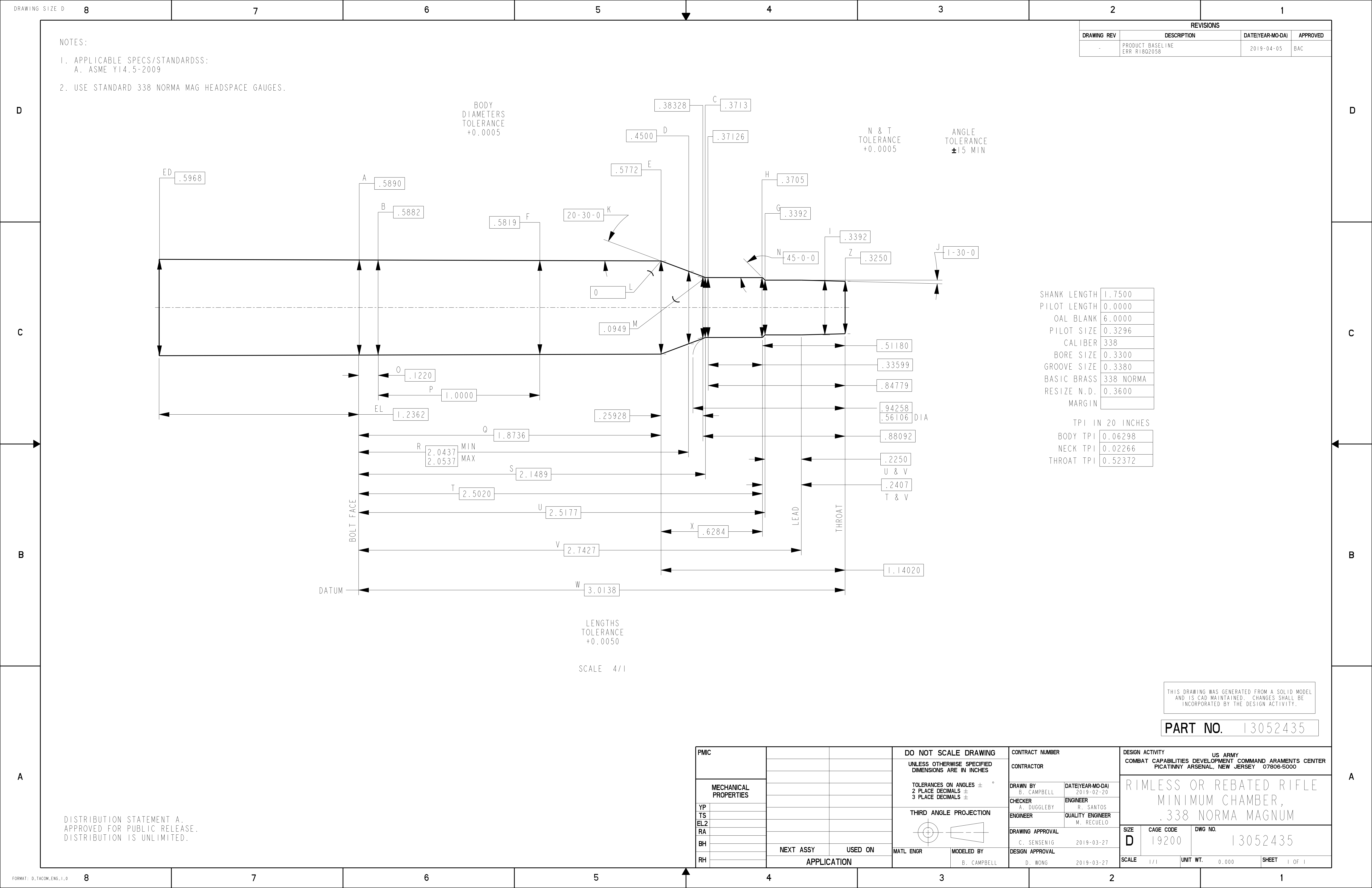




NOTE: Prepared by U.S. Army CCDC,
FCDD-ACM-MI, Picatinny Arsenal, NJ

INCH-POUND

DETAILED SPECIFICATION

CARTRIDGE, CALIBER .338: NORMA MAGNUM MULTI-PURPOSE, M1214

This specification is approved for use by all Departments and Agencies of the Department of Defense within the distribution limitations noted at the bottom of the page.

1. SCOPE

1.1. Scope. This detailed specification prescribes the performance requirements and identifies the verification procedures for the CARTRIDGE, CALIBER .338: Norma Magnum multi-purpose (MP), M1214 for use in the Light Weight Machine Gun weapon systems.

Comments, suggestions, or questions on this document should be addressed to: USSOCOM PM-SOF Lethality, MacDill AFB, FL

AMSC N/A

FSC 1305

DISTRIBUTION STATEMENT A. Approved for public release: distribution unlimited.

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DESTRUCTION NOTICE: Destroy by any method that will prevent disclosure of contents or reconstruction of this document.

