area of interest (water suspended, water soluble, non-aqueous, and dry developer)?			*	*	
3. If applicable, was the non-aqueous developer applied in a fine spray or mist?			*	*	
4. With the developer dwell time not starting until the developer is completely dry, was the appropriate dwell time utilized (water suspended, water soluble)?					
<b>Interpretation/Evaluation:</b>			*	*	
1. Was candidate knowledgeable of potential types of discontinuities peculiar to the part being inspected?			*	*	
2. Was candidate familiar with the appearance of penetrant indications?			*	*	
3. Did the examinee wait the proper time for dark room adaptation?			*	*	
4. Did candidate accurately interpret penetrant indications? **					
5. Was the "bleed back" technique employed and performed properly? **					

<b>Post-Cleaning/Documentation:</b>		
1. Was the component thoroughly post-cleaned IAW TM 1-1500-335-23 and TM 1-1500-344-23?		
2. Were the inspection results documented IAW DA Pam 738-751?	*	*
* Shaded evaluation areas are talking points with examinee.	*	*
** Automatic failure points that require retraining before reevaluation		
Examiner:   Date:	<b>Pass</b>	<b>Fail</b>
Comments:		

**NDT Form 1098-3**

TASK SPECIFIC QUALIFICATION/MAGNETIC PARTICLE (PORTABLE)					
NAME		ORGANIZATION		PASS P1/ P2	FAIL
DATE		TSQ EXPIRES			
<b>Set-Up:</b>					
1. Is the radiometer calibration current?					
2. Verification of black light intensity. **					
3. Verification of ambient light intensity. **				*	*
4. Performance of dead weight test (Yoke/Probe ONLY).					
5. Verification of field indicator operation.					
<b>Pre-Cleaning:</b>					
1. Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500-344-23 and inspection procedure?					
<b>Continuous Method:</b>					
1. Did the examinee place the yoke/probe in the proper locations per the inspection procedure?					
2. Did the examinee place the coil <u>or</u> place the part in the coil as called out in the inspection procedure?					
3. Was the suspension properly agitated prior to application?					
4. Was the "continuous method" properly performed (Did spraying of the magnetic particle medium cease PRIOR to the termination of the induced magnetic fields)?					
<b>Interpretation/Evaluation:</b>					
1. Was the examinee knowledgeable of potential types of discontinuities peculiar to the part being inspected?					
2. Did the examinee wait the proper time for dark room adaption?				*	*
3. Did the examinee thoroughly inspect the test article? **					
4. Did the examinee successfully interpret the magnetic particle indications? **					
<b>Demagnetization:</b>					
1. Was the component properly demagnetized IAW TM 1-1500-335-23?					
<b>Post-Cleaning/Documentation:</b>					
1. Was the component thoroughly post-cleaned IAW TM 1-1500-335-23 and TM 1-1500-344-23?					
2. Were the inspection results documented IAW DA Pam 738-751?				*	*
*Shaded evaluation areas are talking points with examinee.				*	*
**Automatic failure points that require retraining before reevaluation					
Examiner:			Date:	Pass	Fail
Comments:					

