

FED. SUPPLY CLASS

NDT I

INACTIVE FOR DESIGN AFTER 31 MAY 2012. SUPERSEDED BY:

- ASTM E1736, STANDARD PRACTICE FOR ACOUSTO-ULTRASONIC ASSESSMENT OF FILAMENT WOUND PRESSURE VESSELS
- ASTM E2533, STANDARD GUIDE FOR NONDESTRUCTIVE TESTING OF POLYMER MATRIX COMPOSITES USED IN AEROSPACE APPLICATIONS
- ASTM E2580, STANDARD PRACTICE FOR ULTRASONIC TESTING OF FLAT PANEL COMPOSITES AND SANDWICH CORE MATERIALS USED IN AEROSPACE APPLICATIONS
- ASTM E2581, STANDARD PRACTICE FOR SHEAROGRAPHY OF POLYMER MATRIX COMPOSITES, SANDWICH CORE MATERIALS AND FILAMENT-WOUND PRESSURE VESSELS IN AEROSPACE APPLICATIONS
- ASTM E2582, STANDARD PRACTICE FOR INFRARED FLASH THERMOGRAPHY OF COMPOSITE PANELS AND REPAIR PATCHES USED IN AEROSPACE APPLICATIONS
- ASTM E2661, STANDARD PRACTICE FOR ACOUSTIC EMISSION EXAMINATION OF PLATE-LIKE AND FLAT PANEL COMPOSITE STRUCTURES USED IN AEROSPACE APPLICATIONS
- ASTM E2662, STANDARD PRACTICE FOR RADIOLOGIC EXAMINATION OF FLAT PANEL COMPOSITES AND SANDWICH CORE MATERIALS USED IN AEROSPACE APPLICATIONS
- ASTM E2191, STANDARD PRACTICE FOR EXAMINATION OF GAS-FILLED FILAMENT-WOUND COMPOSITE PRESSURE VESSELS USING ACOUSTIC EMISSION

FOR DESCRIPTION OF STATUS NOTES SEE NAS380.

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
1000 WILSON BLVD.
ARLINGTON, VA 22209

THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME
PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS FROM THE LAST
REVISION DATE:

ISSUE DATE: MARCH 1981 REVISION DATE: JUNE 29, 2012

THIRD ANGLE PROJECTION	CUSTODIAN QUALITY ASSURANCE COMMITTEE	REVISION 2
PROCUREMENT SPECIFICATION NONE	TITLE NONDESTRUCTIVE INSPECTION OF ADVANCED COMPOSITE STRUCTURES	CLASSIFICATION SPECIFICATION NAS999 SHEET 1 OF 9



1. SCOPE

- 1.1 **Scope**- This specification establishes the requirements for non-destructive inspection (NDI), NDI standards, NDI methods, and NDI acceptance criteria.
- 1.2 The intent of this specification is to standardize NDI of advanced composite structures in the aerospace industry.
- 1.3 The purpose of NDI shall be the detection of discontinuities for comparison with design acceptance criteria. Discontinuities shall be cause for rejection when in excess of design acceptance criteria.

2. APPLICABLE DOCUMENTS

- 2.1 The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issue in effect on the date of invitation for bids or request for proposal shall apply.
- 2.2 **GOVERNMENT -**
- | | |
|---------------|--|
| MIL-STD-410 | Nondestructive Testing Personnel Qualification and Certification |
| MIL-STD-00453 | Inspection, Radiographic |
- 2.3 **NON-GOVERNMENT**
- | | |
|-----------|---|
| SNT-TC-1A | American Society for Nondestructive Testing Recommended Practice. |
|-----------|---|

3. REQUIREMENTS

- 3.1 **NDI Acceptance Criteria** - Acceptance criteria is dictated by design. The selected NDI method shall be compatible with the design acceptance criteria. Acceptance criteria shall be indicated on the engineering drawing or the governing specification.
- 3.2 **Personnel** - Personnel performing nondestructive tests described herein shall be qualified in accordance with MIL-STD-410, or shall be qualified to comparable levels of competency as those outlined in SNT-TC-1A and its appropriate supplements and appendices.
- 3.3 **NDI Equipment** - Equipment used to perform NDI shall be capable of detecting not less than the minimum size defect allowed by the design acceptance criteria.

LIST OF CURRENT SHEETS			
No.	Rev	No.	Rev
1	New	5	New
2	New	6	New
3	New	7	New
4	New	8	New

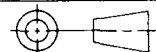
CUSTODIAN **Manufacturing Committee**

PROCUREMENT
SPECIFICATION

TITLE

**NONDESTRUCTIVE INSPECTION OF
ADVANCED COMPOSITE STRUCTURES**

THIRD
ANGLE
PROJECTION



CLASSIFICATION

NAS 999 Documents
Sheet 1 of 8

- 3.4 NDI Standards - NDI reference standards for use in setting the equipment sensitivity and comparing results shall be provided. The design or the type of NDI standards used shall be coordinated with the Level III individual.

The reference standard shall be one of the following:

- (a) Reference Radiographs - When approved by a Level III individual, previously established reference radiographs may be utilized in lieu of specific reference standards.
- (b) Sectioned parts with known defects.
- (c) A facsimile of the assembly being inspected which has a bond of known quality, and contains defects as specified in 3.4.6.
- (d) A series of simple test specimens composed of details similar to the varied areas of the assembly to be evaluated and containing reference defects as specified in 3.4.6., when approved by a Level III individual.
- (e) A set of small pieces of lead tape which are placed directly on the assembly being inspected.

3.4.1 Contoured Surfaces

- (a) The standards for structures with radii equal to or greater than 10 inches may be flat or have a radius of curvature equal to or greater than 10 inches.
- (b) The standards for structures with a radius of curvature (in the area of interest) less than 10 inches shall have the same radius of curvature within ± 10 percent of the radius of curvature of the test item.

3.4.2 Identification - The NDI standard shall be identified with a unique identification number.

3.4.3 Documentation - An engineering drawing or other permanent record shall be maintained for each standard. This record shall contain, as a minimum, the following; evidence of coordination with the Level III individual, identification number, material types and thicknesses, processing specification; size, type and location of reference defects, and adhesive.

3.4.4 Verification - The size and shape of all reference defects shall be verified by at least two methods. One of the methods used shall be the method selected to NDI the production item, the other method may be visual inspection during lay up or any other method approved by a Level III individual. The verification shall be documented and the records maintained for the life of the standard.

AIA AND ITS COMMITTEES WILL NOT INVESTIGATE THE APPLICABILITY OF PATENTS TO THE SUBJECT MATTER OF THIS STANDARD AND IN NO EVENT SHALL IT BE ASSUMED THAT THE AIA OR ITS COMMITTEES ARE TO BE HELD RESPONSIBLE FOR ANY LIABILITY TO PATENT OWNERS OR TO PROSPECTIVE USERS

THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS FROM THE LAST DATE OF APPROVAL SHOWN HEREON

APPROVAL DATE March 1981 REVISION

NAS 999
Documents