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 of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

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2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-63460 - Cleaner, Lubricant and Preservative for Weapons
and Weapon Systems

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-636 - Visual Inspection Standard for Small
Arms Ammunition through Caliber .50
MIL-STD-644 - Visual Inspection Standards and Inspection
Procedures for Inspection of Packaging, Packing
and Marking of Small Arms Ammunition
MIL-STD-1168 - Ammunition Lot Numbering and
Ammunition Data Card
MIL-STD-1916 - DOD Preferred Methods for Acceptance of
Product

(Copies of these documents are available online at <https://quicksearch.dla.mil/>.)

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

U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND (CCDC)
DRAWINGS AND SPECIFICATIONS

13101222-CARTRIDGE, CALIBER .338 NORMA MAGNUM MULTI-PURPOSE
(MP), M1214
13101224-PROPELLANT, OBP(R) 718
13052438-BARREL, TEST, VELOCITY, ELECTRONIC PRESSURE (Barrel shall be
24" OAL)
13052439-BARREL, TEST, ACCURACY (Barrel shall be 24" OAL)
13101227-CASE, .338 NORMA, MACHINE GUN VARIANT
13052435-RIMLESS OR REBATED RIFLE MINIMUM CHAMBER .338 NORMA
MAGNUM

(Copies of these drawings and specifications are available from USSOCOM PM-SOF Lethality,
MacDill AFB, FL)

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 these documents are those cited in the solicitation or contract.

ASTM INTERNATIONAL

- | | | |
|-----------|---|---|
| ASTM E3 | - | Standard Guide for Preparation of Metallographic Specimens |
| ASTM E384 | - | Standard Test Method for Microindentation Hardness of Materials |

SPORTING ARMS & AMMUNITION MANUFACTURER'S INSTITUTE (SAAMI)

- | | | |
|--------------|---|---|
| SAAMI Z299.4 | - | Voluntary Performance Standards for Pressure and Velocity of Centerfire Rifle Sporting Ammunition |
|--------------|---|---|

(Copies of SAAMI documents are available online at <http://www.saami.org>. Copies of ASTM standards may be ordered online at <http://www.astm.org/> or ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article inspection. When specified (see 6.2), a sample of the .338 NM MP shall be subjected to first article in accordance with section 4.3 and Table III.

3.2 Conformance inspection. A sample of the .338 NM MP shall be subjected to conformance inspection in accordance with section 4.4 and Table IV.

3.3 Cartridge. The .338 NM MP cartridge dimensions shall comply with all the requirements specified on the Drawing 13101222.

3.3.1 Cartridge overall length. The nominal overall length of the assembled cartridge shall be in accordance with Drawing 13101222.

3.3.2 Primer seating depth. The primer shall be seated in the cartridge case to a depth in accordance primer seating depth .008" +.000/-.008.

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3.3.3 Component. The .338 NM MP cartridge components are the projectile, the cartridge case, the propellant and the primer.

3.3.3.1 Projectile. The projectile for the .338 NM MP shall be in accordance with Drawing 13101223.

3.3.3.2 Cartridge case. The cartridge case shall be .338 Norma Magnum in accordance with Drawing 13101227.

3.3.3.3 Primer. The primer shall be commercial FEDERAL 215M or 215, CCI 250, REMINGTON 9 1/2M, or WINCHESTER WLRM primers, and be crimped or staked in place.

3.3.3.4 Propellant. The propellant shall be in accordance with Drawing 13101224. The manufacturer shall establish the charge weight to meet performance requirements in paragraph 3.4, 3.5, and 3.6.; however, the weight shall not exceed 94.5 grains, and a minimum charge weight shall be established to preclude a bullet in bore situation (see paragraph 6.11).

3.4 Dispersion. Five, 5-round groups through each target at distance no less than 200 yards. The average of all groups may not exceed 1.75 Minute of Angle (MOA), and no individual group may exceed 2.25 MOA. All accuracy barrels shall be chambered to the ASR accuracy barrel configuration Drawing 13052439. Barrel shall be 24" OAL.

3.5 Chamber pressure. The average chamber pressure of cartridges conditioned and fired at $-40^{\circ}\text{F} \pm 2^{\circ}\text{F}$ and $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$ temperature shall not exceed 68,100 psi and shall not exceed 71,500 psi at $+160^{\circ}\text{F} \pm 2^{\circ}\text{F}$. Neither the chamber pressure of an individual cartridge nor the average chamber pressure plus three standard deviations of chamber pressure at each temperature shall exceed 72,000 psi. Cartridge shall be conditioned per Section 4.5.6.3. All EPVAT barrels shall be chambered to the ASR EPVAT barrel configuration Drawing 13052438. Barrel shall be 24" OAL.

3.5.1 Chamber pressure at extreme conditions. The pressure of sample cartridges conditioned at extreme temperature below shall not vary from the average chamber pressure of the sample test cartridges conditioned at $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$ by more than $\pm 4,500$ psi.

- a. Conditioned at $-40^{\circ}\text{F} \pm 2^{\circ}\text{F}$ for not less than 4 hours and fired at that temperature.
- b. Conditioned at $+160^{\circ}\text{F} \pm 2^{\circ}\text{F}$ for not less than 4 hours and fired at that temperature.

3.6 Velocity. The average muzzle velocity of the cartridges conditioned and fired at $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$ temperature shall be within $2,650 \pm 50$ feet per second (fps) measured at 15 ft from the muzzle of the weapon. The standard deviation of the velocities shall be not greater than 16 fps.

