INCH-POUND

MIL-DTL-85097E(OS)
7 JULY 2000
SUPERSEDING
MIL-DTL-85097D(OS)
21 August 1998

DETAIL SPECIFICATION

USN/USMC PROPELLANT ACTUATED DEVICES (PADs),

GENERAL SPECIFICATION FOR

This specification is approved for use by the Naval Sea 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 covers the requirements for propellant actuated devices (PADs) used in aircrew escape systems. The requirements common to all such devices are in this specification; requirements unique to individual PADs are in the associated detail specifications, listed in Supplement 1 of this specification, and take precedence over this general specification.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents specified in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards 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).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to the Commander, Indian Head Division, Naval Surface Warfare Center, Standardization Team (Code 840M), 101 Strauss Avenue, Indian Head, MD 20640-5035, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by sending a letter.

AMSC N/A **FSC 1377**

SPECIFICATIONS

FEDERAL

QQ-P-416	Plating, Cadmium (Electrodeposited)

MILITARY

MIL-A-8625	Anodic Coatings, For Aluminum and Aluminum Alloys
MIL-PRF-9479	Seat System, Upward Ejection, Aircraft, General Specification for
MIL-P-53030	Primer Coating, Epoxy, Water Reducible, Lead and Chromate Free
MIL-PRF-85285	Coating, Polyurethane, High - Solid

(See Supplement 1 for listing of associated detail specifications)

STANDARDS

FEDERAL

FED-STD-595	Colors Used in Government Procurement

MILITARY

MIL-STD-1168	Ammunition Lot Numbering and Ammunition Data Card
MIL-STD-1252	Inertia Friction Welding Process, Procedure and Performance Qualification
MIL-STD-1907	Inspection, Liquid Penetrant and Magnetic Particle, Soundness Requirements for Materials, Parts and Weldments
MIL-STD-2100	Propellant, Solid, Characterization of (Except Gun Propellant)
DOD-STD-2101	Classification of Characteristics
MIL-STD-2102	Aircrew Escape Propulsion Systems, Vibration and Shock Tests for

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

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted

are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E203	Standard Test Method for Water Using Karl Fischer Reagent (DOD adopted)
ASTM E1417	Liquid Penetrant Examination, Standard Practice for
ASTM E1444	Standard Practice for Magnetic Particle Inspection
ASTM E1742	Standard Practice for Radiographic Examination

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASQC Z1.4	Sampling Procedures and Tables for Inspection by Attributes
ANSI/ASQC Z1.9	Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming

(Application for copies should be addressed to the American Society for Quality Control, PO Box 3005, 611 E. Wisconsin Ave., Milwaukee, WI 53201-4606.)

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE-AMS-STD-2219	Fusion Welding for Aerospace Applications

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), 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 Associated detail specifications. The individual item requirements shall be as specified herein and in accordance with the applicable associated detail specification. In the event of any conflict between the requirements of this specification and the associated detail specification, the latter shall govern. See MIL-DTL-85097 Supplement for a complete list of all associated detail specifications.

3.2 First article. When specified in the contract or purchase order (see 6.2), a sample shall be subjected to first article inspection (see 6.5) in accordance with 4.5.

3.2.1 Sample units. Unless otherwise specified in the contract or purchase order (see 6.2), 21 units shall be submitted to the Indian Head Division, Naval Surface Warfare Center (IHDIV, NSWC) Indian Head, MD 20640-5035 for first article inspection and approval. The sample units shall be manufactured using the same methods and procedures that will be used for production. The propellant used in the sample units shall be representative of the propellant to be furnished in the production units. Only primary components (see 6.7.9 for definition) from a single lot shall be used in a first article lot of PADs. However, a single lot of any primary component may be used in more than one production lot of PADs. When required, all first article test units shall be adapted for pressure transducers as specified by the contracting activity (see 6.2). Location of transducers shall be as specified in the applicable data package or contract.

3.2.2 Lot designation. The lot designation for First Articles shall be as specified in 6.8 for production lots except that the hyphen between the lot interfix number and the lot sequence number shall be replaced with a capital "A".

3.3 Conformance to documents. The PAD shall meet all the requirements specified in this document, on the applicable associated detail specification, and in the applicable PAD drawings (see Section 2 of the applicable associated detail specification).

3.4 Primers. Unless otherwise specified in the contract or purchase order (see 6.2), primers for contract requirements will be supplied as Government Furnished Material (GFM) by IHDIV, NSWC. Primers will be supplied for proprietary items only when the Cognizant Field Activity determines that the use of GFM is advantageous to the Government. Where primers are not supplied as GFM, the primers shall meet the life requirements of 3.5 and all applicable Government or commercial specification requirements for the primer. Additionally, the lot shall be subjected to the primer dud test specified in 4.7.9.

3.5 Preassembly life of explosive components in ignition devices. Rocket motor and rocket catapult cartridge propellant shall be manufactured within 150 days of the original contract delivery date for the first article and production lot acceptance test units. Ignition materials (black powder, delay compositions, etc.) for use in cartridges, initiators, and igniters shall be manufactured or recertified within 12 months of cartridge/igniter manufacture. Percussion primers shall be manufactured within 24 months or recertified within 12 months of cartridge/igniter manufacture.

3.6 Propellant properties. Each batch of propellant shall meet the requirements specified in the applicable associated detail specification. Required tests shall be conducted as specified in 4.7.1. When required by contract, type life testing shall be conducted in accordance with 4.6.3. A propellant analysis report shall be developed (see 6.2).

3.6.1 Propellant moisture content. Unless otherwise specified in the applicable associated detail specification, the moisture content of the propellant shall not exceed 0.05 percent.

3.7 Welding. All welding shall meet the requirements of SAE-AMS-STD-2219 or MIL-STD-1252 as applicable.

3.8 Finish. Unless otherwise specified in the contract or purchase order (see 6.2) the following finishes apply to rocket motor parts.

3.8.1 Ferromagnetic parts. Unless otherwise specified in the contract or purchase order (see 6.2), all ferromagnetic parts of the PAD shall be plated in accordance with the applicable Government drawing. If the part is procured using contractor drawings the protective finish for that specific part shall be approved by the Government.

3.8.2 Corrosion resistant parts. Unless otherwise specified in the contract or purchase order (see 6.2) all corrosion resistant alloys shall receive protective treatment as specified on the applicable drawing or associated detail specification.

3.8.3 Aluminum parts. Unless otherwise specified in the contract or purchase order (see 6.2) aluminum parts shall be anodized in accordance with the applicable Government drawing. If the part is procured using contractor drawings the protective finish for that specific part shall be approved by the Government.

