



DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND
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NAVSEAINST 4355.7A ^{IN REPLY REFER TO}
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NAVSEA INSTRUCTION 4355.7A

From: Commander, Naval Sea Systems Command

Subj: NONDESTRUCTIVE TEST (NDT) EXAMINER QUALIFICATION AND
REQUALIFICATION

- Ref:
- (a) NAVSEA Technical Publication T9074-AS-GIB-010/271, Requirements for Nondestructive Testing Methods
 - (b) MIL-STD-2032, Eddy Current Inspection of Heat Exchanger Tubing on Ships of the United States Navy
 - (c) MIL-STD-2195, Inspection Procedures for Detection and Measurement of Dealloying Corrosion on Aluminum Bronze and Nickel Aluminum Bronze Components
 - (d) NAVSEA 0900-001-7000, Fabrication and Inspection of Brazed Piping Systems
 - (e) NAVSEA 250-1500-1, Welding Standard
 - (f) MIL-STD-2132, Nondestructive Examination Requirements for Special Applications
 - (g) Naval Ships Technical Manual S9086-CH-STM-20/CH-074 Volume 2, Nondestructive Testing of Metals Qualification and Certification Requirements for Naval Personnel (Nonnuclear)
 - (h) NSTR-93, Guidelines for Administering NDT Examiner Qualification Programs Conducted at Bettis-Pittsburgh
 - (i) American Society for Nondestructive Testing (ASNT) Recommended Practice SNT-TC-1A

Encl: (1) Application for Nondestructive Test Examiner Qualification or Requalification Examination

1. Purpose

a. To specify methods for qualifying and requalifying government-employed civilian and military personnel who are attached to Naval activities and who perform NDT Examiner duties specified by NAVSEA in references (a) through (g).

b. To specify requirements for administering the NAVSEA nonnuclear NDT Examiner qualification facility at Portsmouth Naval Shipyard.

2. Cancellation. NAVSEAINST 4355.7 of 24 February 1997 is hereby canceled. This instruction has been revised significantly and should be read in its entirety. Major changes include:

a. Expand coverage to include designation of qualification methods and facilities to be utilized for all government-employed civilian and military examiners who perform duties related to NAVSEA-cognizant NDT.

b. Extend the requalification interval for nonnuclear examiners from three years to five years.

c. Create four categories of examiner/activity combinations for purposes of designating qualification and requalification methods and facilities to be utilized. Categories are based on the makeup of an activity's NDT complement (government-employed civilian personnel, military personnel, or a combination thereof) and on the current qualification status of examiners who require requalification. Such categorization precludes the use of an extensive listing of activities and provides for future activity name changes without outdating this instruction.

d. Provide for more diversified and reciprocal usage of civilian and military qualification facilities by allowing military examiners to qualify at the civilian facility, and vice-versa under certain conditions.

e. Expand eligibility for certain nuclear qualified examiners to renew qualifications at the nonnuclear qualification facility.

f. Incorporate numerous editorial changes and clarifications.

3. Discussion

a. NDT Examiners qualify other NDT personnel and oversee performance of NDT methods. Examiners become qualified by successful completion of examinations for nonnuclear or nuclear applications of a given NDT method and are referred to as either nonnuclear or nuclear examiners. Individual examiners at activities performing

both nonnuclear and nuclear NDT applications who become qualified for both applications are referred to as dual-qualified examiners.

b. Upon successful completion of examinations, NAVSEA or its delegated representative provides written certification that the examiner has met qualification requirements.

c. Examiners are required to repeat the examination process (requalify) every five years, with attendant recertification.

d. There are three NAVSEA-approved facilities for administration of qualification and requalification examinations. The facility to be used by a qualification candidate depends on the candidate's employment and the NDT application for which qualification is attempted:

(1) For government-employed civilian nonnuclear examiners who perform duties related to NDT applications of references (a) through (d), the primary qualification facility is located at Portsmouth Naval Shipyard, Kittery, Maine (PNS). Requirements for administration of the PNS facility are specified in this instruction.

(2) For government-employed civilian nuclear examiners who perform duties related to NDT applications of reference (e) or (f), the qualification facility is located at Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania (BETTIS). Reference (h) controls administration of the BETTIS facility.