3.6.1 Velocity at extreme temperature. The average muzzle velocity of the cartridges conditioned and fired at extreme temperature shall not vary by more than ± 200 fps from the average corrected velocity of the sample cartridge conditioned at $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$.

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3.7 Bullet extraction. The individual force required to separate the bullet from the cartridge case shall be not less than 60 lbs.

3.8 Function and casualty. The cartridges when conditioned at 70°F ± 2°F, 160°F ± 2°F, and -40°F ± 2°F shall function without casualty. There shall be no weapon stoppages due to the cartridge. The cartridge shall meet all function and safety requirements of Table VI. Misfires shall be considered separately in accordance with Table VI. Function and casualty testing shall be conducted using the two unsuppressed accuracy barrels chambered to the ASR accuracy barrel configuration.

3.9 Workmanship. Visually verify that all parts and assemblies shall be free of cracks, splits, perforations, burrs, and foreign matter. The cleaning method used shall not be injurious to any part, nor shall the parts be contaminated by any cleaning agent.

3.10 Case hardness. Case hardness shall be in accordance with Drawing 13101227.

3.11 Ammunition lot numbering. Ammunition lot numbers shall be assigned in accordance with MIL-STD-1168.

3.12 Waterproofness. All cartridges shall have both case mouth and primer sealant. Sealant has to be detectable by ultra violet (UV) light.

4. VERIFICATION

TABLE I. Requirement/verification cross reference matrix.

<u>METHOD OF VERIFICATION</u> 1 – Analysis 2 – Demonstration 3 – Examination 4 – Test		<u>CLASSES OF VERIFICATION</u> A – First article inspection B – Conformance inspection						
Section 3 Requirement		Verification Methods				Verification Class		Section 4 Verification Procedures
		1	2	3	4	A	B	
3.1	First article		X	X	X	X		4.3
3.2	Conformance inspection		X	X	X		X	4.4
3.3	Cartridge			X	X	X	X	4.5.1
3.4	Dispersion		X		X	X	X	4.5.2
3.5	Chamber pressure		X		X	X	X	4.5.3
3.6	Velocity		X		X	X	X	4.5.4
3.7	Bullet extraction		X		X	X	X	4.5.5
3.8	Function and casualty		X		X	X	X	4.5.6

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3.9	Workmanship			X		X	X	4.5.7
3.10	Case hardness				X	X	X	4.5.8
3.11	Ammunition lot numbering			X		X	X	4.5.9
3.12	Waterproofness				X	X	X	4.5.10

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

- a. First article inspection (see 4.3)
- b. Conformance inspection (see 4.4)

4.2 Inspection conditions. Unless otherwise specified, all inspection shall be performed in accordance with the test conditions specified in section 4.5.

4.3 First article inspection. When specified in the contract, a sample of the cartridges shall be subjected to first article verification in accordance with Tables I, II, III, V, VI, and 4.5.

4.3.1 First article quantity. The first article sample shall consist of the following items in sample quantities as indicated in Table II.

TABLE II. First article quantity.

Part Description	Drawings	Quantity
Cartridge, Caliber .338 Norma Magnum Multi-Purpose	13101222	3000
Projectile	13101223	5 <u>1</u> /
Case	13101227	5 <u>1</u> /
Primer	FEDERAL 215M or 215 CCI 250 REMINGTON 9 1/2M WINCHESTER WLRM	5 <u>1</u> /
Notes: <u>1</u> / Per station per machine. Each station of each machine is considered a separate manufacturing process.		

4.3.2 First article rejection. If any assembly, component or test specimen fails to comply with requirements, the first article sample shall be rejected.

TABLE III. First article tests and inspection.

Examination or Test	Conformance Criteria			Requirement Paragraph	Inspection Method/Paragraph Reference
	Qty	Acc	Rej		
Cartridge – Examination of Defects					
Critical defects	100% & Level VII	0	1	3.3, 3.9	Table V, 1/

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Major defects (101-105)	100%	0	1	3.3, 3.9	Table V, 1/
Major defects (106-137)	Level V	0	1	3.3, 3.9	Table V, 1/
Minor defects	Level III	0	1	3.3, 3.9	Table V, 1/
Dispersion <u>2</u> /	100	<u>6</u> /		3.4	4.5.2
Chamber pressure <u>2</u> /, <u>3</u> /, <u>4</u> /					
a. -40°F ± 2°F	20	0	1	3.5	4.5.3
b. 70°F ± 2°F	20	0	1	3.5	4.5.3
c. 160°F ± 2°F	20	0	1	3.5	4.5.3
Velocity <u>2</u> /, <u>3</u> /, <u>4</u> /					
a. -40°F ± 2°F	20	0	1	3.6	4.5.4
b. 70°F ± 2°F	20	0	1	3.6	4.5.4
c. 160°F ± 2°F	20	0	1	3.6	4.5.4
Bullet extraction	25	0	1	3.7	4.5.5

TABLE III. First article tests and inspection – Continued.