3.8.4 Painting the PAD assembly. Unless otherwise specified, all external surfaces shall be thoroughly primed and painted. The primer shall meet the requirements of MIL-P-53030 and the paint shall meet the requirements of MIL-PRF-85285 (Type 1). The applications of the primer and paint shall, in addition to other requirements of MIL-P-53030 and MIL-PRF-85285, yield a smooth and uniform finish, free from runs, sags, bubbles, streaks, hazing, seeding, dusting, floating, mottling or other defects.

3.8.4.1 Paint color. Unless otherwise specified in the applicable associated detail specification, the paint color shall be white No. 17875, 17925, 27875, 27925 or 37875 in accordance with FED-STD-595.

3.8.4.2 Color coding. Unless otherwise specified, each unit shall be color coded with a brown band in accordance with the applicable PAD drawing.

3.9 Environmental. The PAD shall meet all ballistic performance requirements of 3.10 after exposure to the environmental tests of 4.7.7.

3.10 Ballistic performance. The PAD shall meet the ballistic performance parameters specified in the applicable associated detail specification and requirements detailed in 3.10.1 through 3.10.9. Any PAD which fails to meet the performance design limits during lot acceptance tests shall cause rejection of the applicable PAD lot. In addition, the PAD shall meet the following criteria during the test firings:

a. No propellant or unit component, other than nozzle seals, shall be ejected.

b. No component, subject to loading, shall yield or fail unless specifically designed to do so.

c. No burnthrough, excessive erosion, leakage of ballistic gas past a sealing surface, or hot spot that is unusual to the unit shall occur.

d. The thrust-time curve shall exhibit a shape that compares well with the established (or representative) curve for the unit.

3.10.1 PAD initiation. The PAD device shall be gas, electrically, or mechanically initiated as specified in 3.10.1.1 through 3.10.1.3.

3.10.1.1 Gas initiation (pressure actuated units). Unless otherwise specified in the applicable associated detail specification, upon application of 1100 ± 50 pounds-per-square-inch gauge (psig) pressure to the inlet port at a rate of pressurization (see 6.7.4) between 10,000 and 50,000 psig/second, the mechanism shall actuate between 400 and 600 psig over the temperature range. The rate of pressurization shall be measured over the interval from first indication of pressure to shear pin shear. Pressure transducers shall be located as close to the PAD inlet port as is physically possible. The pressure-time profile shall be approved by the Government contracting activity or as specified in the applicable associated detail specification.

3.10.1.2 Electric initiation. Upon application of initiation current, the PAD shall ignite. Unless otherwise specified in the applicable associated detail specification, the initiation current shall be 7 ± 0.5 amps from a source voltage of 28 volts direct current. The procedure and limits shall be those specified in the applicable associated detail specification.

3.10.1.3 Mechanical Initiation. Unless otherwise specified in the contract, the pull force on the firing mechanism required for initiation shall be as specified in the applicable associated detail specification.

3.10.2 Acceleration. A sudden fluctuation in acceleration as measured on the acceleration-time curve, shall not exceed the upper limit of acceleration listed in the applicable associated detail specification for more than 0.020 second.

3.10.3 Onset rate (maximum rate of rise of acceleration). The maximum rate of rise of acceleration is a parameter used with rocket catapults and is measured on the catapult phase acceleration-time curve. It shall be evaluated in accordance with the applicable associated detail specification for the PAD being tested. (See 6.7.8).

3.10.4 Unstable burning. The thrust-time and pressure-time curves obtained from firings, when measured with high frequency response equipment, shall not indicate unstable propellant grain burning (see 6.7.26). Pressure-time curves are preferred when possible and practical; pressure readings are not as subject to interference from the test stand (vibrations) as thrust readings. Pressure-time measurements are mandatory for all First Article units.

3.10.5 Dynamic response index (DRI). The rocket catapult/motor shall satisfy the DRI requirements as specified in MIL-PRF-9479 only when specified as a system performance requirement.

3.10.6 Rocket motor exhaust quality. The rocket motor exhaust shall not contain solid ejecta (see 6.7.20). The presence of solid ejecta in the rocket motor exhaust (nozzle closure material excepted), including propellant fragments, shall be conclusive evidence of potential harm to personnel, equipment, vehicles, and structures and shall serve as a basis for lot rejection.

3.10.7 Smoke emission requirements. Neither smoke (see 6.7.19), nor flame shall be emitted from any part of the rocket motor except the rocket nozzle.

3.10.8 Thrust rise during thrust dissipation interval. The thrust shall not rise above 10 percent maximum thrust level during the thrust dissipation interval (see 6.7.23).

3.10.9 Angle of thrust. Unless otherwise specified, the angle of thrust (see 6.7.22) shall be ± 0.5° of the angle specified on the individual PAD drawing.

3.11 Marking for identification. Each PAD shall be marked with identification and warning labels and any other related label in accordance with the applicable drawings. The production lot number shall be in accordance with MIL-STD-1168 and 6.7 with the exception specified in 3.2.2 when applicable.

3.12 Workmanship. The workmanship shall be that required for maintaining the dimensions, finishes, tolerances, and quality specified herein and on the applicable drawings and associated detail specification, and in 3.12.1 and 3.12.2.

3.12.1 Metal parts. All components and assemblies shall be free from burrs, contamination, corrosion, sharp edges, or foreign material which could result in malfunction of the unit or components or be a safety hazard in handling.

3.12.2 Propellant grain quality. The propellant shall have surfaces free of foreign materials potentially detrimental to proper ignition or burning. The grain shall be free from defects such as cracks, voids, porosity, fuel pockets, or other defects which could be detrimental to the performance of the individual PAD. In a PAD using case-bonded or cartridge-loaded propellant, the liner and inhibitor shall be applied evenly. There shall be no disbonding between the propellant, the liner, and the inhibitor (disbonding requirement includes the motor case for case bonded propellant).

3.13 Packaging. Refer to Section 5 and 6.10.

4. VERIFICATION

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

a. First article inspection (see 4.5).

b. Quality conformance inspection (see 4.6).

4.2 Test instrumentation. Instrumentation used to measure and record pressures shall be capable of detecting ignition peak pressures and unstable burning conditions (see 6.7.26). Test instrumentation capability shall be as defined below.

