

[INCH-POUND]
MIL-I-85547B(AS)
30 November 1990
SUPERSEDING
MIL-I-85547A(AS)
28 March 1986

MILITARY SPECIFICATION

IGNITER, PVU-3A/E AND PVU-3B/E

This specification is approved for use by the Naval Air Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the requirements for the manufacture and inspection of the Igniter, PVU-3A/E and the Igniter, PVU-3B/E, herein after referred to as the igniter.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

MIL-B-117	Bags, Sleeves and Tubing-Interior Packaging
MIL-R-85545	Rocket, GTR-18A

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Naval Air Engineering Center, Systems Engineering and Standardization Department (Code 53), Lakehurst, NJ 08733-5100, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 1370

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STANDARDS

MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-453	Inspection, Radiographic
MIL-STD-810	Environmental Test Methods and Engineering Guidelines
MIL-STD-1167	Ammunition Data Card
MIL-STD-1168	Ammunition Lot Numbering
DOD-STD-2101	Classification of Characteristics

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

NAVAL AIR SYSTEMS COMMAND (NAVAIR) (CAGE Code 30003)

DL1335AS260	Data List, PVU-3B/E
DL1335AS275	Data List, PVU-3A/E
1335AS260	Igniter, PVU-3B/E
1335AS275	Igniter, PVU-3A/E
1335AS280	Rocket, GTR-18A
1335AS290	Packaging Assembly
1335AS390	Simulator, Surfacing-to-Air Missile SMU-124/E (Smokey SAM Simulator)

(Unless otherwise indicated, copies of Naval Air Systems Command drawings are available from the Naval Air Technical Services Facility (NATSF) (Code 312), 700 Robbins Avenue, Philadelphia, PA 19111-5096.)

PUBLICATIONS

CODE OF FEDERAL REGULATIONS

49 CFR 100-199 Transportation

(Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.)

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.4) in accordance with 4.4.

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3.2 Design and construction. The igniter shall be fabricated and assembled in accordance with the following and all documents listed thereon:

PVU-3A/E	DL1335AS275
PVU-3B/E	DL1335AS260

For the smokey SAM simulator, utilizing the PVU-3A/E igniter, see Drawing 1335AS390.

3.3 Performance. The igniter shall meet the following requirements when initiated by a firing pin (see 4.6.6):

- a. (M101) The igniter shall not exhibit ignition failure (see 6.5.1).
- b. (M102) The igniter tube shall not rupture.
- c. (M103) The igniter shall not exhibit burn-through of the cartridge case.
- d. (M104) The cartridge case shall not separate from the igniter tube.
- e. (M105) The luminous output of the igniter shall cause the voltage across the leads of the photodiode to increase to 0.35 volts minimum within 0.1 second after the firing pin impacts the primer. The voltage shall remain above 0.35 volts for a period not less than 0.25 seconds.

3.4 Environmental conditioning. The igniter shall meet the performance requirements of 3.3 after exposure vibration and shock as specified in 4.6.4 and 4.6.5.

3.5 Radiographic. The igniter shall not exhibit any missing or extra components. The configuration and orientation of all PVU-3A/E and PVU-3B/E components shall be in accordance with Drawings 1335AS275 and 1335AS260, respectively (see 4.6.1).

3.6 Marking. Unless otherwise specified in the contract (see 6.2), PVU-3A/E and PVU-3B/E igniter markings shall be in accordance with Drawings 1335AS275 and 1335AS260, respectively.

3.7 Data cards. Data cards shall be prepared in accordance with MIL-STD-1167 and shall be furnished for each igniter lot (see 4.5.1).

3.8 Workmanship. All parts shall be free from chips, dirt, grease, rust and all other foreign materials. The igniter shall be free from explosive material on all external surfaces. There shall be no burrs or other imperfections of manufacturing which would adversely affect the assembly, functioning, or handling of the igniter. The igniter shall not exhibit defective bonds or poor molding fabrication.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspections. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and

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services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4)
- b. Quality conformance inspection (see 4.5)

4.3 Inspection conditions. Unless otherwise specified (see 4.6.6 and 6.2), all inspections shall be performed under the following conditions:

Temperature $73^{\circ}\text{F} \pm 18^{\circ}\text{F}$

Relative humidity 50 ± 30 percent

Atmospheric pressure $14.0 + 1.0, - 1.5$ psia

4.4 First article inspection. First article inspection shall be performed on sample units which have been produced using the same materials equipment, processes, and procedures normally used in production.