(3) For fleet (military) nonnuclear examiners who perform duties related to NDT applications of references (a) through (d), the primary qualification facility is collocated with the Navy NDT School at Service School Command, Great Lakes, Illinois (SSCGLAKES). Reference (g) controls administration of the SSCGLAKES facility.

e. Reciprocal usage of the above facilities may occur to the following extent:

(1) Military examiners may qualify and/or requalify at PNS as an alternative to SSCGLAKES.

(2) Government-employed civilian nonnuclear examiners who are attached to activities where their duties include NDT performance oversight of military NDT personnel may qualify and/or requalify at SSCGLAKES as an alternative to PNS.

(3) Government-employed civilian nuclear or dual-qualified examiners employed at certain activities may renew nuclear qualifications at PNS in lieu of requalification at BETTIS. For eligible dual-qualified examiners, this occurs through completion of a dual-purpose examination which results in concurrent nonnuclear and nuclear requalification. Eligibility criteria for this provision are provided below.

4. Coverage. Qualification and requalification of examiners shall be accomplished as specified for each of the following four categories of examiner/activity types:

a. Government-employed civilian examiners attached to activities having an NDT complement of civilian personnel only. This category includes activities such as Naval Shipyards and Supervisor of Shipbuilding (SUPSHIP) activities. Qualification and requalification shall be accomplished as follows:

(1) Nonnuclear examiners shall qualify and requalify at PNS.

(2) Nuclear examiners shall qualify at BETTIS.

Requalification may be performed at either BETTIS or PNS, except for nuclear qualified examiners attached to SUPSHIP activities who shall requalify only at BETTIS.

(3) Dual-qualified examiners may perform concurrent nonnuclear and nuclear requalification at PNS except for dual-qualified examiners attached to SUPSHIP activities who shall requalify at PNS and BETTIS for nonnuclear and nuclear NDT applications, respectively.

b. Government-employed civilian examiners attached to activities having an NDT complement of military personnel or a combination of military and civilian personnel. This category includes activities such as Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNS&IMF), Trident Refit Facilities (TRFs), and certain Shore Intermediate Maintenance Activities (SIMAs). Qualification and requalification shall be accomplished as follows:

(1) Nonnuclear examiners shall utilize one of the following options:

(a) Perform qualification and/or requalification at PNS;
or

(b) Perform qualification and/or requalification at SSCGLAKES in accordance with reference (g). Use of this alternative is subject to examination capabilities and space availability at SSCGLAKES.

(2) Nuclear examiners shall qualify and requalify consistent with 4.a.(2) above.

(3) Dual-qualified examiners shall requalify consistent with 4.a.(3) above.

c. Military examiners. This category includes all military examiners who perform duties related to NAVSEA-cognizant NDT. Qualification for nuclear NDT applications does not apply. Qualification and requalification for duties related to nonnuclear NDT applications of references (a) through (d) shall be accomplished as follows:

(1) at SSCGLAKES in accordance with reference (g); or

(2) at PNS in accordance with this instruction. Use of this alternative is subject to space availability at PNS and candidates shall meet prerequisite criteria specified in reference (g).

d. Examiners with lapse of qualifications greater than five years. This category includes all examiners who otherwise conform to one of the above categories but whose nonnuclear and/or nuclear qualifications for a given NDT method have been lapsed for more than five years. Examiners in this category shall requalify in accordance with one of the methods specified for initial qualification in 4.a, 4.b or 4.c above, as applicable.

5. Definitions

a. Activity. All sites of an organization performing NDT under the same quality assurance management and using the same quality assurance plan.

b. Approval. Acceptance by NAVSEA.

c. Certification. A written, recorded verification that all qualification requirements have been met.

d. Dual-qualified NDT Examiner. An examiner who is qualified for both nonnuclear and nuclear applications of a given NDT method.

e. NDT Examiner. The qualified individual who is certified by NAVSEA or its delegated representative, and who is delegated by the examiner's activity to establish NDT techniques and procedures, interpret specifications, and designate particular NDT methods, techniques and procedures to be used consistent with NAVSEA specifications. In addition, the examiner is the individual who is responsible for the training, examination, certification and monitoring of NDT inspector and operator personnel attached to the examiner's activity.

