

CEPEDA Associates, Inc.

Number: Q-53

Revision: 8/29/2014

Title: **NONDESTRUCTIVE TEST AND ALLOY IDENTIFICATION PROCEDURE APPROVAL**

Clause: CEPEDA and/or their customer shall approve the supplier's nondestructive testing (NDT) personnel and procedures prior to performing any NDT.

The requirements contained herein shall apply to the seller's and any sub-tier supplier's NDT procedures used in fulfilling the requirements of this purchase order. This standard clause is also applicable to alloy identification procedures.

A. General Requirements for NDT Procedures

1. All radiography, magnetic particle, liquid penetrant, ultrasonic, eddy current, and visual testing must be performed in accordance with written procedures approved by the buyer.

Visual testing, as it pertains to this standard clause, is only applicable to the inspection of completed fabrication weldments.

2. All procedures shall be uniquely identified by a procedure number, with a revision and date.
3. Procedures should be submitted for buyer approval within thirty (30) days of the seller's receipt of the order. Procedures that will be used during the manufacture of the purchased item(s) shall be approved prior to the performance of any such inspections. NDT procedures that were previously used to inspect and certify base material procured from a sub-tier source shall be submitted for approval prior to any usage of that material.
4. All procedure changes or revisions shall be resubmitted to the buyer for written approval prior to the performance of any testing. Material inspected in accordance with unapproved changes or revisions shall be subject to rejection.

B. NDT Performance Specifications

1. Where reference is made to the following performance specifications, the effective issues shall be as follows:
 - MIL-STD-271 shall be NAVSEA Technical Publication T9074-AS-GIB-010/271; Revision F may only be used as permitted in paragraph B.2 below.
 - NAVSEA Technical Publication T9074-AS-GIB-010/271 shall be dated 30 April 1997 with Notice 1 dated 16 February 1999 and as modified by EB3900.
 - NAVSEA 0900-LP-003-8000, NAVSEA 0900-LP-003-9000, and NAVSEA 0900-LP-006-3010 shall be MIL-STD-2035.
 - MIL-STD-2035 shall be Revision A.

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- NAVSEA 250-1500-1 shall be Revision 17.
 - MIL-STD-2132 shall be Revision D.
 - NSTR-99 shall be Revision 4.
2. The use of procedures previously approved to the requirements of MIL-STD-271, Revision F is still permitted, provided the guidelines of Section I. are met. However, any submittal of new or revised procedures shall comply with NAVSEA Technical Publication T9074-AS-GIB-010/271 even if MIL-STD-271 is invoked.

C. Supplier Procedure Approval Request (SPAR)

1. All seller and sub-tier supplier NDT procedures shall be forwarded to the buyer via a properly completed Supplier Procedure Approval Request, form F-7420-014. Each procedure shall be submitted separately. The seller shall send the SPAR and a copy of the procedure to the buyer designated on this purchase order. The SPAR shall be dispositioned by the buyer's designated representative and shall serve as the seller's process approval, when approved.
2. To expedite procedure approval, the seller should assure that the SPAR form is completed properly and all pertinent information is included. Particular attention should be applied to the following sections:
 - A. BLOCK 6. This block is intended to identify the applicable drawing. Without this information, the buyer cannot verify the application for which the SPAR is being submitted. If the same technique will be applied to numerous drawings, various should be entered in this block and an explanation entered in Block 8. If drawings are not applicable to this order, "N/A" should be entered.
 - B. BLOCK 7. This block is intended to identify the piece mark on the drawing identified in Block 6 for which the procedure approval is being requested. If a piece mark is not applicable, enter "N/A." Where the purchase order references a buyer's part number for raw material, that number should be entered.
 - C. BLOCK 8. This block is intended to provide information to the buyer pertaining to the specific procedure for which approval is being requested, e.g., procedure number, revision, date, and any attachments/addenda/supplements, etc. This block should also state the applications for which approval is being requested and the applicable acceptance criteria e.g., PT of NAVSEA Technical Publication S9074-AR-GIB-010/278, P-1 welds with acceptance to MIL-STD-2035A, Section 7.2, Class 1.
If clarification to Blocks 6 and 7 is required, this block should be utilized e.g., piping details are being fabricated to various drawings and various piece marks. All welding is in accordance with NAVSEA Technical Publication S9074-AR-GIB-010/278, Class P-1.
If procedure approval is being requested for more than one application, each application and acceptance specification should be clearly stated e.g., PT of NiCuAl fasteners and weld repairs to CuNi castings.

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3. When radiography is required, the seller is responsible for the review and approval of all production radiographs. In addition, the seller shall forward to the buyer all production radiographs via a properly completed SPAR. The buyer must approve all radiographs, including all repair cycles, prior to shipment of hardware unless the requirement is specifically waived in writing by the buyer.