Performance requirement	Instrumentation capability
Maximum thrust/pressure	± 2.0 Percent
Weight	± 0.005 Pound
Time	± 0.001 Second
Maximum acceleration	± 5.0 Percent

Frequency	± 1.0 Percent of measured or ± 1 Hertz (Hz), whichever is greater
Temperature	± 3.5°F
High frequency thrust	Minimum of 66 Hz (excepting test stand vibration)
High frequency pressure	Minimum of 2500 Hz
Recording instruments	Permanent records

4.3 Classification of characteristics. The characteristics verified by the tests and examinations on the applicable associated detail specification or PAD drawings are classified as critical, major, or minor in accordance with DOD-STD-2101. Requirements for critical characteristics are identified by the symbol (C) and major characteristics by the symbol (M). The number following the classification symbol indicates the serial number of the characteristic. Requirements not annotated with a classification are classified as minor. The contractor shall maintain inspection records of all characteristics so classified. Items of inspection shall be serialized and inspection data traceable to a specific serial number.

4.4 Submission of data. Unless otherwise specified in the contract (see 6.2), the contractor shall provide the following data:

a. Ammunition Data Cards

b. Propellant Analysis Report

c. Radiographic Inspection Report

d. Primer test results

e. Special data, if applicable

The contractor shall prepare and maintain, for the service life of the PAD lot, propellant/assembly production records.

4.5 First article inspection. First article inspection shall consist of the tests specified in Table I. Failure of the first article sample to meet any of the requirements specified shall be cause for rejection of the lot. Unless otherwise specified in the contract or purchase order (see 6.2), first article inspection shall be performed by IHDIV, NSWC after award of contract and prior to production. Unique fixtures, such as static-firing test stands, vibration or hydrostatic test fixtures, and so forth, shall simulate function and be approved by the contracting activity.

4.5.1 Assembly inspection. Twenty-one loaded assemblies shall be subjected to the tests and inspections listed in 4.7 and Table I in the sequence specified in Table II, except only one loaded assembly shall undergo a detailed breakdown inspection as outlined in 4.7.6.

TABLE I. First Article Inspection

Tests	Requirement Paragraph	Test Method Paragraph
Propellant aging	3.6	4.6.3, 4.7.1
Radiographic	3.3, 3.6, and 3.12	4.7.2
Magnetic particle[1]	3.3 and 3.12.1	4.7.3
Hydrostatic pressure[1]	3.3	4.7.4
Visual	3.3, 3.8 and 3.12	4.7.5
Detailed breakdown	3.3 and 3.12	4.7.6
Environmental	3.9	4.7.7
Ballistic	3.10	4.7.8
Packaging	3.13	4.7.10

*[1] These tests are to be performed on the unit during detailed breakdown inspection (see 4.7.6), as applicable.

4.5.2 Propellant structure. Two grain assemblies from each batch of propellant used in the first article sample shall be submitted to the IHDIV, NSWC, Indian Head, MD 20640-5035, Attn: PAD Engineering, for structural tests. Propellant samples for case bonded units shall be provided in shapes similar to those in the actual rocket motors and shall be of similar quality. All samples shall be individually wrapped in moisture proof packaging and properly identified as to propellant lot, batch number, and grain serial number. Test results on these samples will be used as baseline information. Propellant tests shall conform to the requirements of the applicable associated detail specifications and their referenced propellant specifications.

4.5.3 Propellant sample size. Four blocks of cured propellant from each batch of propellant used in the PAD end item, shall be prepared and cured in a manner similar to the production process and submitted to the IHDIV, NSWC, Indian Head, MD. 20640-5035, Attn: PAD Engineering, for testing to determine the long range aging characteristics specified in the applicable associated detail specification. Each propellant sample shall be cast into containers producing a cured propellant block not smaller than 6 inches long by 6 inches wide by 4 inches thick. All samples submitted shall be bare propellant, individually wrapped in moisture proof packaging and properly identified as to propellant lot, batch number, and rocket motor/catapult Mark and Mod. High temperature aging shall be conducted for 84 days, in an atmosphere of 22 percent relative humidity at 160°F (a lower temperature shall be used if there is supporting evidence that the degradation is at a faster rate at a lower temperature). At the end of the 84-day aging, physical properties and burning rates shall conform to the requirements of the applicable associated detail specification. Tests shall also be performed at 0, 28, and 56 days to indicate trends. The strain rate for stress/strain determination shall be .74 in/in/minute.

4.6 Quality conformance inspection. Unless otherwise specified in the contract the following guidelines shall apply. Quality conformance inspection shall consist of the tests and examinations specified in 4.7.4, 4.7.6, and 4.7.8. The sample size shall be in accordance with ANSI/ASQC Z1.4, General Inspection Level II, with AQLs as specified in the contract. The criteria for acceptability for all inspections

is 0 and the criteria for rejection is 1. One loaded PAD from each lot shall be disassembled (see 4.5.1), to determine conformance to the data package, in accordance with 4.7.6.

TABLE II. First article test program

Requirement Paragraph	Test Method Paragraph	Test	Units[1]																				
			Control Group										11	12	13	14	15	16	17	18	19	20	21
			1	2	3	4	5	6	7	8	9	10											
3.3, 3.6 and 3.12	4.7.2	Radiographic inspection	a	A	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
3.9	4.7.7.3	Temperature cycling[2] Cold temperature Hot temperature											b	b							b	b	
3.9	4.7.7.2	Forty-two day storage[2] Cold temperature Hot temperature													b	b	b	b					
3.9	4.7.7.4	Vibration[2] Cold temperature Hot temperature																	b	b	c	c	
3.3 and 3.12	4.7.6	Detailed breakdown																					b
3.3, 3.6 and 3.12	4.7.2	Radiographic inspection											c	c	c	c	c	c	c	c	d	d	c
3.10	4.7.8	Ballistic test[2] Cold temperature 70°F Hot temperature	b	B	b	b	b	b	b	b	b	b	d	d	d	d	d	d	d	d	e	e	

[1] Letters refer to testing sequence.
[2] Tolerances for all temperatures shall be ± 5°F.

4.6.1 Lot size. For inspection purposes, a production lot (which includes the lot acceptance test sample) shall consist of not more than 500 loaded units. Lot sample size shall be in accordance with Table III. Only primary components (see 6.7.9) from a single lot shall be used in a production lot of PADs. One primary component production lot may be used in more than one production lot of PADs.

TABLE III. Ballistic sample size.