Examination or Test	Conformance Criteria			Requirement Paragraph	Inspection Method/Paragraph Reference
	Qty	Acc	Rej		
Function and casualty					
a. -40°F ± 2°F	60	<u>5</u> /		3.8	4.5.6
b. 70°F ± 2°F	60	<u>5</u> /		3.8	4.5.6
c. 160°F ± 2°F	60	5/		3.8	4.5.6
Hardness (side wall)	20	0	1	3.9	4.5.8.1
Hardness (head)	20	0	1	3.9	4.5.8.2
Waterproofness	20	0	1	3.11	4.5.10

Notes:

- 1/ Level III, Level V, or Level VII refers to Verification Level III, V, or VII respectively of MIL-STD-1916.
- 2/ The total sample amount shall be broken up evenly between the test barrels.
- 3/ These tests shall be done simultaneously.
- 4/ Each 20 round sample shall meet the requirements of 3.5 and 3.6.
- 5/ The first article sample shall be rejected when function and casualty defects plus firing defects observed on all other firing tests are greater than any acceptance numbers listed in Table VI.
- 6/ The lot shall be rejected if the average extreme spread of all 5-shot groups exceeds the specified requirement or if two or more 5-shot groups exceed the individual group requirement. If one 5-shot groups exceed the individual group requirement the lot is subject to a second sample retest consisting of the same quantity used in the first test. The lot shall be rejected if the cartridges in the second sample fail to comply with all the applicable requirements.

4.4 Conformance inspection.

4.4.1 Conformance verification (Lot Acceptance Tests). Sample cartridges and components shall undergo conformance inspection by examination, analysis, demonstration and tests as specified in accordance with Tables I, IV, V, and VI, and applicable paragraphs within this section. For conformance inspections the same sample specimen may be used for all non-destructive examinations or tests.

4.4.2 Inspection lot formation. The cartridges shall be assembled into identifiable lots. Each lot shall consist of the same type of cartridges, manufactured under essentially the same conditions. Unless otherwise specified, component parts shall be inspected, and tested. Production lot formation shall conform to requirements of MIL-STD-1168 and inspection sample formation shall conform to the requirements of MIL-STD-1916. The cartridge lot shall contain:

- a. Cartridges cases from one lot number.
- b. Primers from one lot number.
- c. Bullets from one lot number.
- d. Propellant from one lot number.

4.4.3 Inspection of cartridges by classification of defects. Inspection of cartridges shall be performed for known character defects as specified in Table V as well as any design specific defects that are not listed in Table V. Inspection sampling requirements for critical, major and minor characteristics are defined in MIL-STD-1916.

4.4.4 Conformance rejection. If any assembly, component or test specimen fails to comply with any of the applicable requirements, the conformance sample shall be rejected.

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TABLE IV. Conformance tests.

Examination or Test	Conformance Criteria			Requirement Paragraph	Inspection Method/Paragraph Reference
	Qty	Acc	Rej		
Cartridge - Examination of Defects					
Critical defects	100% & Level VII	0	1	3.3, 3.9	Table V, <u>1/</u>
Major defects (101-105)	100%	0	1	3.3, 3.9	Table V, <u>1/</u>
Major defects (106-139)	Level IV	0	1	3.3, 3.9	Table V, <u>1/</u>
Minor defects	Level II	0	1	3.3, 3.9	Table V, <u>1/</u>
Dispersion	100	<u>2/</u> , <u>6/</u>		3.4	4.5.2
Chamber pressure					
a. -40°F ± 2°F	20	<u>2/</u> , <u>3/</u>		3.5	4.5.3
b. 70°F ± 2°F	20	<u>2/</u> , <u>3/</u>		3.5	4.5.3
c. 160°F ± 2°F	20	<u>2/</u> , <u>3/</u>		3.5	4.5.3
Velocity					
a. -40°F ± 2°F	20	<u>2/</u> , <u>3/</u>		3.6	4.5.4
b. 70°F ± 2°F	20	<u>2/</u> , <u>3/</u>		3.6	4.5.4
c. 160°F ± 2°F	20	<u>2/</u> , <u>3/</u>		3.6	4.5.4
Bullet extraction	25	<u>4/</u>		3.7	4.5.5
Function and casualty					
a. -40°F ± 2°F	60	<u>5/</u>		3.8	4.5.6
b. 70°F ± 2°F	60	<u>5/</u>		3.8	4.5.6
c. 160°F ± 2°F	60	<u>5/</u>		3.8	4.5.6
Sidewall	10	<u>8/</u>		3.9	4.5.8.1
Head	10	<u>7/</u>		3.9	4.5.8.2
Waterproofness	10			3.11	4.5.10

Notes:

1/ Level II, Level IV, or Level VII refers to Verification Level II, IV, or VII respectively of MIL-STD-1916.

2/ The total sample amount shall be broken up evenly between the test barrels.

3/ These tests shall be done simultaneously. Failure to comply with the applicable requirement shall be cause for testing of a second sample consisting of double the quantity used in the first test. Failure of the cartridges in the second sample to comply with the applicable requirement shall be cause for rejection of the lot. If that failed requirement was performed at a particular temperature the double sample shall be performed at that temperature.

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TABLE IV. Conformance tests – Continued.