D. General Requirements for Procedure Approval

1. The buyer reviews seller and sub-tier supplier NDT procedures to assure compliance with applicable performance documents and acceptance criteria specifications. In general, any portion of a performance document or acceptance specification that contains the word "shall" must be included in the vendor procedure.
2. All NDT procedures shall be signed for by the performing activity's cognizant Level III test examiner denoting approval.
3. All NDT procedures, with the exception of radiography, must contain detailed acceptance criteria as required by this purchase order and applicable specifications and drawings. Acceptance criteria may be contained in separate attachments/addenda/supplements to the base performance procedure. Acceptance criteria shall be detailed enough to be self-standing, e.g., not just referring to the paragraph but rather citing the wording, as often as is practical. Noted exceptions are
 - SAE J122/123
 - FF-S-86

E. Additional Requirements for NAVSEA Technical Publication T9074-AS-GIB-010/271 Procedures

1. Whenever NAVSEA Technical Publication T9074-AS-GIB-010/271 is invoked, the following must be included in all NDT procedures:
 - A statement is required that the procedure is in accordance with the requirements of NAVSEA Technical Publication T9074-AS-GIB-010/271 to meet the requirement of paragraph 1.7.1.
 - A statement is required that personnel certifications must be in accordance with ASNT SNT-TC-1A, as a minimum requirement, except as modified by section 1 of NAVSEA Technical Publication T9074-AS-GIB-010/271 to meet the requirement of paragraph 1.6.
 - A statement is required that acceptance inspections shall be performed on an item in the final surface and heat-treated condition, unless otherwise specified, to meet the requirement of paragraph 1.4. However, it is also recognized that UT inspection is typically performed when the part has a simple geometry i.e. prior to final machining per paragraph 6.3.
2. Whenever NAVSEA Technical Publication T9074-AS-GIB-010/271 is invoked, the minimum procedural elements are contained in each NDT section: RT - paragraph 3.3.2, MT - paragraph 4.3.1.2, PT – paragraph 5.4.2, UT - paragraph 6.5.2, ET - paragraph 7.3.2, VT - paragraph 8.3. Additionally, the following information must also be contained in all NDT procedures:

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- Magnetic particle testing
 - Lighting requirements
 - Final cleaning
- Liquid penetrant testing
 - Material to be tested; e.g., welds, weld repairs, castings, etc.
 - Surface preparation
 - Lighting requirements
 - All penetrants, emulsifiers, removers, and developers shall be included on the qualified products list of the latest revision of AMS 2644
- Ultrasonic testing
 - The instrument model(s) allowed for the inspection
 - Equipment qualification method or reference to a qualification procedure
 - Description of the reference calibration standard
- Visual testing
 - Type of welds or surfaces to be inspected

NOTE: Unless otherwise stated in the ordering data or document(s) invoked, this requirement can be satisfied by simply offering an opening statement to the effect that, "This procedure specifies the requirements for performing the visual inspection of completed fabrication weldments in accordance with [enter applicable specification]."

F. Procedure Approval

1. Provided the methodology and acceptance criteria contained in an NDT procedure are acceptable, the buyer's approval will be granted for the specific application(s) requested by the seller. For example, if a penetrant procedure is submitted for the inspection of MIL-S-1222H NiCu bolts, the buyer's evaluation should state, "This procedure has been reviewed and approved for the penetrant testing of [list the type and method of MIL-S-1222H fasteners] in accordance with NAVSEA Technical Publication T9074-AS-GIB-010/271 with acceptance to SAE J123C." If the supplier's procedure also contains acceptance criteria for other applications such as forgings or castings, but approval is not requested in Block 8 of the SPAR and not required by this purchase order, procedure approval for those other applications will not be granted. The seller must then resubmit this procedure to obtain buyer approval prior to usage on any other applications.
2. In selected instances, the buyer may approve a procedure with comments. In such instances, the performing activity's inspection personnel must be made aware of these comments, and all testing shall be performed to instructions incorporating these comments. In addition, the seller or sub-tier supplier must incorporate them and resubmit a revised procedure for buyer approval prior to future use.

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G. Alloy Identification Procedure Review

1. All procedures shall be uniquely identified by a procedure number with a revision and date.
2. The alloy identity procedure submitted for approval shall contain the following as a minimum
 - A. Scope – The procedure shall include a list of all the generic materials manufactured or used in the seller's or supplier's shop and the testing instrument(s) used to separate each.
 - B. Equipment description – The procedure shall state the testing instrument brand name, model number, and principle of operation.
 - C. Equipment setup – The procedure shall list the steps necessary for equipment setup and preparation for use.
 - D. Instrument check or calibration – The procedure shall provide means for determining that the testing instrument is functioning properly. If a calibration standard of known value is used, an acceptance criteria for proper calibration shall also be given, and shall as a minimum be prior to and at the conclusion of testing, and after any change in operator, equipment or periods of inactivity. Appropriate documentation of the calibration standard composition shall be maintained on file by the supplier.
 - E. Testing of material – The procedure shall include details of testing technique including instrument settings, positioning of instrument probes and precautions concerning condition of material to be tested such as free from oil, grease, oxide, scale and film as appropriate.
 - F. Acceptance criteria – The procedure shall provide acceptance criteria for each of the generic materials manufactured or used in the suppliers shop.
 - G. Overlap – The procedure shall address the question of overlap of readings among different generic materials. It shall contain adequate instructions on supplemental tests use of magnet, spectrographic analysis, etc., to distinguish between such materials and to provide positive identification when overlap occurs.
3. Generic materials shall include but are not limited to those listed below. Other materials encountered in work which are not listed here also require the generic identity check.
 - NiCuAl-Chromium-Iron base alloys (Inconels and Hastelloys)
 - K-Monel
 - Copper-Nickel alloys (Cupro-Nickels)
 - Nickel-Copper alloys (Monels)
 - Austenitic stainless steels (AISI 300 series)