4.4.1 Sample. First article sample shall consist of 36 igniters. (see 6.4)

4.4.2 Inspection routine. The igniters shall be divided into three equal groups and subjected to the tests specified on figure 1. The sequence of tests shall be as shown on figure 1.

4.4.3 Failure. Failure of any igniter shall be cause for rejection of the first article sample.

4.5 Quality conformance inspection. Quality conformance inspection shall consist of the tests in 4.6.1, 4.6.2 and 4.6.6 in sequence.

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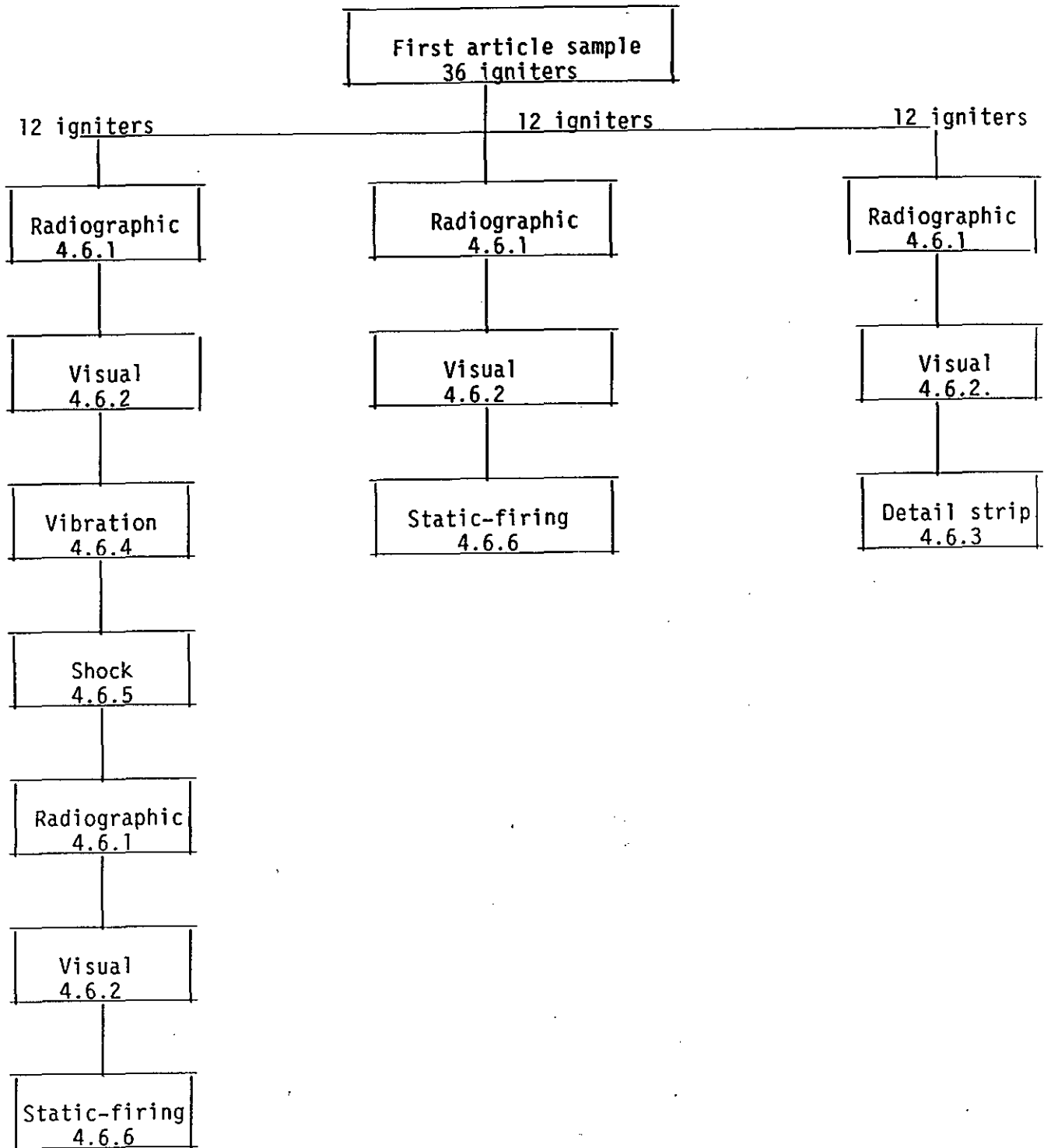