Lot Size[1, 2]	Lot Acceptance Sample (Min)	Total Ballistic Sample (Min)	Samples Per Temperature Extreme (at least one per batch)	Acceptability Constant (K)[3] (Single spec. limit)	Maximum Allowable Percent Defective (M)[3] (Double spec. limit)
Up to 40	7	6	3	-	-
41 - 65	9	8	4	-	-
66 - 110	11	10	5	-	-
111 - 180	15	14	7	-	-
181 - 300	21	20	10	-	-
301 - 340	23	22	11	1.41	7.39
341 - 380	25	24	12	1.43	7.13
381 - 420	27	26	13	1.45	6.92
421 - 500	31	30	15	1.47	6.56

[1] Lot size shown includes the lot acceptance sample. The acceptance sample must be randomly selected from the lot since it is construed to be a representative sample of the lot. Therefore, the quantity to be delivered for end use shall be the lot size minus the lot acceptance sample.

[2] Lot size in excess of 300 loaded units must be approved by IHDIV, NSWC. A sample size of 15 shall be used when estimating the lot percent defective (applicable for double specification limits) for a lot consisting of 301 to 420 loaded units.

[3] The acceptability constant (K) (applicable for single specification limits) and maximum allowable percent defective (M) (applicable for double specification limits) for a lot size up to 300 loaded units shall be derived in accordance with ANSI/ASQC Z1.9. K and M for a lot size between 301 and 500 loaded units shall be as indicated.

4.6.2 Lot acceptance tests. The production lot acceptance sample shall be randomly selected from the completed production lot and presented to the Government contracting activity for testing. The test firings shall be evenly divided between the hot and cold conditioning temperature extremes specified in the applicable associated detail specification unless otherwise specified in the contract or production order. The lot acceptance sample size shall also be proportionately divided among propellant batches as much as possible.

4.6.2.1 Ballistic sample production lot size. The ballistic sample size for individual production lots shall be in accordance with Table III, plus one additional unit for the detailed breakdown test of 4.7.6 (see Lot Acceptance Sample column in Table III). Each batch of propellant shall be represented by a minimum of one unit per temperature extreme. The ballistic data shall be analyzed and accepted in accordance with

ANSI/ASQC Z1.9, standard deviation method, single or double specification limit (as applicable), variability unknown with an AQL as specified in the contract (see 6.12).

4.6.3 Propellant type life sampling. When required by the contract (see 6.2), four blocks of cured propellant from each batch of propellant used in the PAD end item shall be prepared and cured in a manner similar to the production process and submitted to the IHDIV, NSWC, Indian Head, MD. 20640-5035, Attn: PAD Engineering, for type life testing to determine the long range aging characteristics specified in the applicable associated detail specification. Each propellant sample shall be cast into containers producing a cured propellant block not smaller than 6 inches long by 6 inches wide by 4 inches thick. All samples submitted shall be bare propellant, individually wrapped in moisture proof packaging and properly identified as to propellant lot, batch number, and rocket motor/catapult Mark and Mod. These samples and tests shall not be applied to acceptability of the PAD lot as determined by lot acceptance tests.

4.7 Tests and inspections.

4.7.1 Propellant aging inspection. Propellant samples shall be prepared in accordance with MIL-STD-2100 and tested in accordance with the following test paragraphs of MIL-STD-2100 for mechanical properties, hardness, heat of explosion and strand burning rate:

a. Test paragraph 5.4.2 - Heat of explosion.

b. Test paragraph 5.4.20 - Hardness.

c. Test paragraph 5.4.22 - Uniaxial mechanical properties.

d. Test paragraph 5.4.3 - Strand burning rate.

Failure of the propellant to meet the requirements above or as specified in the applicable associated detail specification shall be cause for failure of that batch.

4.7.1.1 Propellant moisture content test. The moisture content shall be determined using the Karl Fischer method described in ASTM E203. Unless otherwise specified in the applicable associated detail specification, the moisture content shall not exceed 0.05 percent.

4.7.2 Radiographic inspection. All first article/production units shall be radiographically inspected in accordance with ASTM E1742, radiographic quality level II (minimum). Unless otherwise specified in the applicable associated detail specification or PAD drawing package, units shall be radiographed at 0° and 90°. The 0° position shall be as defined on the applicable drawing particular to that PAD assembly or subassembly. Any discrepancy (including, but not limited to, grain imperfection, defective material, missing or misplaced internal components) shall be cause for rejection of the unit. Radiographs shall be capable of detecting defects on unit components with a minimum dimension of 0.03 inch. The contractor shall review all unit radiographs (such as assemblies, subassemblies, and propellant, as applicable) and certify that all units have no radiographic discrepancies. All radiographs taken of the assembly or components shall be presented to an IHDIV, NSWC, PAD Engineer or other designated Government representative for inspection on-site to assure quality conformance to ASTM E1742 (see 6.2). Radiographs of all units in the accepted lot shall be retained by the contractor for 1 year past the service life of all applicable units. The contractor shall contact IHDIV, NSWC, Indian Head, MD. 20640-5035, Attn: PAD Engineering, prior to disposing of any radiographs.

4.7.3 Magnetic particle and liquid penetrant inspections. Where design and function warrant, ferromagnetic parts shall be magnetic particle inspected in accordance with ASTM E1444. Non-ferromagnetic parts shall be liquid penetrant inspected in accordance with ASTM E1417. Unless otherwise specified on the applicable drawing or contract, sample size shall be 100% of the lot. Acceptance criteria shall be in accordance with MIL-STD-1907, Grade A. The contractor shall retain a record of all inspection results for review by a Government contracting activity representative (see 6.2).

4.7.4 Hydrostatic proof test. One hundred percent of all components subject to pressure shall be hydrostatically tested at pressures specified on the individual part drawing. Leakage or any permanent deformation shall be cause for rejection of the component. The tested component shall mate with the test fixture in the manner in which the component was designed to functionally operate.

4.7.5 Visual examination. The PAD and associated packaging shall be visually examined for conformance to 3.12 and Section 5. Nonconformance shall be cause for rejection of the lot or unit, as applicable.

4.7.6 Detailed breakdown test. One unit of each first article/production sample shall be disassembled and radiographically, visually, and dimensionally inspected in detail for conformance to the technical drawings and associated detail specification requirements. A detailed inspection record shall be maintained throughout the process. If the unit fails to conform to data package requirements, the lot of PADs shall be rejected.

4.7.7 Environmental tests. Environmental tests include conditioning the units to various temperatures. The conditioning temperatures, time to equilibrium temperature in the conditioning chamber, and time from removal of the unit from the conditioning chamber to test firing shall be as specified in the applicable detail specification for the PAD undergoing tests. Temperature conditioning shall be achieved in accordance with the following:

a. Chambers shall have fans for circulating air within the workspace of the chamber assuring that all points within the workspace are at the specified temperature.

b. The unit shall be supported in the chamber in such a manner as to provide uniform air circulation around it.

