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| +          |
| INCH-POUND |

MIL-C-63990C (AR)  
 AMENDMENT 4  
15 October 1999  
 SUPERSEDING  
 AMENDMENT 3  
 15 SEPTEMBER 1996

## MILITARY SPECIFICATION

CARTRIDGE 5.56mm, TRACER, M856

|  |
|--|
| MIL-C-63990C was inactivated after 15 September 1996 For New Design. |
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This amendment forms a part of MIL-C-63990 (AR), dated 15 February 1994, and is approved for use by the US Army Armament, Research, Development and Engineering Center, and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 2

2.1.1 Under military specification delete the following:

|             |  |
|-------------|--|
| "MIL-L-3150 | Lubricating Oil, Preservative,<br>Medium                             |
| MIL-C-16173 | Corrosion Preventive Compound,<br>Solvent Cutback, Cold Application" |

\* 2.1.2 Under drawings add the following:

|          |   |                                     |
|----------|---|-------------------------------------|
| "9349659 | - | Jacket                              |
| 9357840  | - | Jacket, Pointed with Filler, Point" |

PAGE 4

\* 3.6 Delete in its entirety and substitute the following:

"3.6 Velocity. The average velocity of the cartridges, conditioned at 70 degrees plus or minus 2 degrees F, shall be 3,010 feet per second (fps) plus or minus 40 fps at 78 feet from the muzzle of the weapon. The standard deviations of the velocities shall not exceed 40 fps."

\* 3.7 Delete in its entirety and substitute the following:

"3.7 Chamber pressure. The average chamber pressure of the sample cartridges, conditioned at 70 degrees plus or minus 2 degrees F, shall not exceed 58,700 psi. Neither the chamber pressure of an individual sample test cartridge nor the average chamber pressure plus three standard deviations of chamber pressure shall exceed 64,700 psi."

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- \* 3.8 Delete in its entirety and substitute the following:

"3.8 Port pressure. The mean port pressure minus three standard deviations shall not be less than 15,300 psi for sample cartridges conditioned at 70 degrees plus or minus 2 degrees F."

- \* 3.10.2 Delete in its entirety and substitute the following:

"3.10.2 Chamber pressure. The average chamber pressure shall not vary from the average chamber pressure of the sample test cartridges conditioned at 70 degrees plus or minus 2 degrees F. by more than 7,000 psi. The average chamber pressure of the sample cartridges of the same lot conditioned at 125 degrees plus or minus 2 degrees F shall not exceed 63,700 psi. Any decrease in pressure is acceptable.

- \* 3.10.3 Delete in its entirety and substitute the following:

"3.10.3 Port pressure. The average port pressure shall not vary by more than 1,500 psi from the average port pressure of the sample test cartridges of the same lot conditioned at 70 degrees plus or minus 2 degrees F, and shall not be less than 14,00 psi."

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- \* 4.4.1 Add the following:

|                                       |         |     |
|---------------------------------------|---------|-----|
| "Jacket                               | 9349659 | 25  |
| Jacket, Pointed with<br>Filler, Point | 9357840 | 25" |

- \* Delete 4.3.2" and substitute "4.4.2".

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- \* Table I Title Delete "Jacket, pointed" and substitute "Jacket"

Drawing Number Delete "9357839" and substitute "9349659".

Next Higher Assembly Delete "9342866" and substitute "9357839".

Delete "Sheet 1 of 4" and substitute "Sheet 1 of 6".

Delete "wall thickness variation (2 locations)" and substitute "wall thickness variation".

PAGE 10

- \* Delete "Table II" and substitute "Table I".

TABLE I Delete "Sheet 2 of 4" and substitute "Sheet 2 of 6".

Add sheet 3 of 6 included on page 3.

Add sheet 4 of 6 included on page 4.

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TABLE I Delete "Sheet 3 of 4" and substitute "Sheet 5 of 6".

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TABLE I Delete "Sheet 4 of 4" and substitute "Sheet 6 of 6".

Under Examination or Test Column, delete "Critical" and substitute "Critical/Special".