f. NDT method. Six NDT methods are currently in use for purposes of this instruction. They are:

(1) Visual/Dimensional Testing (VT)

(2) Magnetic Particle Testing (MT)

(3) Liquid Penetrant Testing (PT)

(4) Radiographic Testing (RT)

(5) Ultrasonic Testing (UT)

(6) Eddy Current Testing (ET) (used for nonnuclear applications only)

g. Overlapping knowledge and skills. The term used to describe those cases where the essential knowledge and skills for a given NDT method are similar for both nonnuclear and nuclear applications of that method.

h. Program. Refers to the NDT Examiner qualification and requalification program administered at the PNS qualification facility.

i. Qualification. Qualification (or qualified) refers to demonstrated skill, knowledge, training and experience required for examiner personnel to perform required duties.

j. Qualification facility. A facility designated by NAVSEA to test knowledge and skills of an examiner candidate and recommend the candidate for NAVSEA certification when all qualification requirements are met.

k. Staff NDT Examiner. A certified examiner attached to the PNS qualification facility staff who develops and administers examinations, recommends NAVSEA certification for examiner candidates who meet qualification requirements, and performs other program functions as specified in this instruction.

6. Responsibilities

a. Quality Programs and Certification Office (SEA 04XO). Act as the single NAVSEA point-of-contact for program issues as follows:

(1) Approve examinations and examination facilities at the PNS qualification facility.

(2) Provide written certification for examiner candidates who meet prerequisite requirements and are recommended by the PNS qualification facility. Provide copies of certification documentation to the NAVSEA Nuclear Propulsion Directorate (NAVSEA 08) and BETTIS for nuclear qualified examiners who requalify at PNS.

(3) Interface directly with other NAVSEA Directorates regarding program issues.

(4) Liaison with the PNS qualification facility regarding program issues.

(5) Monitor and audit functions of the PNS qualification facility as necessary to ensure continued compliance with requirements of references (a) through (f) and this instruction.

(6) Administer applicable qualification and requalification examinations to Staff NDT Examiners of the PNS qualification facility. Provide NAVSEA certification for Staff NDT Examiners who qualify or requalify in accordance with this instruction.

(7) Coordinate with NAVSEA 08 regarding scheduling and administration of requalification examinations for nuclear qualified Staff NDT Examiners.

b. Naval activities where nonnuclear and/or nuclear NDT applications are performed in accordance with references (a) through (f).

(1) Select candidates for qualification in nonnuclear NDT applications of reference (a), (b), (c) or (d). Select an appropriate number of nonnuclear examiner candidates to support the extent of NDT personnel qualification/requalification, procedure development and NDT performance oversight necessary for efficient NDT operations at the activity. Submit enclosure (1) to obtain examination scheduling at the PNS qualification activity. For military candidates or for eligible government-employed civilian candidates utilizing the alternative method for completing examinations at SSCGLAKES (see 4.b), submit applications in accordance with reference (g). Ensure that military nonnuclear examiner candidates meet prerequisite criteria of reference (g). Ensure that other nonnuclear examiner candidates meet one of the following prerequisites of reference (i):

(a) Have graduated from a minimum of a four-year college or university curriculum with a degree in engineering or science, plus one year experience as an NDT Inspector or in an assignment comparable to that of an NDT Inspector in the applicable test method.

(b) Have completed with passing grades at least two years of engineering or science study at a college, university, or technical school, plus two years as an NDT Inspector or in an assignment comparable to that of an NDT Inspector in the applicable test method.

(c) Have four years experience as an NDT Inspector or in an assignment comparable to that of an NDT Inspector in the applicable test method.

(2) Select and schedule government-employed civilian candidates for qualification examinations in nuclear NDT applications of reference (e) or (f). Select an appropriate number of nuclear examiner candidates to support the extent of NDT personnel qualification/requalification, procedure development and NDT performance oversight necessary for efficient NDT operations at the activity. Requests for examination scheduling shall be made in writing to:

Bettis Atomic Power Laboratory
Attn: Administrative Asst (ZAP-55A)
PO Box 79
West Mifflin, PA 15122-0079

(3) Schedule requalification examinations for nonnuclear examiners. Schedule requalification testing in each NDT method and specification of references (a) through (d). Submit as applicable enclosure (1) or the application of reference (g) at least 90 days prior to qualification expiration. Ensure requalification is performed at intervals not exceeding five years.