Notes:

- 4/ Failure of three or more cartridges shall be cause for rejection of the lot. If one or two cartridge fails in the first test a second sample consisting of double the number of cartridges in the first sample shall be tested. Total cartridge failures in both the first and second samples shall be not greater than two failures to extract.
- 5/ If the firing of a second Function and Casualty sample is required due to the occurrence of a misfire as specified by Table VI, the second sample shall consists of 360 cartridges, and shall be fired in accordance with the Function and Casualty test procedure. This second sample shall be tested only for misfires and critical defects in determining acceptance/rejection.
- 6/ The lot shall be rejected if the average extreme spread of all 5-shot groups exceeds the specified requirement or if two or more 5-shot groups exceed the individual group requirement. If one 5-shot groups exceed the individual group requirement the lot is subject to a second sample retest consisting of the same quantity used in the first test. The lot shall be rejected if the cartridges in the second sample fail to comply with all the applicable requirements.
- 7/ Failure of one or more cartridges to comply with the applicable requirement shall be cause for rejection of the lot. No second sample permitted.
- 8/ Failure of the cartridges to comply with the applicable requirement shall be cause for rejection of the lot subject to testing a second sample consisting of double the quantity of cartridges used in the first test. Failure of the cartridges in the second sample to comply with the applicable requirement shall be cause for rejection of the lot.

TABLE V. Defect inspections.

Classification	Examination or Test 1/	Conformance Criteria	Requirement Paragraph	Inspection Method/Paragraph Reference
Critical				
1	Propellant weight under minimum 2/	100% & Level VII	3.3	Scale
2	Case split in K, L, or M location (6)	100% & Level VII	3.3	Visual
3	Case split in I, S, or J location (6) when loss of powder occurs	100% & Level VII	3.3	Visual
4	Perforated case (7)	100% & Level VII	3.3	Visual
Major				
101	Primer missing (32)	100%	3.3	Visual/Gage

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102	Cocked primer (33)	100%	3.3	Visual/Gage
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TABLE V. Defect inspections – Continued.

Classification	Examination or Test <u>1</u> /	Conformance Criteria <u>3</u> /	Requirement Paragraph	Inspection Method/Paragraph Reference
103	Primer Inverted (34)	100%	3.3	Visual/Gage
104	Case split in I, S, or J location (6) with no loss of powder	100%	3.3	Visual/Gage
105	Cartridge type, incorrect <u>4</u> /	100%	3.3	Visual/Gage
106	Corroded or stained, if etched (cartridge) (2)	Level IV	3.3	Visual
107	Round head (case) (4)	Level IV	3.3	Visual/Gage
108	Dent (case) (5)	Level IV	3.3	Visual
109	Draw scratch (case) (8)	Level IV	3.3	Visual
110	Scratch (case) (9)	Level IV	3.3	Visual
111	Beveled underside of head (case) (10)	Level IV	3.3	Visual
112	Scaly metal (case) (12)	Level IV	3.3	Visual
113	No chamfer on head (rim) (case) (13)	Level IV	3.3	Visual
114	Fold (case) (14)	Level IV	3.3	Visual
115	Wrinkle (case) (15)	Level IV	3.3	Visual
116	Buckle (case) (16)	Level IV	3.3	Visual
117	Bulge (case) (17)	Level IV	3.3	Visual
118	Defective head (case) (19)	Level IV	3.3	Visual
119	Defective mouth (case) (20)	Level IV	3.3	Visual
120	No visible evidence of mouth anneal (case) (21)	Level IV	3.3	Visual
121	Dent (bullet) (22)	Level IV	3.3	Visual
122	Split bullet jacket (24)	Level IV	3.3	Visual
123	Loose bullet (25)	Level IV	3.3	Visual
124	Scaly metal (bullet) (27)	Level IV	3.3	Visual
126	Upset (crooked) point (bullet) (28)	Level IV	3.3	Visual
127	Loose primer (35)	Level IV	3.3	Visual
128	Total length	Level IV	3.3	Gage
129	Cartridge profile failure	Level IV	3.3	Gage

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TABLE V. Defect inspections - Continued.

Classification	Examination or Test	Conformance Criteria 3/	Requirement Paragraph	Inspection Method/Paragraph Reference
131	Case headspace	Level IV	3.3	Gage
132	Diameter of head	Level IV	3.3	Gage
133	Thickness of head	Level IV	3.3	Gage
134	Depth of primer	Level IV	3.3	Gage
136	Cartridge identification marking missing/incorrect	Level IV	3.3	Visual
137	No vent hole	Level IV	3.3	Visual/ Gage
Minor				
201	Discolored, dirty, oily case (1)	Level II	3.3	Visual
202	Dent (case) (5)	Level II	3.3	Visual/Gage
203	Draw scratch (case) (8)	Level II	3.3	Visual/Gage
204	Scratch (case) (9)	Level II	3.3	Visual
205	Scaly metal (case) (12)	Level II	3.3	Visual
206	Fold (case) (14)	Level II	3.3	Visual
207	Wrinkle (case) (15)	Level II	3.3	Visual
208	Buckle (case) (16)	Level II	3.3	Visual
209	Bulge (case) (17)	Level II	3.3	Visual
210	Illegible or missing head stamp (case) (18)	Level II	3.3	Visual
211	Defective head (case) (19)	Level II	3.3	Visual/Gage
212	Defective mouth (case) (20)	Level II	3.3	Visual/Gage
213	Dent (bullet) (22)	Level II	3.3	Visual
214	Scratch (bullet) (23)	Level II	3.3	Visual
215	Scaly metal (bullet) (27)	Level II	3.3	Visual
216	Blunt point (bullet) (30)	Level II	3.3	Visual
217	Nicked or dented primer (36)	Level II	3.3	Visual
218	Defective crimp (primer) (38)	Level II	3.3	Visual
219	Diameter of extractor groove, minimum	Level II	3.3	Visual/Gage
220	Workmanship	Level II	3.9	Visual

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TABLE V. Defect inspections – Continued.