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4.5.6 Delete the last sentence and substitute the following:

"If a visual critical or special defect is found in a sample either just prior to a firing test or after a firing test (and the defect is not due to the firing), the lot shall be rejected."

PAGE 15

Delete page 15 in its entirety and substitute new page 15 included as page 5.

TABLE I First article inspection  
CLASSIFICATION OF CHARACTERISITICS

Title: Jacket, Pointed

Sheet 3 of 6

Drawing Number  
9357839

Next Higher Assembly  
9342866

| Examination or Test                                      | Conformance Criteria | Requirement Paragraph | Inspection Method Reference |
|--|----------------------|-----------------------|-----------------------------|
| Variation in wall thickness (see note 4 on Dwg. 9357839) | 25, 0-1              | 3.2                   | SMTE                        |
| Evidence of poor workmanship                             | 25, 0-1              | 3.2                   | Visual                      |

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TABLE I First article inspection  
CLASSIFICATION OF CHARACTERISITICS

|  |                         |                           |                                   |
|--|-------------------------|---------------------------|-----------------------------------|
| Title: Jacket, Pointed<br>with Filler, Point | Sheet 4 of 6            | Drawing Number<br>9357840 | Next Higher Assembly<br>9342866   |
| Examination or<br>Test                       | Conformance<br>Criteria | Requirement<br>Paragraph  | Inspection<br>Method<br>Reference |
| Length, tracer cavity<br>(.430)              | 25, 0-1                 | 3.2                       | SMTE                              |
| Evidence of poor<br>workmanship              | 25, 0-1                 | 3.2                       | Visual                            |

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QUALITY CONFORMANCE INSPECTION  
CLASSIFICATION OF CHARACTERISITICS

Paragraph Title:  
4.5.6.1 Cartridge, 5.56mm, Tracer, Sheet 1 of 3 Drawing Number  
M856 (Inspection) M856 (Inspection) 9342865

Next Higher Assembly  
Not Applicable

| Classification | Examination<br>or Test  | Conformance<br>Criteria | Requirement<br>Paragraph | Inspection<br>Method<br>Reference |
|----------------|---|-------------------------|--------------------------|-----------------------------------|
| CRITICAL       |   |                         |                          |                                   |
| 1.             | Perforated case (7)   | 100%                    | 3.1                      | Gage                              |
| 2.             | Case split in K, L or<br>M Location (6)   | 100%                    | 3.1                      | Gage                              |
| 3.             | Weight, min. see note 1   | 100%                    | 3.1                      | See note 2                        |
| 4.             | Case split in I, S or J location<br>when it is determined that there<br>is a potential for loss of<br>propellant (6)  | 100%                    | 3.1                      | Gage                              |
| SPECIAL        |   |                         |                          |                                   |
| a.             | Primer missing (32)   | 100%                    | 3.1                      | Visual                            |
| b.             | Primer cocked (33)  | 100%                    | 3.1                      | Visual                            |
| c.             | Primer inverted (34)  | 100%                    | 3.1                      | Visual                            |
| MAJOR          |   |                         |                          |                                   |
| 101.           | Total length  | Level I                 | 3.1                      | Gage                              |
| 102.           | Case split in I, S or J location<br>when it is determined that<br>there is no potential for<br>loss of propellant (6) | 100%                    | 3.1                      | Gage                              |
| 103.           | Corrosion or stain with<br>etching (2)  | Level I                 | 3.1                      | Visual                            |
| 104.           | Chamfer missing on<br>head (rim) (13)   | Level I                 | 3.1                      | Visual                            |
| 105.           | Case mouth not crimped<br>in cannellure (11)  | Level I                 | 3.1                      | Visual                            |
| 106.           | No evidence of mouth anneal (21)  | Level I                 | 3.1                      | Visual                            |
| 107.           | Draw scratch (8)  | Level I                 | 3.1                      | Visual                            |
| 108.           | Split bullet jacket (24)  | Level I                 | 3.1                      | Visual                            |
| 109.           | Loose bullet (25)   | Level I                 | 3.1                      | Visual                            |
| 110.           | Loose primer (35)   | Level I                 | 3.1                      | Visual                            |

NOTES:

1. Each lightweight cartridge shall be disassembled and the propellant weighed. Any cartridge containing less than 13 grains of propellant shall be classed as a critical defect. Any cartridge containing 13 grains or more of propellant shall be classed as a major defect.