FIGURE 1. First article inspection.

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4.5.1 Inspection lot. Igniter inspection lot definition, formation, and size shall be in accordance with MIL-STD-105. In addition, an inspection lot of igniters shall consist of assemblies meeting the following conditions:

a. All primers in an igniter inspection lot shall come from a single primer inspection lot

b. All ignition grains in an igniter lot shall come from a single ignition-grain inspection lot.

c. Lot size shall be not greater than 10,000 igniters

4.5.2 Lot numbering. Unless otherwise specified (see 6.2), lot numbering shall be in accordance with MIL-STD-1168. Lot interfix numbers shall be assigned by the acquiring activity.

4.5.3 Sampling plan. Sampling, for visual, radiographic and static-fire inspections, shall be in accordance with MIL-STD-105, inspection level I, with an acceptance quality level (AQL) of 1.0 percent defective for major characteristics and an AQL of 2.5 percent defective for minor characteristics.

4.5.4 Classification of characteristics. The characteristics verified by the tests and examinations herein are classified as critical, major, or minor in accordance with DOD-STD-2101. Requirements that are critical are identified by the symbol (C) and those that are major are identified by the symbol (M). The number following the classification symbol indicates the serial number of the requirement. Requirements not annotated with a classification code are classified minor.

4.6 Methods of inspection.

4.6.1 Radiographic. The igniter shall be radiographically inspected perpendicular to its longitudinal axis in accordance with MIL-STD-453.

4.6.2 Visual examination. Igniters shall be visually examined for conformance to the requirements of 3.2 and 3.8. Four power (4X) magnification may be used for this inspection.

4.6.3 Detail strip. The igniters shall be disassembled and each component examined for conformance to the requirements of 3.2.

4.6.4 Vibration. The igniters shall be preserved in plastic bags in accordance with 5.1. Two bags of igniters shall be packed in the Smokey Sam shipping container in accordance with Drawing 1335AS290. The igniters shall be subjected to a vibration test with 12 GTR-18A rockets (see MIL-R-85545 and Drawing 1335AS280) (or 12 dummy rockets that simulate the GTR-18A weight configuration as approved by the acquiring activity) in the shipping container. The shipping container shall be banded with strapping in accordance with Drawing 1335AS290. While in the shipping configuration, the igniters shall be subjected to the vibration test of MIL-STD-810, method 514.4, category 1. Vibration test levels given in figures 514.4-1 through 514.4-3 shall be used. Test time shall be based on a transportation of 3000 miles.

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4.6.5 Shock. The igniters shall be removed from their bags and shipping containers for this test. The 6-foot drop test shall be conducted in accordance with MIL-STD-810, method 516.4, procedure IV. Drop height shall be measured from the lowest point of the test item to the impact plane. One-third of the igniters shall be dropped with the primer end down, one-third with the primer end up, and one-third with the longitudinal axis parallel to the impact plane. Drop orientation of the igniters shall be required at the drop point only.

4.6.6 Static-firing. Static-firing shall be preformed at ambient conditions. A test fixture, equipped with a firing pin capable of producing an indentation not less than 0.015 inch without rupture in the igniter primer, shall be used to perform this test. A Motorola MRD 500 photodiode, or an equivalent approved by the acquiring activity, shall be mounted 5 ± 0.5 feet above the top of the igniter. The igniter shall be inserted into the test fixture in a vertical position, cartridge down. Ambient light shall be such that the voltage across the leads of the photodiode is not greater than 0.2 volts. The igniter shall be fired by hitting the percussion primer. Record the luminous output by measuring the voltage across the photodiode as a function of time with a device accurate to 0.005 volts and 0.005 seconds.