4.7.7.1 Temperature control test firings. Four units shall be test fired at the cold temperature, four at the hot temperature, and two at 70° ± 5°F as specified in the applicable associated detail specification.

4.7.7.2 Forty-two day storage. Two units shall be stored for 42 days at the cold temperature and two at the hot temperature. After 42 days the units shall be radiographed, conditioned, and test fired at the temperature specified in the applicable associated detail specification (see Table II).

4.7.7.3 Temperature cycling test. Four loaded units shall be subjected to temperature cycling. The chamber temperature, at each of the following steps, shall be maintained throughout the conditioning period specified in the applicable PAD associated detail specification.

Step 1. Two loaded units shall be placed in a conditioning chamber that has been preconditioned to the cold temperature.

Step 2. The loaded units shall be removed from the cold chamber and, within 5 minutes maximum transfer time (this time to be adhered to throughout temperature cycling), shall be placed in a chamber preconditioned to the hot temperature.

Step 3. The loaded units shall be transferred to the cold temperature chamber as above.

Step 4. Repeat steps 2 and 3.

Step 5. Repeat step 4.

The other two units shall be temperature cycled as above except the temperatures shall be reversed. After temperature cycling, two units, one each at the hot and cold temperatures, shall be radiographed, conditioned to final cycle temperature and test fired. The remaining two units shall be radiographed and then shall be subjected to the vibration test of 4.7.7.4.

4.7.7.4 Vibration test. Vibration shall be performed on the PAD as indicated in Table II in accordance with MIL-STD-2102, at the specified temperature. In the event the test conditions vary from those specified in MIL-STD-2102, the test conditions in the applicable associated detail specification shall apply. After vibration, the units shall be radiographed, conditioned to the temperature indicated in Table II, and test fired.

4.7.8 Ballistic tests. PAD units shall be ballistically tested at IHDIV, NSWC, Indian Head, MD unless otherwise specified in the contract. The sample conditioning temperatures and the time from the conditioning chamber to test firing of the first article/production units shall be as specified in the applicable associated detail specification. Failure of any unit to meet ballistic requirements specified in the applicable associated detail specification and the requirements specified in 3.10 shall be cause for rejection of the lot.

4.7.8.1 Actuation pressure for gas initiated units. The actuation pressure for gas initiated units shall meet the requirements of 3.10.1.1. The actuation pressure shall be recorded.

4.7.8.2 Initiation current for electric initiated units. The initiation current shall meet the requirements specified in 3.10.1.2. The initiation current shall be recorded.

4.7.8.3 Resubmission or rework of the lot. When the contractor requests that a rejected lot be tested under different conditions or he has reworked a rejected lot to meet requirements of this specification, then, with the Government contracting activity approval, a sample shall be submitted for testing. Sample size shall be double the original sample unless, with Government approval, the contractor has shown additional samples are unnecessary.

4.7.8.4 Marginality of success evaluation. The PAD shall be disassembled after test firings to determine if any marginal condition exists. A check-off sheet approved by the Government contracting activity shall be utilized for this purpose.

4.7.9 Primer dud test. When primers are not supplied GFM, the results of the dud test for primers shall be submitted. The dud test shall be conducted as follows:

a. A sample of 2300 primers from the lot shall be functionally tested at the minimum all-fire energy established by the primer specification. A ball drop test fixture shall be used for the test. The primers shall be tested in cases or a die which reasonably simulates end item conditions.

b. No failures are permitted. A failure is any one of the following:

(1) Misfire - a failure wherein initiation of the primer mixture does not occur.

(2) Squib - a failure wherein a burning of the primer mixture occurs without detonation.

(3) Hangfire - a failure wherein an audible delay occurs between the instant of application of energy and the detonation report.

4.7.10 Quality of packaging. The packaging, packing, and marking shall be visually examined for conformance to Section 5 and 6.10. A copy of the required performance oriented packaging (POP) report shall be submitted to IHDIV, NSWC, Indian Head, MD 20640-5035, Attn: PAD Engineering.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DOD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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 aircrew escape propulsion system is composed of a variety of propellant actuated devices that when sequentially activated provide for aircrew safety during an emergency egress. Units such as catapults or the catapult phase of a rocket catapult will propel the ejection seat and its occupant out of the aircraft. Units such as under seat or seat back rocket motors or the rocket phase of a rocket catapult will propel the ejection seat and occupant safely away from the aircraft. Other rocket motors provide reactive impulse for seat subsystems such as man-seat separation, seat trajectory modification, canopy jettison, or parachute deployment. The system will propel the occupant of the seat at a sufficient velocity to ensure that he will clear a fast moving aircraft by a safe margin and attain a height required to permit parachute deployment and a normal and safe descent. The specific intended use for a particular unit will be described in 6.1 of the individual associated detail specification. All of the aircrew escape propulsion systems covered by this document and its associated detail specifications are used for military aircraft only and have no commercial applications.

6.2 Acquisition requirements. Acquisition documents must 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 2.2.1 and 2.3).

c. Whether a first article sample is required (see 3.2).

d. Whether adaptation for pressure transducers in first article units is required and location of transducers (see 3.2.1).

e. Whether Government furnished material is supplied (see 3.4 and 6.9).

f. Whether a Propellant Analysis Report is required (see 3.6)

g. Type of finish, if other than as specifie*d* (see 3.8).

h. Whether inspection records of classification of characteristics are required (see 4.3).

i. Whether primer test results are required (see 4.4).

j. Whether propellant/assembly production records are to be prepared and maintained (see 4.4).

k. The facility designated to perform first article inspection (see 4.5).

l. Whether production lot samples for type life testing are required (see 4.5.3).

m. Inspection lot quantity if other than as specified in 4.6.1.

n. Inspection lot sample quantity if other than as specified in 4.6.2.

o. Whether radiographic inspection is required (see 4.7.2).

p. Whether a Radiographic Inspection Report is required (see 4.7.2).

q. Level of preservation, packaging, packing and palletization required, (see 6.10.1, 6.10.1.1, 6.10.2, 6.10.3)

r. Whether special marking is required (see 6.10.4).

s. Whether ammunition data cards are required (see 6.2 and 6.10.5).

t. Whether AQLs must be specified (see 4.6, 4.6.2.1, 6.11 and 6.12)

u. That safety precautions are required (see 6.6).