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2. One hundred percent examination for weight may be either by weighing or by measuring for propellant fill; method used must be capable of detecting a cartridge containing less than 13 grains of propellant.

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\* 4.5.6.1 Under Minor

Characteristic 215 Delete: No waterproofing material (primer pocket joint) (37)" and substitute "Insufficient/smeared waterproofing material (primer pocket joint) (37)"

Characteristic 216 Delete "(28)" and substitute "(38)".

Characteristic 218 Delete in its entirety and substitute the following:  
"Missing or improper bullet tip ID (see note 4).

Note 4 A cartridge is acceptable if it is missing up to 10% of the required bullet identification prior to linking, clipping or insertion into cartons; up to 40% following any necessary handling or orientation and after linking or clipping, or insertion into cartons".

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\* 4.5.6.2 Characteristic 102 Delete acceptance criteria from "75, 7-8" and substitute "75, 6-7".

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\* Table III Note 2 Delete first sentence in its entirety and substitute the following:

"The acceptance and retest numbers of Table IV shall be applied to the M249 results (all temperatures combined) and the M16A2 results (all temperatures combined) individually except where noted to combine them".

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TABLE IV Under "a, Perforation of firing pin indent in primer cup", delete the following:

"(1) M249 Machinegun 0 see 3/ 1"  
and substitute:  
"(1) M249 Machinegun 22 28 (see 3/) 40".

\* 3c. Delete in its entirety and substitute the following:

"c. Escape of gas around primer cup

|                                 | First Sample | Retest(Combined) |        |
|---------------------------------|--------------|------------------|--------|
|                                 | Accept       | Reject           | Accept |
| (1) Total number of all leakers |              |                  |        |
| M16A2 Rifle                     | 8            | 16               | 22     |
| M249 Machinegun                 | 17           | 35               | 67     |

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|  |   |   |   |
|--|---|---|---|
| (2) Number of leakers that cover<br>50% or more of the periphery |   |   |   |
| M16A2 Rifle  | 3 | 7 | 9 |
| M249 Machinegun  | 3 | 7 | 9 |

\* Add the following new defect at the end of the Table:

|   |    |    |      |
|---|----|----|------|
| "7. Total defects for both<br>M16 Rifle and<br>M249 Machinegun combined | 35 | 75 | 140" |
|---|----|----|------|

\* 4.5.9 Delete the first sentence and substitute:

"The inspection equipment required to perform the inspections specified herein is identified in the "Inspection Method Reference" column of the Classification of Characteristics listings specified in Table I, 4.5.6.1 and 4.5.6.2".

Note 3 Delete in its entirety and substitute the following:

"If defects in excess of the acceptance number in Table IV are noted in the first sample, a second sample consisting of double the quantity of cartridges specified under function and casualty in Table III shall be fired in both weapons. Prior to the testing of the second sample, the firing pip of the specific weapon in which the defect occurred shall be replaced with a new firing pin. If the cumulative number of defects from both the first and second sample exceeds the cumulative acceptance number in Table IV, the lot shall be rejected."

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\* 6.3 Delete "Commander, U.S. Army ARDEC, ATTN: SMCAR-QAF-I, Picatinny Arsenal, N.J. 07806-5000" and substitute "Commander, U.S. Army TACOM-ARDEC, ATTN: AMSTA-AR-QAC-C, Picatinny Arsenal, N.J. 07806-5000."

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\* 6.6 Delete "Commander, ARDEC, ATTN: SMCAR-QAF-S, Picatinny Arsenal, N.J. 07806-5000" and substitute "Commander, U.S. Army TACOM-ARDEC, ATTN: AMSTA-AR-QAC-C, Picatinny Arsenal, N.J. 07806-5000."

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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