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MILITARY SPECIFICATION

AMMUNITION, STANDARD QUALITY ASSURANCE PROVISIONS, GENERAL SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-A-48078 (PA), dated 1 November 1973, and is approved for use within the US Army Armament Munitions and Chemical Command, and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 1

Delete preamble and substitute the following:

"This specification is approved for use by the U.S. Army Armament Munitions and Chemical Command, and is available for use by all Departments and Agencies of the Department of Defense."

PAGE 2

Specifications, Handbooks: Delete in its entirety.

* Add the following new paragraphs:

"3.2 Critical defect material handling for conventional Army fuzes and Safing and Arming (S&A) devices. The contractor's quality program plan or detailed inspection plan shall include a documented material handling system to be utilized for each critical defect characteristic defined by the item detail specification for fuzes/S&A devices. The system shall demonstrate that the contractor has positive procedures in effect for identifying and controlling material with features identified as critical defects. The contractor shall provide this information to the procuring contracting officer for review by the cognizant technical agency (CTA) in accordance with the approved Data Item Description (DID) specified on the Contract Data Requirements List (CDRL) in the contract (see 6.1.2). When specified in the contract, material handling procedures for critical defects may be required for items other than fuzes/S&A devices.

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3.2.1 System definition. The critical defect material handling system for an item is defined as all operations (e.g., manufacturing, inspection, material transport, storage, marking, rework, repair, disposal, etc.) subsequent to the creation of the feature classified as a critical defect.

3.2.2 System description/analysis requirements.

3.2.2.1 The description of the system shall include the following, as a minimum:

a. Flow chart and block diagram.

b. Identification of all material handling devices (automated and manual), including load/off-load points.

c. Description of method for identification and traceability of items being manufactured which contain critical defects.

d. Reference to all operating procedures of the system, including manufacturing, inspection, record keeping, handling of non-conforming material, and material handling equipment operation, under all conditions (e.g., normal operation, power failure, recall, etc.)

e. Controls used at reject/accept stations to assure mixing of good and defective material cannot occur.

3.2.2.2 The analysis of the system shall include the following, as a minimum:

a. Identification of each potential failure mode which could inadvertently permit material with a critical defect to leave the plant as "acceptable" product.

b. Description of methods employed by the contractor to prevent the occurrence of each failure mode."

* Add the following new paragraphs:

"3.3 Process controls. The contractor's quality program plan or detailed inspection plan shall include documented process controls which detail the specific procedures involved in the application of adhesives, sealants and lubricants during manufacture of conventional

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fuzes and safing and arming devices. These documented process controls shall be submitted to the contracting officer for review and approval by the CTA in accordance with the approved DID specified on the CDRL in the contract (see 6.1.2). The contractor shall not initiate production without written approval from the contracting officer. Once approved, the contractor shall not change the process without written approval from the contracting officer. The documented process controls shall include the following information, as a minimum:

a. Item nomenclature.

b. Applicable assembly.

c. List of applicable drawings and specifications.

d. List of inspection equipment.

e. List of materials and suppliers.

f. Process flow chart.

g. Bonding procedure for adhesives/sealants.

(1) Surface preparation method (i.e., cleaning, etching, primer application, protection of prepared parts, as applicable).

(2) Quantities to be mixed, if not pre-mixed.

(3) Method for measuring mix quantities.

(4) Potlife of mixed adhesives and controls to preclude use of deteriorated mixes.

(5) Labeling method for mixed adhesives.

(6) Storage procedures for mixed and un-mixed adhesives to prevent deterioration.

(7) Method of controlling contamination in bonding area (e.g., positive pressure filtered air, exclusion of parting agents such as silicone sprays).

(8) Application method of adhesive/sealant, including physical orientation of item.

(9) Method of controlling location of application (prevention of runs).

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(10) Curing method (including temperature, time, orientation of the assembly, fixturing used, specification of when safe to move bonded part).

(11) Tests used to verify the adequacy of bond or seal, including method, equipment, procedure, sample size and frequency.

h. Procedure for lubricant application

(1) Surface preparation method.

(2) Methods of controlling quality of lubricant before application such as storage procedure.