6.3 Section 6 documents. The following documents are referenced only in section 6 and, therefore, are not listed in section 2.

6.3.1 Government Specifications

FEDERAL

PPP-B-621 Boxes, Wood, Nailed and Lock-Corner

MILITARY

MIL-P-83126 Propulsion Systems, Aircrew Escape, Design Specification for

6.3.2 Government Standards

MILITARY

MIL-STD-129 Standard Practice for Military Marking

MIL-STD-973 Configuration Management

MIL-STD-2073 DOD Material, Procedures for Development and Application of Packaging Requirements

6.3.3 Other Government Documents

CODE OF FEDERAL REGULATIONS (CFR)

49 CFR 100-199 Transportation

6.4 Proprietary PADs. In the event a non-Government technical data package for a PAD is to be used for procurement purposes, it should meet the following requirements:

a. All requirements of this specification.

b. All requirements of the applicable source control or interface control drawing.

c. Service release testing in accordance with MIL-P-83126 must have been accepted by the Government.

d. Configuration management in accordance with MIL-STD-973.

e. An information only copy of the technical data package should be on file with the U.S. government procuring activity and (1) should be current or (2) should be filed with supplementing documents detailing any and all changes since the last contractual effort of the government procuring activity involving the non-current copy on file. The contractor should be responsible for furnishing the government with the necessary documents.

6.5 First article. When a first article sample is required, the contracting officer should provide specific guidance to offerors whether the item(s) should be a preproduction sample, a first article sample, a first production item, or a sample selected from the contractor's current inventory (see 3.2), and the number of items to be tested as specified in 4.5. The contracting officer should also 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 such products which

have been previously acquired or tested by the Government, and that bidders offering such products, who wish to reply on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.6 Safety precautions. The safety precaution requirements of the "Contractor's Safety Manual for Ammunition and Explosives" (DOD 4145.26M) are applicable and should be specified in the contract as required by the Federal Acquisition Regulation (FAR) 23.3. NOTE: When this document 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) should be made applicable.

6.7 Definitions. For inspection purposes, the following definitions apply to this specification:

6.7.1 Action time. Action time is determined from the thrust-time curve, and is defined as the time interval from the 10 percent of maximum thrust on the initial rise of the curve to the corresponding 10 percent of maximum thrust on the declining portion of the curve. Use the normal curve on units with canted nozzles.

6.7.2 Batch. A batch of propellant is a mix of all ingredients including curative(s) manufactured at one time in one mixer/bucket/container.

6.7.3 Catapult separation velocity. Catapult separation velocity is the average velocity of the simulated ejected weight propelled horizontally at catapult separation measured over the interval from 6 inches before to 6 inches after separation.

6.7.4 Catapult ignition delay time. Catapult ignition delay time is the elapsed time from the shearing of the firing pin shear pin to first indication of catapult thrust.

6.7.5 Composite propellant lot. A propellant lot may consist of more than one batch of propellant as long as each propellant ingredient used to manufacture the propellant lot is from one raw material lot to assure homogeneity. As far as possible, all propellant ingredients needed for the entire lot of rocket motors should be premixed at one time.

6.7.6 Conditioning time. The conditioning time is the time to condition a unit after it is placed in a preconditioned chamber/oven.

6.7.7 Double-base propellant lot. All propellant that is extruded using a single lot of sheetstock, unless otherwise specified by the contracting officer. The definition of a sheetstock lot should be agreed upon with the contracting activity prior to start of production.

6.7.8 Onset rate (catapult phase). The maximum rate of rise of acceleration (during the catapult phase) measured over any 0.030 second interval, occurring 0.010 seconds after the first indication of acceleration.

6.7.9 Primary components. Primary components are all components containing explosive ingredients including all primers, cartridges, ignition material, and propellant.

6.7.10 Rate of pressurization. The rate of pressurization is determined by measuring the slope of the pressure-time curve where first indication of firing pin movement occurs (ignoring the break in the curve caused by the firing pin movement).

6.7.11 Rocket catapult lot. A rocket catapult lot consists of one lot of rocket motors and one lot of catapult cartridges; it complies with 4.6.1 and 6.7.16.

6.7.12 Rocket catapult sustainer ignition delay. Rocket catapult sustainer ignition delay is the elapsed time from strip off to 10 percent of maximum thrust, as measured on the rising portion of the normal component rocket thrust trace.

6.7.13 Rocket motor burn time. Rocket motor burn time is the time between the initial 10 percent maximum thrust level and the web burnout point of maximum rate of change of curvature on the thrust time record. The web burnout point may be determined by the tangent-bisector method or may be determined mathematically. (from CPIA Publication No. 80 (May 1965).

6.7.14 Rocket motor ignition delay. Rocket motor ignition delay is the elapsed time from the ignition signal (shear pin, lanyard release, or application of electrical impulse to firing squib) to 10 percent of maximum thrust, as measured on the rising portion of the rocket thrust trace.

6.7.15 Rocket motor impulse. The rocket motor impulse is obtained by vectorially adding the longitudinal and normal impulse of the rocket motor taken over the action time.

6.7.16 Rocket motor lot. A rocket motor lot consists of one propellant lot and one lot of igniter cartridges.

6.7.17 Rocket motor resultant thrust. The rocket motor resultant thrust is obtained by vectorially adding all components of rocket thrust that occur in any one instant.

6.7.18 Void. An empty or unfilled volume within the propellant grain.

6.7.19 Smoke. A suspension, in gas, of solid particles (as distinguished from mist or fog, in which the particles are liquid).

6.7.20 Solid ejecta. All nongaseous and nonplasma matter except smoke or solid particles used as ingredients of the propellant or ignition material less than 0.03 inch in diameter.

6.7.21 Three-component thrust. The three mutually perpendicular axes of thrust related to the rocket motor longitudinal center line.

6.7.22 Thrust angle. The time averaged angle of the thrust vector as measured in the time interval between 10 percent of maximum thrust on the initial rise of the curve and the corresponding 10 percent of maximum thrust on the final declining portion of the curve.

6.7.23 Thrust dissipation interval. Thrust dissipation interval is the time interval from the end of the action time until the time when the thrust-time curve touches the zero thrust abscissa.

6.7.24 Time to 70 percent maximum rocket motor thrust. Time to 70 percent maximum rocket motor thrust is the interval between the ignition signal (shear pin release) until 70 percent of maximum thrust is achieved on the initial rise portion of the thrust-time curve.