Notes:

- 1/ Numbers in parenthesis after defect descriptions refer to visual standards in MIL-STD-636 (7.62mm section). Inspection for visual defects may be performed employing an automated inspection. In the event of a conflict between this specification and MIL-STD-636 as to defect classification, the classification specified in this specification shall apply. For case split locations see Drawing 7643674.
- 2/ Examination for weight may be performed by weighing or by measuring for propellant fill. The minimum charge weight required to preclude the possibility of a bullet in bore shall be established. Cartridges containing less than this minimum charge shall be classed as a critical defect.
- 3/ Level II, Level IV or Level VII refer to verification level II, verification level IV or verification level VII respectively of Table II Attributes sampling plans in MIL-STD-1916.
- 4/ Inspection for incorrect cartridge type shall be performed during or immediately prior to the packaging operation which is before cartridge lot acceptance. Occurrence of any other type of cartridge shall be classified as a major defect. Any incorrect cartridge type found shall be replaced with a correct cartridge type and the entire lot shall be subjected to a subsequent 100% inspection. During the subsequent inspection, any incorrect type found shall be a rejection of the lot.

TABLE VI. Firing defects criteria.

Defect Description <u>1/</u> <u>4/</u>	Acceptance Criteria		Classification
	Acc	Rej	
1. Bullet in bore	0	1	Critical
2. Hangfire	0	1	Major
3. Misfires	<u>2/</u>		Major
4. Primer defects:			
a. Perforation in the primer cup not caused by the firing pin	5	6	Major
b. Blown primer (Primer separates from case head and primer pocket is grossly distorted)	5	6	Major
c. Dropped primer (Primer that falls out of pocket on retraction of the bolt)	5	6	Major
d. Loose primer (primer remains in the pocket but in physically loose)	5	6	Major
e. Perforation in the primer cup caused by the firing pin	10	11	Minor
f. Escape of gas around the primer cup	10	11	Minor
5. Case casualties: <u>3/</u>			

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TABLE VI. Firing defects criteria - Continued.

Defect Description <u>1/</u> <u>4/</u>	Acceptance Criteria		Classification
a. Longitudinal split			
(1) Through case base (M)	0	1	Critical
(2) Case base (L)	0	1	Critical
(3) Body (K)	5	6	Major
(4) Upper body (J)	5	6	Major
(5) Neck and shoulder (I or S)	5	6	Major
b. Circumferential rupture			
(1) Complete	0	1	Critical
(2) Partial – case base (L)	0	1	Critical
(3) Partial – body (K)	5	6	Major
(4) Partial – neck, shoulder, or upper body (I, S or J)	10	11	Minor
6. Failure to extract <u>5/</u>	0	2	Major
7. Weapon stoppages <u>5/</u>	0	2	Major

Notes:

- 1/ a. For any ballistic test, where the occurrence of a firing defect prevents the obtaining of a valid result for the characteristic being tested, the following shall apply; The defect shall be noted under the appropriate firing defect category and included in the defect count for determining acceptance or rejection in accordance with Table VI. The particular test for which the round was fired shall not be penalized. A replacement round shall be fired to obtain the data for the characteristic being tested.
- b. The occurrence of one or more critical defects attributable to the cartridge during any test, including warm and foul firings of cartridges from the test lot, shall result in rejection of the lot.
- 2/. Each cartridge that misfires shall be disassembled and examined to determine the cause of the misfire:
- a. For the presence of the vent hole in the primer pocket or any obstruction in the vent hole area of the primer pocket that can be assignable as the cause for the misfire. The lot shall be rejected if the vent hole is missing or obstructed.
- b. If the misfire is attributed to a defective cartridge (for other than a critical defect) due to improper assembly, missing components, then the criteria for acceptance/rejection for major characteristic shall be accept on 0, reject on 2 defective. If one misfire occurs, then a second function and casualty sample of 360 cartridges shall be tested. The occurrence of any additional misfires shall result in rejection of the lot (accept on 1, reject on 2 defective for the cumulative total of all firings). Additionally, the occurrence of one or more critical defective during the firing of any test, including the second Function and Casualty sample, shall result in rejection of the lot.

TABLE VI. Firing defects criteria - Continued.

Notes:

c. If the misfire is attributed to the test weapon, then the weapon shall be repaired or replaced and another cartridge fired in place of the misfire.

3/. For location of defects indicated in parenthesis, see Drawing 7643674.

4/. For definition of characteristics, see paragraph 6.12.