(4) Schedule requalification examinations for nuclear examiners. Schedule nuclear qualified examiners for requalification at BETTIS or PNS as applicable (see 4.a, 4.b and 4.d). NAVSEA 08 approval is required for PNS requalification of nuclear examiners other than those specifically designated in this instruction.

(3) Schedule requalification examinations for eligible dual-qualified examiners. Schedule eligible (see 4.a, 4.b and 4.d) dual-qualified examiners for PNS requalification in each NDT method for which the examiner is dual-qualified. NAVSEA 08 approval is required for this method of requalification for examiners other than those specifically designated in this instruction. Submit enclosure (1) at least 90 days prior to qualification expiration. Ensure requalification is performed at intervals not exceeding five years.

(4) Conduct prerequisite vision tests. Ensure each examiner candidate has completed the vision examination(s) specified in applicable references (a) through (f) prior to reporting to the respective qualification facility.

c. PNS Qualification Facility

(1) Provide facilities. Provide and maintain approved examination facilities.

(2) Develop qualification examinations. Develop approved qualification examinations for nonnuclear NDT applications which meet applicable requirements of references (a) through (d), and (I).

(3) Develop examinations to be used for requalification of eligible nuclear and dual-qualified examiners. Develop approved examinations for requalification of nuclear qualified examiners who meet eligibility criteria of 4.a, 4.b and 4.d as applicable. Develop, where practical, approved examinations to be used for requalification of eligible examiners who are dual-qualified in NDT methods having overlapping knowledge and skills. Development of dual-purpose examinations shall include but not be limited to the following methods:

(a) Incorporation of nuclear-related examination material into examinations for the corresponding nonnuclear NDT method.

(b) Development of supplemental written or operational examinations.

(c) Development of standardized examination grading criteria which consolidates and complies with grading requirements of both nonnuclear and nuclear specifications.

(4) Administer dual-purpose requalification examinations. Administer the dual-purpose requalification examination discussed above in order to establish concurrent expiration for dual qualifications. Establish such concurrence for an eligible candidate (see 4.a, 4.b and 4.d) by administering the examination regardless of the expiration date for any qualification for which the examination applies.

(5) Develop program guidelines. Develop detailed guidelines for administering the qualification and requalification program. Incorporate the requirements of this instruction and applicable portions of reference (h).

(6) Randomize written questions. Develop a computerized method for random selection of written test questions from a Master Test Question Bank. Ensure written questions adhere to the following requirements.

(a) Questions are complete, including answer choices, correct answers, references and cross-references.

(b) Multiple choice-type questions shall be used except that true/false-type questions may be used when limited to fifteen

percent of the total number of questions for each individual test method question bank.

(c) Test questions shall be clearly written to have only one interpretation and one correct response.

(7) Rotate operational test props. Develop a system to ensure equal usage of all operational test props. Map the location of test prop defects.

(8) Revise examinations. Revise examinations as directed in writing by NAVSEA to reflect requirements of the latest revisions of governing documents. Review examinations for possible immediate revision upon receipt of any clarification/interpretation.

(9) Provide secure examination storage. Provide secure storage of examination material in a manner which prevents unauthorized access. Limit and identify personnel having access to examination material.

(10) Develop test administration guidelines. Develop and implement approved test administration and grading guidelines for each examination to ensure that examinations are consistently administered and graded. Include in the guidelines information such as materials to be supplied to the candidate, time limits for the examination, grading criteria, number and type of operational test specimens, etc.

(11) Perform examination analysis. Develop and implement a formal analysis system for written and operational examinations. Utilize the system at least biennially to track and analyze candidate weaknesses, and to reveal possible examination problem trends such as high-percentage-correct or high-percentage-incorrect written examination questions or attributes of an operational examination. Initiate corrective action for identified problems. Maintain results of examination analysis on file for NAVSEA review.