6.7.25 Time to 375-pound thrust. The time to 375-pound thrust is the interval between the first indication of thrust until 375 pounds of thrust is achieved.

6.7.26 Unstable burning. Unstable burning is a condition in which pressure/thrust fluctuations that are greater than 5 percent of maximum pressure/thrust occur within a time interval of 0.010 second or less. It is measured between the end of the initial rise interval and web burnout. We recommend a minimum of 300 Hz for the frequency response for thrust measurements when thrust is used to detect unstable burning.

6.8 Production lot number designation. The production lot numbers should be as follows:

IHM	**93**	**D**	**002** -	**007**
a	**b**	**c**	**d**	**e**

where:

a = Manufacturer's Identification Code.

b = The year of manufacture of the oldest batch of propellant in the lot.

c = The month of manufacture of the oldest batch of propellant in the lot expressed as an alpha code in accordance with 4.1.3 of MIL-STD-1168.

d = Lot interfix number (provided and controlled by IHDIV, NSWC, PAD Engineering).

e = Lot sequence number - lot number (manufacturer is responsible for the assignment of lot numbers).

6.9 Government furnished material. The contracting officer should arrange to furnish the property listed in 3.4.

6.10 Packaging

6.10.1 Preservation and packing. Unless otherwise specified in the contract or purchase order (see 6.2), or applicable drawing, preservation and packing should be in accordance with MIL-STD-2073-1C, Methods 40 and 41, one unit per package. The package should be cushioned adequately to protect the PAD unit against handling and shipping shocks and vibrations and should comply with the applicable requirements of MIL-STD-2073 and 49 CFR 171-178.

6.10.1.1 Intermediate packaging. The loaded PAD should be packed in containers and the package should be cushioned adequately to protect the PAD unit against handling and shipping shocks and vibrations and should comply in general with the applicable requirements of MIL-STD-2073 and 49 CFR 171-178.

6.10.2 Packing. Unless otherwise specified in the contract or purchase order (see 6.2) or applicable drawings, container box packing should be in accordance with PPP-B-621, Group I, Class 2, Style 2, Grade

B, Type 2 and the applicable requirements of 49 CFR 171-178. The loaded PAD unit is packed singly or in pairs, as specified in the contract or applicable drawing.

6.10.3 Palletized loads. Loaded PADs, packed as specified in 5.2, depending on the level of packing specified in the contract (see 6.2), should be packed for shipment on a metal or disposable wood pallet suitable for mechanized handling by forklift, whenever total quantities for shipment to one destination equal 36 cubic feet or more. The pallet dimension (length and width) should exceed the unit package length and width by approximately 12 inches. Palletized loads should be uniform in size and quantities to the greatest extent practicable.

6.10.4 Marking. In addition to any special marking required by the contract or purchase order (see 6.2), or drawings, each unit package, intermediate package shipping container, and palletized load should be marked in accordance with MIL-STD-129 and 49 CFR 171-178. Marking should include the following as a minimum:

6.10.4.1 Transportation Data

a. Nomenclature (item designation)

b. National stock number, DODIC and United Nations identification number (UN 0186 for all AEPS)

c. Quantity

d. Lot number

e. Serial number(s)

f. Contract or purchase order numbers

g. Gross weight and cube

h. The applicable DOT explosive classification, unless otherwise specified in the applicable associated detail specification, should be:

"ROCKET MOTORS CLASS B EXPLOSIVES".

6.10.4.2 Performance Oriented Packaging (POP) Requirements Data

a. UN Proper Shipping Name: “ROCKET MOTOR”

b. UN Number: 0186 for all PADs

c. Hazard Class: 1.3

The following exceptions apply: The hazard class for the MK 83 Mod 0 and the MK 85 Mod 0 should be 1.4.

d. Compatibility Code: C

e. Net Explosive Weight: In accordance with the applicable value for the unit

f. Competent Approval Authority (CAA) Number

6.10.5 Ammunition data cards. When specified in the contract or purchase order (see 6.2), one ammunition data card prepared in accordance with MIL-STD-1168 should be placed in the top of each pack (see 5.1). Figures 1 and 2 are examples of data cards applicable to Rocket Motors and Rocket Catapults, respectively.

6.10.6 Ammunition lot numbering. Ammunition lot numbers should be in accordance with MIL-STD-1168.

6.11 Quality conformance sampling. The following AQLs have been used successfully for quality conformance sampling. The contracting activity is cautioned that any deviation for these ANSI/ASQC Z1.4 selections should be warranted and verified statistically considering the criticality of the AEPS function.

a. For minor characteristics, an AQL of 2.5% has been used
b. For major characteristics, an AQL of 1.0% has been used
c. For critical characteristics, an AQL of 0.04% has been used

6.12 Ballistic Data Analysis. An AQL of 2.5% has been used successfully for analyzing and accepting ballistic data. The contracting activity is cautioned that any deviation from this MIL-STD-414 selection should be warranted and verified statistically considering the criticality of the AEPS function.

6.13 Subject term (key word) listing.

Acceleration
Ballistic performance
Ejection seat
Electrical initiation
Ferromagnetic parts
Gas initiation
Government furnished material
Pressure transducers
Primers
Propellant
Thrust rise

6.14 Changes from previous issue. The margins of this specification are marked with verticle lines to indicate where changes from the previous issue were made. This was done as a convience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Preparing Activity:
Navy - OS
(Project Number 1377-0133)

DEPARTMENT OF DEFENSE
AMMUNITION DATA CARD

FORM APPROVED
BUDGET BUREAU NO. 22-R0269

1. ITEM NOMENCLATURE	2. FSN	3. LOT NUMBER
MK 82 MOD 0 Rocket Motor	1377-00-119-2022M928	IHM77D002-007
4. MANUFACTURING LOADING OR ASSEMBLING ACTIVITY	**5. NET QUANTITY**	**6. PACKING OF LOT**
A. B. C. Manufacturing Co. Anytown, USA	280 ea	Dwg or Spec No. of Shipping Container

7. CONTRACTOR	8. CONTRACT OR ORDER NO	9. DRAWING OR REVISION	10. SPECIFICATION & REVISION	
A. B. C. Mfg. Co.	N00174-77-C-XXXX	944AS100	MIL-A-85097/5	
11. DATE STARTED	**12. DATE COMPLETED**	**13. DATE INSPECTED**	**14. LINE**	**15. ZONE WT SHELL**
August 1977	October 1977	October 1977	Bldg 41	
16. CHARGE WEIGHT	**16a. INDEX OF POWDER**	**16b. MPD IN INCHES**	**16c. PPDR IN INCHES**	
16d. EXPLOSIVE WEIGHT PER PKG	**17. EXPECTED MUZZLE VELOCITY**	**18. EXPECTED PRESSURE**	**19. SHELL WEIGHT**	
0.60 lb			2.3 lb	
20. NUMBER OF TEST SAMPLES	**21. SENT TO**	**22. DATE AND MODE OF SHIPMENT**		
20 ea	IHDIV, NSWC	October 1977 Air Freight Co.		