4.7 First article and quality conformance inspection report. A first article or quality conformance report (see 6.3) shall be available to the acquiring activity within the time frame specified (see 6.2). The report shall contain the following information:

- a. Date of report
- b. Date of inspection
- c. Lot number
- d. Manufacturer
- e. Operational objectives
- f. Test equipment used
- g. Environmental conditions of inspection
- h. Type of failure, if any
- i. Analysis, significance, and recommendations
- j. Disposition of parts
- k. Corrective action taken

4.8 Inspection of packaging. The sampling and inspection of the preservation, packing, and container marking shall conform to this specification (see section 5).

5. PACKAGING

5.1 Preservation. Unless otherwise specified in the contract (see 6.2), igniters shall be preserved in 4.5 inch x 14 inch bags in accordance with MIL-B-117, type I, class B, style 2. Nominal thickness of the bags shall be a minimum of 0.003 inch. Six igniters shall be placed in each bag with the primer end at the bottom. The top of the bags shall then be heat-sealed.

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5.2 Packing. Unless otherwise specified in the contract (see 6.2), bagged igniters shall be packed in accordance with Class C explosive regulations of 49 CFR 171-178 and industrial practice. Interior bracing for the igniters shall afford protection against physical damage or deformation to the igniters and the packaging material. The weight of the container contents shall not be greater than 60 pounds.

5.3 Marking. Unless otherwise specified in the contract (see 6.2), marking on the shipping container shall be in accordance with 49 CFR 171-178 and MIL-STD-129.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The igniter is intended for use with the GTR-18A rocket (see Drawing 1335AS280) and the LMU-23A/E (see Drawing 1335AS380) and LMU-24A/E (see Drawing 1335AS700) launchers to train aviation and ground forces to recognize and cope with attacking surface-launch missiles.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).
- c. Part number.
- d. Quantity required.
- e. Whether first article inspection is required (see 6.4), and if so, specify the test activity.
- f. Date and place of delivery.
- g. Inspection conditions, if other than specified in 4.3.
- h. Preservation, packing, marking and lot numbering instructions, if other than specified in 3.6, 4.5.2, and 5.1 through 5.3.
- i. Time frame for submission of first article or quality conformance report.
- j. That the safety precaution requirements of the "Contractor's Safety Manual for Ammunition, Explosives, and Related Dangerous Material," DOD 4145.26M are applicable. NOTE: When this specification is used as part of the description of work to be accomplished by a Government activity, the safety precaution requirements of "Ammunition and Explosives Ashore," OP5 are applicable.

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6.3 Consideration of data requirements. The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
4.7	DI-T-2072	Report, test	--

The above DID's were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

6.4 First article. When a first article inspection is required, the item should be a first article sample. The first article should consist of 36 igniters. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.5 Definition. For the purpose of this specification, the following definition applies.

6.5.1 Ignition failure. Ignition failure is the failure of the igniter grain to burn after application of sufficient firing pin energy to produce an indentation of the primer of not less than 0.015 inch.

6.6 Subject term (key word) listing.

Cartridge case
Firing pin energy
Ignition failure
Ignition grains
Static firing

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Preparing activity:
Navy - AS
(Project No. 1370-N325)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:		1. DOCUMENT NUMBER MIL-I-85547B(AS)	2. DOCUMENT DATE (YYMMDD) 30 November 1990
3. DOCUMENT TITLE IGNITER, PVU-3A/E AND PVU-3B/E			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
5. REASON FOR RECOMMENDATION			
6. SUBMITTER			
a. NAME (Last, First, Middle Initial)		b. ORGANIZATION	
c. ADDRESS (Include Zip Code)		d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (if applicable)	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY			
a. NAME		b. TELEPHONE (Include Area Code)	
Commanding Officer NAEC (SESD) Code 53		(1) Commercial 908/323-1116	(2) AUTOVON 624-1116
c. ADDRESS (Include Zip Code)		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:	
Lakehurst, NJ 08733-5100		Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	