(12) Assign qualification facility personnel. Provide personnel assets for the qualification facility as follows:

(a) Assign an adequate number of Staff NDT Examiners and administrative support personnel.

(b) Ensure that Staff NDT Examiners possess NAVSEA examiner certification for their intended work assignment. Consider any certifications which are current upon assignment as a Staff NDT Examiner, or those acquired or renewed during such assignment, to remain effective until the assignment is terminated and for a period of five years thereafter if employment is continued at a Naval shipyard. Ensure at least one Staff NDT Examiner is certified in each applicable NDT method of references (a) through (f). If necessary, obtain certification for individual Staff NDT Examiners in more than one NDT method and to requirements of more than one of references (a) through (f).

(c) Assign Staff NDT Examiners who have demonstrated exemplary NDT technical expertise and sound judgement.

(d) Ensure that each Staff NDT Examiner, other than the Staff NDT Examiner who authors or develops an examination, has observed the administration of a particular examination prior to being assigned to administer that examination. Ensure that a Staff NDT Examiner does not administer a particular examination if more than one year has elapsed since the examiner last observed or administered the examination.

(13) Process candidate applications. Review and process applications for examination services, and schedule examinations. Ensure that candidates meet the minimum prerequisites of this instruction and applicable references (a) through (d), and (I).

(14) Provide liaison. Liaison with activities requesting examiner qualification or requalification services.

(15) Provide pre-examination information. Provide each examiner candidate a detailed pre-arrival information packet a minimum of 30 days in advance of the scheduled examination or as soon as feasible. Include the following minimum information:

(a) Location of qualification facility and description of examination facilities.

(b) Visitor clearance requirements.

(c) Local area information.

(d) Description of type of examination.

- (e) Available test equipment.
- (f) Recommended candidate self-preparation.
- (g) Listing of recommended study material.
- (h) A study guide.
- (i) Listing of materials the candidate may provide.

(j) Other information which may contribute to efficient completion of the examination process.

(16) Maintain qualification records. Maintain examiner qualification records for NAVSEA review.

(17) Provide examiner responsibilities and duties. Provide receipted lecture-type and written information covering examiner responsibilities and performance of duties to those candidates who successfully complete the qualification examination.

(18) Issue certification recommendation. Issue a written recommendation for NAVSEA certification of candidates who satisfactorily complete the appropriate examinations and other qualification requirements. Issue an interim certification document signed by a Staff NDT Examiner for candidates who pass the examinations and meet all qualification requirements. Limit the interim certification to a period of sixty days or until the recommendation for formal certification is dispositioned by NAVSEA, whichever occurs first.

(19) Limit retests. Provide a maximum of one immediate retest attempt at the discretion of the cognizant Staff NDT Examiner for candidates who fail the examination. Retest only those candidates who have demonstrated a clear understanding of principles related to the NDT method but fail the examination for other reasons such as mathematical errors or errors in documentation. Provide no oral upgrading of failed candidates as substitution for retesting. Ensure that a written retest does not duplicate the original examination by more than 20% of the number of original examination questions. Provide different test piece(s) for an operational examination retest. Provide further retests only upon re-application by the candidate's activity.

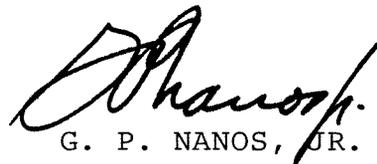
(20) Critique candidate performance. Provide a detailed review of each test question missed or discrepancies on an operational examination for those candidates who pass the examination. Provide a general review of deficient areas for those candidates who fail the examination.

(21) Overgrade examinations. Provide overgrading by another certified Staff NDT Examiner for those examinations which have a score between 75-85 percent, i.e., examinations which are close to the minimum passing score of 80 percent.

(22) Develop examination feedback system. Develop and implement a system for both examiner candidate and Staff NDT Examiner feedback on examinations and facilities. Evaluate feedback and initiate appropriate corrective action for any recommendations which are constructive, beneficial and practical. Maintain comments and feedback on file for NAVSEA review.

(23) Perform corrective action. Perform documented corrective action for identified program deficiencies.

(24) Perform additional or modified functions. Perform additional or modified qualification and requalification program functions as directed by NAVSEA.


G. P. NANOS, JR.

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