23. **COMPONENTS** ***(Continue on reverse, if necessary)***

COMPONENT	DRAWING NO.	MODEL	MANUFACTURER	DATE MFG	LOT NO.	QUANTITY
Propellant Grain	XXXXXXX	--	A. B. C. Mfg. Co.	April 1977	ZZZ	100 gms
Igniter	XXXXXXX	--	A. B. C. Mfg. Co.	May 1977	YYY	305

24. DISPOSITION

Lot accepted and shipped.

25. TYPED NAME OF GOVERNMENT INSPECTOR

SIGNATURE

DD FORM 1650
1 FEB 68

23a. **COMPONENTS** ***(Continued)***.

COMPONENT	DRAWING NO.	MODEL	MANUFACTURER	DATE MFG	LOT NO	QUANTITY
Igniter Pellets	Dwg or Spec		X. Y. Mfg Co.	Feb 1977	ZZZ XYZ	100 gms 50 gms
Igniter Granules	Dwg or Spec		X. Y. Mfg Co.	Feb 1977	XYX	300
Primer	8799925	M42-5086	Remington Arms	Jan 1977		

20. REMARKS ***(Identify by appropriate symbols; "Changes in process"; "Deviations from drawing or specification"; "Unusual occurrences or difficulties")***

(a) Ballistic values out of specification, if any
(b) List of serial numbers delivered
(c) Waivers and deviations, if any

FIGURE 1. Sample data card for rocket motors (front and back).

DEPARTMENT OF DEFENSE **AMMUNITION DATA CARD**		FORM APPROVED **BUDGET BUREAU NO. 22-R0269**
1. ITEM NOMENCLATURE **MK 16 MOD 1 Rocket Catapult**	2. FSN **1377-01-040-9342MD72**	3. LOT NUMBER **IHM77D002-008**
4. MANUFACTURING LOADING OR ASSEMBLING ACTIVITY **A. B. C. Manufacturing Co. Anytown, USA**	5. NET QUANTITY **280 ea**	6. PACKING OF LOT **Dwg or Spec No. of Shipping Container**

7. CONTRACTOR	8. CONTRACT OR ORDER NO	9. DRAWING OR REVISION	10. SPECIFICATION & REVISION	
A. B. C. Mfg. Co.	**N00174-77-XXXX**	**736AS300**	**MIL-A-85097/1**	
11. DATE STARTED **August 1977**	12. DATE COMPLETED **October 1977**	13. DATE INSPECTED **October 1977**	14. LINE **Bldg 41**	15. ZONE WT SHELL
16. CHARGE WEIGHT	16a. INDEX OF POWDER	16b. MPD IN INCHES	16C. PPDR IN INCHES	
16D. EXPLOSIVE WEIGHT PER PKG **7.0 lb**	17. EXPECTED MUZZLE VELOCITY	18. EXPECTED PRESSURE	19. SHELL WEIGHT **18.8 lb**	
20. NUMBER OF TEST SAMPLES	21. SENT TO **IHDIV, NSWC**	22. DATE AND MODE OF SHIPMENT **October 1977 Air Freight Co.**		

23.**COMPONENTS** ***(Continue on reverse, if necessary)***

COMPONENT	DRAWING NO.	MODEL	MANUFACTURER	DATE MFG	LOT NO.	QUANTITY
Propellant Grain	**736AS127**		**X. Y. Mfg. Co.**	**April 1977**		**315**
Catapult Ctg	**Dwg or Spec**		**X. Y. Mfg. Co.**	**May 1977**		**305**
Primer	**8799925**	**M42-5086**	**Remington Arms**	**Jan 1977**		**1500**

24. DISPOSITION

Lot accepted and shipped.

25. TYPED NAME OF GOVERNMENT INSPECTOR

SIGNATURE

DD FORM 1650
1 FEB 68

23a. **COMPONENTS** ***(Continued).***

COMPONENT	DRAWING NO.	MODEL	MANUFACTURER	DATE MFG	LOT NO	QUANTITY
Base Grain	**736AS142**		**X. Y. Mfg Co.**	**April 1977**	**XYZ**	**310**
Head Igniter	**736AS301**		**X. Y. Mfg Co.**	**May 1977**	**XYX**	**gms**
Igniter Pellets	**Dwg or Spec**		**X. Y. Mfg Co.**	**Feb 1977**	**XYY**	**gms**
Igniter Granules	**Dwg or Spec**		**X. Y. Mfg Co.**	**Feb 1977**	**XZZ**	**gms**
Head Ctg	**736AS302**		**X. Y. Mfg Co.**	**May 1977**	**XZX**	**310**
Ctg Pellets	**Dwg or Spec**		**X. Y. Mfg Co.**	**Feb 1977**	**XZY**	**gms**
Ctg Granules	**Dwg or Spec**		**X. Y. Mfg Co.**	**Feb 1977**	**XYY**	**gms**

20. REMARKS ***(Identify by appropriate symbols; "Changes in process"; "Deviations from drawing or specification"; "Unusual occurrences or difficulties")***

(a) Ballistic values out of specification, if any
(b) List of serial numbers delivered
(c) Waivers and deviations, if any

FIGURE 2. Sample data card for rocket catapults (front and back)

INDEX

INDEX

INDEX

INDEX

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-DTL-85097	2. DOCUMENT DATE (YYMMDD) 000707

3. DOCUMENT TITLE
USN/USMC PROPELLANT ACTUATED DEVICES (PAD), GENERAL SPECIFICATION FOR

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) DSN (*If applicable*)	7. DATE SUBMITTED (*YYMMDD*)

8. PREPARING ACTIVITY

a. NAME Commander, Indian Head Division Naval Surface Warfare Center	b. TELEPHONE (*Include Area Code*) (1) Commercial 301-744-4700 (2) DSN 354-4700
c. ADDRESS (*Include Zip Code*) Standardization Team (Code 840M) 101 Strauss Avenue Indian Head, MD 20640-5035	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman Road, Suite 2533 Fort belvoir, VA 22060-6221 Telephone (703) 767-6888 DSN 427-6888