NDT Form 1098-4

TASK SPECIFIC QUALIFICATION/MAGNETIC PARTICLE (STATIONARY)				
NAME		ORGANIZATION		
DATE		TSQ EXPIRES		
			Pass	Fail
<b>Set-Up:</b>				
1. Is the radiometer calibration current?				
2. Verification of black light intensity. **				
3. Verification of ambient light.			*	*
4. Verification of settling testing. **				
5. Verification of system effectiveness test.				
6. Verification of quick break and amperage indicator check.			*	*
7. Verification of field indicator operation.				
<b>Pre-Cleaning:</b>				
Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500-344-23 and inspection procedure?				
<b>Continuous Method:</b>				
1a. Did the examinee place the component for circular magnetization IAW the inspection procedure (i.e., central conductor, head stocks)?				
1b. Was the amperage selected IAW the inspection procedure?			*	*
1c. Was the "continuous method" properly performed (Was the application of the magnetic particle inspection medium diverted PRIOR to the termination of electrical current)?				
2a. Did the examinee place the component in the inspection coil for longitudinal magnetization IAW the inspection procedure (i.e., bottom, centered)?				
2b. Was the amperage selected IAW the inspection procedure?			*	*
2c. Was the "continuous method" properly performed (Was the application of the magnetic particle inspection medium diverted PRIOR to the termination of the induced magnetic fields)?				
<b>Interpretation/Evaluation:</b>				
1. Is the examinee knowledgeable of potential types of discontinuities peculiar to the part being inspected?			*	*
2. Did the examinee wait the proper time for dark room adaptation?			*	*
3. Did the examinee thoroughly inspect the test article? **				
4. Did the examinee successfully interpret the magnetic particle indications? **				
<b>Demagnetization:</b>				
Was the specimen properly demagnetized IAW TM 1-1500-335-23?				
<b>Post-Cleaning/Documentation:</b>				
1. Was the component thoroughly post-cleaned IAW TM 1-1500-335-23 and TM 1-1500-344-23?				
2. Were the inspection results documented IAW DA Pam 738-751?			*	*
*Shaded evaluation areas are talking points with examinee.			*	*
**Automatic failure points that require retraining before reevaluation				
Examiner:			Date:	Pass Fail
Comments:				

NDT Form 1098-5

TASK SPECIFIC QUALIFICATION/ ULTRASONIC (AH-64 STRAP PACK BOLT)					
NAME		ORGANIZATION		Pass	Fail
DATE		TSQ EXPIRES			
<b>Inspection/Instrument Preparation:</b>					
1. Did examinee select the proper standard and transducer (s)? **					
2. Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500-344-23 and inspection procedure?					
<b>Calibration:</b>					
1. Were the correct instrument settings entered into the UT instrument?					
2. Was the electronic GATE positioned IAW the inspection procedure?					
3. Examinee's familiarity with the test instrument.					
4. Were the correct signal amplitudes obtained from the upper and lower OD EDM notches as required per the inspection procedure? **					
5. Did the examinee rotate the transducer within the positioner to minimize baseline noise?			*		*
6. Was the examinee familiar with the thread run-out groove signal's amplitude and time baseline location?					
7. Were the correct signal amplitudes obtained from the upper and lower ID notches?					
<b>Inspection Process:</b>					
1. Was adequate couplant applied to the bolt surface prior to locating the positioner?					
2. Were two (2) 360 degree passes made on the ID scan IAW the inspection procedure?					
3. Was an OD calibration verified again prior to conducting the OD scan?					
4. Were two (2) 360 degree passes made on the OD scan IAW the inspection procedure?					
<b>Interpretation/Evaluation:</b>					
1. Did the inspection performed exhibit excessive signal noise possibly from a loss of couplant, excessive couplant, inherent noise, contamination, etc.?			*		*
2. Was the examinee capable of discerning relevant signal responses from non-relevant indications? **					
3. Did the examinee detect and correctly interpret all relevant indications? **					
<b>Post Inspection Standardization</b>					
Was post inspection standardization performed?					
<b>Documentation:</b>					
Were inspection results documented IAW DA Pam 738-751?			*		*
*Shaded evaluation areas are talking points with examinee.			*		*
**Automatic failure points that require retraining before reevaluation					
Examiner:		Date:		<b>Pass</b>	<b>Fail</b>
Comments:					