(3) Methods of controlling application amount, location, and preventing contamination.

(4) Tests used to verify presence, quality and thickness of applied lubricant.

i. Listing of workstation instructions.

j. Method and frequency of verification that work instructions are being followed.

k. Description and action taken upon discovery of failure to adhere to work instructions.

l. Revision record sheet."

* Add the following new paragraph.

"3.4 <u>Fuze and safing and arming devices (S&A) critical defects</u>.

3.4.1 <u>Applicability</u> - This requirement is applicable to all non-destructive fuze and S&A critical inspections unless exempted by the detailed item specification.

3.4.2 <u>System reliability</u> - Unless otherwise specified in the detailed item specification, the contractor shall provide, for each defect identified as critical, a manufacturing and inspection system which assures no more than one in a million fuzes or S&As contain the defect. This shall be assured by controlling the maximum defect rate produced and the error rate of the inspection equipment such that the product of the two terms when multiplied together is less than one in a million.

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3.4.2.1 Maximum defect rate produced - The maximum defect rate produced shall be defined as the largest defect rate expected for the characteristic of concern on a monthly or lot basis. The maximum defect rate shall be established by the contractor, however, it may not exceed one percent without approval of the procuring contracting officer. Once established, the contractor shall monitor the defect rate to assure it does not exceed the maximum rate allotted. If the established maximum defect rate is exceeded, the production of that feature shall be terminated until the cause is determined and corrected. Additionally all product for that period of time shall be rejected and reinspected.

3.4.2.2 Maximum error rate of the inspection system - The error rate of the inspection equipment shall be defined as the expected ratio of the number of defective parts accepted to the number of defective parts inspected by the equipment. The maximum error rate allowed is defined by the contractor to meet the system requirement as defined in 3.4.2. However, it may not exceed 1/500 without approval of the procuring contracting officer. Based on the maximum error rate defined for the equipment, the contractor shall develop a demonstration test procedure to demonstrate the error rate of the equipment. When specified in the contract or order, a test procedure shall be prepared (see 6.1.2) in accordance with MIL-STD-785 and include the maximum defect rate required. The test shall be performed using defective parts or reject standards. No part or standard shall be accepted during the test. If a part or standard is accepted, the cause for failure shall be isolated and corrected and the test rerun. Unless otherwise specified in the detailed item specification, the minimum number of test samples to be run shall be equal to 0.7 divided by the error rate (e.g. If the required error rate is 1/1000, the sample size would be 0.7 divided by (1/1000) = 700).

When specified in the contract or order, the test data shall be analyzed and results reported (see 6.1.2).

3.4.2.3 Periodic verification - Periodic verification of the system error rate shall be performed (See 6.2).

3.4.2.4 Redundant inspection equipment - The contractor may elect to use redundant inspection equipment in lieu of using a single piece of equipment with a very low error rate. Where redundant equipment is used, the inspection system error rate is defined as the error rates of the two pieces of equipment multiplied together."

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4.4.2a, b, c: Delete in its entirety and substitute the following:

"a. Critical and special defects - Unless otherwise specified, inspection for these defects should be at least 100% and whenever possible utilize non-operator dependent test equipment. Accepted items should be marked accordingly.

b. Sampling plans - Sampling plans are incorporated in the item detail specification either by reference to appropriate military standards or by stipulating other specific acceptance criteria. In cases where sampling is specified in accordance with MIL-STD-105, the contractor may request permission from the procuring activity to use an equivalent continuous sampling plan from MIL-STD-1235.

c. Major and minor defects - Major and Minor defects shall be inspected by sampling to the AQL indicated in the Classification of Defects and Tests paragraphs provided in the item detail specification, unless 100 percent inspection is indicated."

4.4.2.1: Delete in its entirety and substitute the following:

"4.4.2.1 Classification of defects - See item detail specification. For definitions, see 6.3.3 and 6.3.4 of this specification."

4.4.3: Add the following sentence:

"The sampling plans for testing shall conform to the provisions of 4.4.2.b above."

6.1.2: Delete "a" in its entirety and substitute the following:

"6.1.2 Contract data requirements

a. Contract data requirements for inspection equipment designs shall conform to Data Item Description DI-R-1714, or as specified in the contract. See 6.2."