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- Martensitic & ferritic stainless steels (AISI 400 series & 17-4 PH class)
 - Carbon and alloy steels
 - Titanium alloys
 - Cobalt base alloys (Stellites)
 - Nickel-chromium-boron alloys (Colmonoys)
 - Copper
 - Bronze
 - Nickel-Aluminum-Bronze
 - Brass
 - Silver brazing material
4. Material not meeting the acceptance criteria in the approved alloy identity testing procedure shall be rejected.

H. Resubmittal of Seller and Sub-Tier Supplier Procedures

1. The seller or sub-tier supplier may be required to resubmit procedures due to disapproval, changes in application or acceptance criteria, or periodic modifications to performance and acceptance specifications. Resubmittals shall be timely and, in all cases, buyer's approval of the resubmitted procedure is required prior to use. In such instances, the seller should again utilize a SPAR to explain why the procedure is being resubmitted, letter number and date of previous submittal, and identification of how the procedure has been modified, if at all. This information will assist in the evaluation of the procedure and expedite approval.
2. Radiographic procedures revised to denote when X-ray machine tubes are changed and the new focal spot is equal to or less than the original or for new isotope sources where the physical size is equal to or less than that of the largest source, of same type, originally qualified do not require resubmittal for approval.

I. Procedures Previously Approved

1. For sellers that receive multiple or repetitive orders that apply to similar items, it is not always necessary to submit a SPAR for every application. Previously approved procedures may be used provided the following conditions are satisfied:
 - A. The procedure, including revision, and any associated attachments/addenda/supplements, is the same as was previously approved by the buyer.
 - B. The procedure covers the same type of process, process specification revision, material specification revision, application, and acceptance criteria. In addition, the configuration must be the same, i.e., the proposed NDT method can technically be applied with quality results as determined by the performing activity's cognizant Level III test examiner with respect to size and shape.
2. NDT procedures previously approved to the requirements of MIL-STD-271, Revision F may continue to be used provided all the requirements set forth above are followed.

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3. Where the seller elects to use procedures previously approved, a copy of the previously approved CEPEDA SPAR, Electric Boat VPAR, or equivalent Newport News Shipbuilding VPAR and applicable Newport News Shipbuilding approval letter meeting all these conditions shall be furnished with the shipment.

If the name and/or address of the performing activity listed on the certification of accomplishment is different than the name of the activity listed on the applicable procedure for the previously approved SPAR, the supplier shall provide OQE that:

- this change is administrative in nature,
- this is not considered to be a transfer of procedures as governed by Tech Pub 271, paragraph 1.7.4, and
- the performing activity is operating under the same Quality Assurance Management and using the same Quality Assurance Plan as was applicable to the activity listed on the applicable procedure for the previously approved SPAR, as required by Tech Pub 271, paragraph 1.5.3

J. Test Reports for Performance of NDT

1. When specified, reports showing the results of each test performed within the specified nondestructive test method are required. Guidelines for proper test report requirements are as detailed in applicable specifications. Where guidance is not provided, the seller shall record the below listed information, as a minimum.
 - A. the NDT method(s) used
 - B. description or unique identification of the item inspected
 - C. procedure identification
 - D. the performing activity, whether it be the seller, a sub-tier supplier, or a test lab
 - E. quantity inspected
 - F. acceptance standard used
 - G. quantity accepted/rejected
 - H. date of initial inspection and inspector identification
2. In addition, the seller shall attach a copy of the buyer's SPAR that approved the procedure to the test report.
3. Test reports and/or other verification of conformance documents shall be signed and dated by the seller's authorized representative.
4. Evidence of all tests and inspections performed, as required by this purchase order or specification, must be maintained by the seller. However, records required to be submitted by this purchase order or specification shall be forwarded with each shipment.

Test reports shall be attached to the packing list. Where more than one container or package is included in the shipment, the test reports shall be attached securely to or

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placed in one container or package and clearly identified on the outside.

K. Submittals

Submittals shall be provided to CEPEDA via email, mail, or fax to the attention of the buyer or Quality Assurance (quality@cepedaassociates.com):

CEPEDA Associates, Inc.

500 E Burnett Ave,

Louisville, KY 40217

Phone: 502-267-4945

Fax: 502-266-5918

All submittals must reference the CEPEDA purchase order number.

For more information refer to [QCP300.2, Supplier Quality Assurance Requirements](#).