NDT Form 1098-6

TASK SPECIFIC QUALIFICATION/ ULTRASONIC (H-60 SPINDLE LUG)					
NAME		ORGANIZATION		Pass	Fail
DATE		TSQ EXPIRES			
<b>Inspection/Instrument Preparation:</b>					
1. Did examinee select the proper standard and transducer(s)? **					
2. Was the area under inspection cleaned and prepped IAW TM 1-1500-335-23, TM 1-1500-344-23 and inspection procedure?					
<b>Calibration:</b>					
1. Were the correct instrument settings entered into the UT instrument?					
2. Examinee's overall familiarity with test instrument.					
3. Was the RH EDM notch located IAW the inspection procedure?					
4. Proficiency of the examinee performing the RH calibration.					
5. Was the electronic GATE positioned IAW the inspection procedure?					
6. Was the LH EDM notches located IAW the inspection procedure?					
7. Proficiency of the examinee performing the LH calibration.					
<b>Inspection Process:</b>					
1. Was adequate couplant applied to the lug surface?					
2. Did the examinee provide inspection coverage of all applicable lug surfaces utilizing the RH transducer?					
3. Was the gain adjusted to compensate for variances in the LH and RH transducers and EDM notches?					
4. Did the examinee provide inspection coverage of all applicable lug surfaces utilizing the LH transducer?					
<b>Interpretation/Evaluation:</b>					
1. Did the inspection performed exhibit excessive signal noise possibly from couplant or paint variances?			*	*	
2. Was the examinee capable of discerning relevant signal responses from non-relevant indications?					
3. Did the examinee detect and correctly interpret all relevant indications? **					
<b>Post Inspection Standardization</b>					
Was post inspection standardization performed?					
<b>Documentation:</b>					
Were inspection results documented IAW DA Pam 738-751?			*	*	
*Shaded evaluation areas are talking points with examinee.			*	*	
**Automatic failure points that require retraining before reevaluation					
Examiner:		Date:		Pass	Fail
Comments:					

NDT Form 1098-7

TASK SPECIFIC QUALIFICATION/ BOND TESTING - PITCH-CATCH SWEEP MODE (GENERAL)					
NAME		ORGANIZATION		Pass	Fail
DATE		TSQ EXPIRES			
<b>Inspection/Instrument Preparation:</b>					
1. Did examinee select the proper equipment called out in the inspection procedure?					
2. Was the area under inspection cleaned and prepped IAW 1-1500-335-23, TM 1-1500-344-23, and the inspection component inspection procedure?					
<b>Calibration:</b>					
1. Were the correct instrument settings entered into the BT instrument?					
2. Were the correct Alarm setting established?					
3. Was an approved reference standard used for calibration?					
4. Was the probe NULLED IAW the inspection procedure?					
5. Did the flying dot clearly differentiate between good and bad areas?					
6. Was the electronic GATE positioned optimized per the inspection procedure?					
<b>Inspection Process:</b>					
1. Did the examinee provide complete coverage of the suspected area?					
2. Did the examinee manipulate the probe in at least two directions during inspection scans?					
3. Did the examinee properly map out any discrepant areas?					
4. Did the examinee perform a periodic standardization check?					
<b>Interpretation/Evaluation:</b>					
1. Did the inspection performed exhibit excessive signal noise possibly from surface condition?				*	*
2. Was the examinee capable of discerning relevant signal responses from non-relevant indications?					
3. Did the examinee detect and correctly interpret all relevant indications?					
<b>Documentation:</b>					
1. Were inspection results documented IAW DA PAM 738-751?				*	*
*Shaded evaluation areas are talking points with examinee.				*	*
Examiner:		Date:		<b>Pass</b>	<b>Fail</b>
Comments:					

NDT Form 1098-8

## **Appendix F**

### **Management Control Evaluation Checklist**

#### **F-1. Function**

The function covered by this checklist is the inspection, evaluation, and operation of the ARNG Aviation Nondestructive Testing (NDT) Program.

#### **F-2. Purpose**

The purpose of this checklist is to assist commanders, managers, and supervisors in evaluating the key management controls outlined below. It is *not* intended to cover *all* controls.

#### **F-3. Instruction**

Answers must be based on the actual testing of key management controls (e.g., document analysis, direct observation, sampling, simulation, other). Answers which indicate deficiencies must be explained and corrective action indicated in supporting documentation. These management controls must be evaluated at least once every five years. Certification that this evaluation has been conducted must be accomplished on DA Form 11-2-R (Management Control Evaluation Certification Statement).

#### **F-4. Test Questions**

- a. Are NDT qualified and TSQ personnel appointed on orders by their Commander IAW NGR 750-410?
- b. Has the Commander designated a certifier to verify and maintain TEACTS records for NDT personnel?
- c. Does the certifier verify and maintain TEACTS records for NDT personnel?
- d. Does the facility/activity have a NDT SOP?
- e. Are near vision screenings administered annually and color perception screenings administered prior to certification or recertification?
- f. Is all hazardous waste generated from NDT inspections removed and disposed IAW Federal and State regulations?