5/. If weapon stoppages or failures to extract occur due to the ammunition cartridges, then the criteria for acceptance/rejection for major characteristic shall be accept on zero (0), reject on two (2) defectives. If one (1) weapon stoppage or one (1) failure to extract due to the cartridge occurs, then a second Function and Casualty sample shall be tested at the temperature range(s) of the failure. The occurrence of any additional weapon stoppage or failure to extract shall result in rejection of the lot and the acceptance criteria for the cumulative total of all firings is accept on one (1), reject on two (2) defectives.

4.5 Methods of inspection.

4.5.1 Cartridge. The cartridge dimensions shall be verified by standard measurement equipment or specialty gauges.

4.5.1.1 Components. The components shall be verified by standard measurement equipment or specialty gauges and visual inspection.

4.5.2 Dispersion. This test shall be conducted from an accuracy fixture in nominal conditions and fired without a suppressor. The test shall be conducted in accordance with DTL13038145, Appendix C, Accuracy (Dispersion) Test Procedure, Annex B, Measurement of Targets for 5.56mm, M855 Ball, M193 Ball, 7.62MM and Caliber .50 Cartridges, utilizing the longest range available, with the following exceptions:

4.5.2.1 Extreme spread. Measurement of target shall be determined by MOA.

4.5.2.2 Range. Ranges shorter than 200 yards shall not be used.

4.5.2.3 Mount. The test weapon shall be supported during testing by mounting in an accuracy test fixture. The test fixtures shall be constructed and mounted so as to prevent fixture movement, beyond what is necessary for proper weapon function, during testing.

4.5.2.4 Barrel. Test barrels (Drawing 13052439) shall consist of solid barrels (no piston or transducer port) with barrel dimensions, tolerance, material and configuration equivalent to the ASR/ PSR weapon systems barrel. A minimum of two test barrels shall be used with a maximum of 10 targets being fired upon by each test barrel (5 shots per target).

4.5.3 Chamber pressure. The test shall be performed in accordance with 4.5.3.1 to 4.5.3.8. The lot shall be rejected if the corrected average peak chamber pressure of any test sample fails the requirements 3.5 or if one or more cartridges fail the individual sample requirements of 3.5.

4.5.3.1 Test and equipment. The Electronic Pressure and Velocity Test shall be performed to determine the chamber pressure level, velocity level and the uniformity of the cartridges. This test shall be performed prior to other ballistic tests. A pier or mount of solid construction shall be utilized to mount the universal receiver and barrel assembly. Test barrels (Drawing 13052438) shall consist of solid barrels with barrel dimensions, tolerance, material and configuration equivalent to the Light Weight Machine Gun weapon systems barrel. Test barrel shall be retired from use, regardless of condition, after it has fired 1,000 cartridges. The barrel assembly shall be deemed acceptable provided the values obtained with the reference cartridges during the test are as described; i.e., the peak average chamber pressure and muzzle velocity are within the inclusion limits as reported for that lot. A conformal-type piezoelectric transducer shall be used in accordance with the requirements of SAAMI Z299.4 for the test. All conformal gauges shall be calibrated with the same lot of brass case used for production, with the same offsets and sensitivities used throughout the test and production run until there is a change in cartridge case processes and/or material. The transducer shall be calibrated in accordance with SAAMI Z299.4. Equipment shall be in accordance with the requirements of SAAMI Z299.4 for the test, less the equipment required to measure action time. Instrumental velocity shall be measured at 15' in accordance with SAAMI Z299.4. One method of achieving this would be to place the velocity screens at 5' and 25' from the muzzle (20' between screens).

4.5.3.1.1 Test barrel preparation. The barrel(s) shall be "break-in" with 200 rounds prior to testing in accordance with 4.5.3.1.1.a – 4.5.3.1.1.e.

- a. Clear bore. Ensure the barrel is clean, free of any debris, oil or solvents, and run a clean patch down the barrel using a one-piece carbon fiber cleaning rod. Clean from chamber end only.
- b. Shoot one (1) round and then clean in accordance with the cleaning procedure in 4.5.3.1.2. Do this for the first five rounds.
- c. Shoot ten (10) rounds then clean in accordance with 4.5.3.1.2.
- d. Repeat the cleaning procedure described in 4.5.3.1.2 after the one-hundredth (100th) rounds and then again after the two-hundredth (200th) rounds.
- e. The barrels shall be cool after each ten (10) rounds fired. The barrel shall be cool to the touch before proceeding the firing next ten (10) rounds group. Use compressed air in the bore to cool the barrel.

4.5.3.1.2 Barrel cleaning procedure. The barrel(s) shall be clean in accordance with 4.5.3.1.2.a – 4.5.3.1.2.g.

- a. Use a bore guide in action with a one-piece carbon fiber cleaning rod and clean from chamber end only. With the bore guide inserted, run a soaked patch with Pro-Shot Copper Bore Cleaning Solvent IV through the barrel breach to muzzle, removing it at

- the muzzle. Repeat until all fouling is removed from the bore and chamber (no black carbon on patch).
- b. Use a dry patch to remove excess cleaning solvent.
 - c. Use a wet patch soaked with Bore Tech Copper Eliminator until copper is removed (no blue on patch).
 - d. Use a dry patch until excess Copper Eliminator is removed.
 - e. Use two (2) wet patches with Pro-Shot oil on a firm fitting soft cotton patch down bore.
 - f. Then use four (4) dry patches through to dry barrel and make ready for use.
 - g. Inspect the bore using a borescope. If the barrel is clean and de-coppered proceed to the next step. If not, then repeat steps d-g.