* 6.1.2: Add the following:

"c. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.410-6 (DD Form 1423) are invoked

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and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification are cited in the following paragraphs.

Ref. Para.	DID Number	DID Title	Suggested Tailoring
3.2	DI-R-5297	Quality Program Plan	Material Control
3.3	DI-R-5297	Quality Program Plan	Process Controls
3.4.2.2	DI-R-7035	Procedures, Reliability Test and Demonstration	---
3.4.2.2	DI-R-7034	Reports, Reliability Test and Demonstration (Final Report)	---
6.1.2.a	DI-R-1714	Inspection Equipment Designs	---

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5000.19L, Vol. II, AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer)."

6.2: Delete in its entirety and substitute the following:

"6.2 Inspection equipment designs - Inspection equipment designs are of two types - Government Special Inspection Equipment (SIE) designs and contractor designs. SIE designs are designated by drawing numbers under the "Method of Inspection" heading in Section 4, or on the Equipment Lists referenced on the Equipment Tabulation, whichever is specified in the item detail specification. Design responsibility for all other inspection equipment is assigned to the contractor. However, the contractor need not furnish any design when a complete Government SIE design is part of the Technical Data Package (TDP). Unless otherwise specified, the contractor may submit alternate or modified contractor designs of SIE in accordance with 6.2.2 and 6.2.3 should he elect to do so."

6.2.2, Line 17: Delete "The contractor is referred to MIL-HDBK-204 "Inspection Equipment Designs" for guidance."

6.2.3:

Second sentence: Add the following: "or in the contract."

Line 11: Delete "Picatinny Arsenal" and substitute "AMCCOM".

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Add the following at the end of paragraph:

"When the contractor submits inspection equipment designs to the Government for approval he shall give the following information in his letter of transmittal:

a. The contract number.

b. The contract item (name, model number, etc.).

c. The designs remaining to be submitted and the expected date of submittal."

Add new paragraphs 6.2.4, 6.2.4.1 and 6.2.4.2:

"6.2.4 Automatic inspection equipment.

6.2.4.1 Approval of automated inspection equipment shall occur in two phases. The first phase will be the design phase. In this phase, designs, either conceptual or detailed, will be submitted for evaluation to the CTA indicated in the item specification. Design approval will authorize the contractor to proceed with fabrication. The second phase will be the equipment evaluation phase. During this phase an acceptance test will be conducted. Final approval of the inspection system will be contingent upon the performance of a successful test. A plan defining the requirements of an acceptable test will be prepared by the contractor and submitted for approval to the CTA. The test will be witnessed by DCAS or if the equipment is of such complexity that DCAS does not feel qualified to perform the evaluation, the CTA will provide assistance.

6.2.4.2 In addition to the initial acceptance test conducted in phase 2, periodic tests shall be performed to verify continued system reliability. A plan will be provided by the contractor which will define the requirements for acceptable verification tests and also prescribe the frequency at which the tests will be performed. This plan will require approval of the CTA. DCAS will witness the tests or if they do not feel qualified, assistance will be provided by the CTA."

PAGE 8

Delete paragraphs 6.3.3, 6.3.4, 6.3.5, 6.3.6 and 6.3.7 in their entirety and substitute the following:

"6.3.3 Critical defect - A defect that judgement and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product; or a defect that judgement and

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experience indicate is likely to prevent performance of the tactical function of a major end item such as an aircraft, tank, land vehicle, missile, artillery or other major weapon system.

6.3.4 Special defect - A defect, other than Critical, that judgement and experience indicate may, depending upon the degree of variance from the design requirement:

a. Result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product, or

b. Prevent performance of the tactical function of a major end item.

6.3.5 Automatic inspection equipment - Equipment for which no, or minimal, human involvement is required in the acceptance determination. This would include equipment employing probes/sensors/transducers that are automatically manipulated to perform measuring and detection functions. If a readout is provided, the equipment will be categorized as automatic even if operator interpretation is needed in the accept/reject decision."

The margins of this amendment are marked with an asterisk or vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience 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 amendment.

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(Project 1395-A244)