#### **F-5. Comments**

Help make this a better test for evaluating management controls. Submit comments to ARNG-AVL (NGR 750- 410), ARNG Readiness Center, 111 South George Mason Drive, Arlington, VA 22204-1373.

## **Glossary**

### **Section I Abbreviations**

**AAFA**

Army Aviation Flight Activity

**AASF**

Army Aviation Support Facility

**AATS**

Army Aviation Training Site (i.e., Eastern AATS, High Altitude AATS, Western AATS, Fixed Wing AATS)

**ADSW**

Active Duty Special Work

**AG**

Adjutant General

**AGR**

Active Guard/Reserve

**AIT**

Advanced Individual Training

**AR**

Army Regulation

**ARNG**

Army National Guard

**ASNT**

American Society for Nondestructive Testing

**AT**

Annual Training

**B.S.**

Bachelor of Science

**CMF**

Career Management Field

**ET**

Eddy Current Test

**IAW**

In Accordance With

**IDT**

Inactive Duty for Training

**kHz**

Kilohertz

**MHz**

Megahertz

**MOS**

Military Occupational Specialty

**MT**

Magnetic Particle Test

**NDT/NDI/NDE**

Nondestructive Testing/Nondestructive Inspection/Nondestructive Evaluation

**NAS**

National Aerospace Standard

**NGB**

National Guard Bureau

**NGR**

National Guard Regulation

**NLT**

Not Later Than

**OJT**

On the Job Training

**Pd**

Product Director

**PID**

Personal Identifier

**POTO**

Plans, Operations and Training Office (State Army National Guard)

**PT**

Penetrant Test (Liquid/Dye)

**PM**

Program Manager

**SAAO**

State Army Aviation Officer

**SAD**

State Active Duty

**SME**

Subject Matter Expert

**SNT-TC-1A**

Society for Nondestructive Testing – Technical Committee – 1A

**TEACTS**

Training Experience and Certification Tracking System

**TM**

Technical Manual

**TRADOC**

U.S. Army Training and Doctrine Command

**TSQ**

Task Specific Qualification

**UT**

Ultrasonic Test

**Section II Terms****ARNG Aviation Approval (SOURCE)**

Written documentation from the ARNG Aviation NDT Program Manager or other authorized authority.

**ARNG Aviation NDT Program Manager**

ARNG Aviation person assigned responsibility for management of the ARNG Aviation NDT program.

**Certification (Appointment)**

Orders issued by a Commander certifying an individual has met the applicable training and experience requirements IAW NGR 750-410, and is approved to perform NDT inspections for which qualified.

**Certifier**

Commander, or designated representative, with the responsibility and authority to document that an individual meets the applicable requirements IAW NGR 750-410. (See Para 3-5.d. certifier)

**Checklist**

The written checklist is a guide to ensure the proper use of equipment, and materials, to include adherence to procedural details and the documentation of the results. This includes but is not limited to flaw detection and interpretation.

**Closed Book Examination**

An examination administered without access to reference material, except as provided during the examination. Reference material such as specifications, tables, formulas, etc. may be provided as determined by the responsible Level III. Questions utilizing such material shall require understanding of the information contained therein rather than merely finding its location.

**Commander**

The TASMGM, AASF, AATS, or Unit (M-DAY) person authorized to place individuals on "duty appointment orders" to perform NDT inspections.

**Currency**

Performance in a specific method (example, ET, UT, etc.) or TSQ during time periods as defined in NGR 750-410.

**Direct Readout Instrument**

Direct readout instruments physically display values either as digital readout or an analog display, such as a scale/pointer configuration. Direct readout instruments do not involve adjusting signal displays such as gates, delays, gain, or phase to obtain measurements.

**Documented**

The condition of being in written form.

**Evaluation**

The determination of the significance of indications.

**Examination**

A formal, controlled, documented test conducted in accordance with a written procedure.

**Experience**

Actual performance or observation conducted in the work environment resulting in the acquisition of knowledge and skill after initial training in each specific method.

**Formal Training**

An organized and documented program or activities designed to impart the knowledge and skills necessary to be qualified to this standard. This program may be a mix of classroom, laboratory and programmed self-instruction as approved by the responsible Level III or NDT PM approved source.

**General Examination**

A written examination addressing the basic principles of the applicable NDT method.

**Indication**

Evidence of a material condition that requires interpretation to determine its significance.

**Instructor**

An individual qualified and designated, in accordance with this NGR 750-410, to provide classroom or laboratory training for NDT personnel.

**Interpretation**

The determination of whether indications found during NDT are relevant or non-relevant.

**M-Day**

Traditional ARNG Soldier.

**Method**

One of the disciplines of nondestructive inspection or testing (e.g. magnetic particle) within which different techniques exist.

**NAS-410 (National Aerospace Standard 410)**

A standard which establishes the minimum requirements for the qualification and certification of personnel involved in NDT. These requirements include training, experience and examinations for personnel performing NDT.

**NDT Auditor**

An individual qualified to review NDT facilities and procedures for compliance to requirements. (See paragraph 3-1.g. Approval of NDT Auditors, NGR 750-410).

**NDT Organization**

Organization responsible for administering qualification of NDT personnel as designated by NDT PM.

**NDT Supervisor**

Individual designated by the Commander to manage their NDT Program. This individual should be a certified (appointed) Level II, but may be the most NDT qualified individual available, if a Level II is not available.

**On-The-Job-Training**

Includes but not limited to training in the work environment in learning instrumentation set-up, equipment operation, recognition of indications, and interpretation under supervision of Level II or a NDT PM approved source. (i.e. Level I Task(s) Specific)

**Outside Agency**

As approved by NDT PM, an independent body providing training and examination of NDT personnel, or any other NDT services to the requirements of NGR 750-410. Consultants and self-employed individuals are included in this definition.

**Personal Identifier (PID)**

The PID is made up with the first and last name initials, plus last four numbers of the person's Social Security Account Number (SSAN).

**Practical Examination**

The examination used to demonstrate an individual's ability in conducting the NDT methods that will be performed for ARNG. Questions and answers need not be written, but observations and results must be documented.

**Procedure**

A detailed, written instruction for conducting NDT.

**Proficiency**

A thorough competence derived from training and practice.

**Portable Equipment**

NDT equipment that is capable of being carried.

**Process Control**

Actions and documentation that are necessary for an NDT method to be effective in detecting conditions of interest.

**Qualification**

The skill, training, knowledge, experience and visual acuity required for personnel to properly perform to a particular Level.

**Specific Examination**

The written examination to determine an individual's understanding of procedures, codes, standards and specifications for a given method used, administered by an NDT PM approved source.

**SNT-TC-1A (Society for Nondestructive Testing-Technical Committee-1A)**

A set of NDT qualification guidelines called the *Recommended Practice No. SNT-TC-1A*. Establishes levels of qualification based upon a combination of education, training, experience, and qualification examinations.

**Stationary Equipment**

NDT equipment intended to be used in a fixed location.

**Technique**

A category within a method; for example, ultrasonic immersion testing or ultrasonic contact testing.

**Test Samples/Training Aids**

Parts or images containing known defects and used in the practical examination or training to demonstrate the individual's proficiency in using a particular method. Test samples can refer to images of actual hardware. Parts shall be readily identified as training aids and stored in a secure area preventing accidental usage or application.

**Trainee**

An individual who has attended an approved training program and has not qualified to the next level of certification.

**Training Program**

Any NDT PM approved Training Program providing NDT method training to include DoD MOS awarding programs, (ex: TRADOC), college/university programs or other approved training entities.

**TSQ Evaluator**

Individual approved by NDT PM to perform TSQ evaluations. Minimum qualifications for TSQ Evaluator are: successfully complete Level II formal training; Level I certified in at least two methods; successfully complete TSQ evaluator training and testing, as approved by NDT PM; and, receive written approval from NDT PM as a TSQ Evaluator.

**TSQ Requalification (Proficiency)**

An evaluation used to assess and document the proficiency of TSQ personnel.

*Note.* TSQ requalification is not applicable while an individual is mobilized, but requalification must be accomplished NLT 90 days from post-mobilization.