4.5.3.2 Use of reference cartridges. Reference cartridges shall be used to establish range and equipment corrections prior to firing an ammunition lot for acceptance. A minimum of twenty (20) reference cartridges shall be fired for each test sample of forty (40) cartridges. If several tests are grouped such that they may be fired in a common test barrel and within a period of time of 4 hours maximum, then a single twenty (20) cartridge reference firing may be performed. Reference cartridges shall be temperature conditioned at 65°F to 75°F.

4.5.3.3 Reference cartridge evaluation. After the required number of reference cartridges has been fired, the actual average chamber pressure and the actual average velocity of the reference cartridges shall be compared with the assessed values. If the assessed chamber pressure value is higher than the actual average chamber pressure of the reference cartridges, the difference is a plus correction and shall be added to the average chamber pressure of the test cartridges. If the assessed value is lower than the actual average chamber pressure of the reference cartridges, the difference is a minus correction and shall be subtracted from the average chamber pressure of the test cartridges. If the assessed value and the actual average chamber pressure of the reference cartridges are identical, then no correction is applied. The same methodology is applied when correcting the average velocity of the test cartridges.

4.5.3.4 Cartridge conditioning. The required number of test cartridges shall be placed in a vertical position, primer end down, in recessed holding blocks. The cartridges shall be permitted to come to a temperature of 60°F to 80°F prior to being placed in the controlled temperature room or container. The recessed holding blocks containing the cartridges shall be placed in the controlled temperature room or container in such a manner that all the cartridges are subjected to a uniform temperature. Cartridges shall be temperature conditioned per Section 4.5.6.3 prior to firing. Reference cartridges shall be temperature conditioned at $70^{\circ} \pm 5^{\circ}\text{F}$ for each temperature range of firing. The chamber and bore of the test barrel shall be thoroughly cleaned and wiped dry prior to firing, and shall be cleaned after firing each group of rounds for record.

4.5.3.5 Firing. Three (3) warmer/fouling shots shall be fired after each cleaning of the test barrel. During warming and fouling shots, chamber pressure shall be measured using a transducer in accordance with paragraph 4.5.3.6 below, but the readings shall not be included in the observed sample. The occurrence of one or more critical defective attributable to the cartridge during any test, including warming and fouling firings of cartridges from the test lot, shall result in rejection of the lot. The cartridges shall be placed in an insulated box (five

cartridges at a time) and the box placed at a point convenient to the technician. The cartridges are then removed singly from the insulated box immediately before firing. If an insulated box is not available, then the cartridges shall be removed singly from the controlled temperature room or container immediately before firing.

4.5.3.6 Procedure. Attention to detail is necessary in handling and chambering the cartridge to ensure the propellant is uniformly positioned from shot to shot. The cartridge shall first be held vertically, bullet upward. It shall then be rotated slowly in a vertical plane, stopping the rotation momentarily after 180° of rotation when the bullet is downward, and then continuing through the remainder of 360°, stopping with the cartridge again bullet upward. The bullet end of the cartridge shall now be lowered slowly to a position slightly above horizontal. The cartridge shall be chambered very carefully, taking care that the primer end of the case is not elevated above the bullet end of the case. (The object is to have the propellant in a loose condition at the primer end of the case, and with such airspace as is present, at the bullet end of the case). The breech-block shall be closed gently. The trip lever to which the lanyard is attached shall be carefully engaged to the hammer. If the technician encounters any difficulty closing the breech-block or engaging the trip lever, the test shall be discontinued until such difficulty is corrected. If any delay of approximately 1 minute or longer should occur after the cartridge is placed in the weapon chamber, that cartridge shall be extracted and another inserted in its place when firing is ready to continue. The cartridge shall be fired. The breech-block shall be lowered and the cartridge case extracted.

4.5.3.7. Evaluation. The procedure prescribed in 4.5.3.6 is repeated until the required number of cartridges has been fired. The average chamber pressure and average velocity of the reference cartridges shall be compared to their respective assessed values for the reference lot to assure that the test barrel meets the requirements of 4.5.3.1. The chamber pressure and velocity corrections shall be obtained as prescribed in 4.5.3.3. The test cartridges shall then be fired in accordance with 4.5.3.5 through 4.5.3.6 above. The individual chamber pressure and the time of flight over the screens and/or the velocity shall be observed for each cartridge. The chamber pressure correction obtained with the reference cartridges shall be applied to the average chamber pressure and to the maximum individual chamber pressure obtained with the test cartridges as prescribed in 4.5.3.3. Similarly, the velocity correction obtained with the reference cartridges shall be applied to the average velocity obtained with the test cartridges. Continuous air cooling should be used on the barrel throughout the test. If air cooling is not available, firing should be regulated so that one cartridge is fired every 15 seconds. The barrel shall be allowed to cool to ambient temperature between each series of tests, or after a maximum of sixty (60) cartridges have been fired. At no time shall the exposed metal surface of the test barrel become too hot to grasp with the bare hands (approximately 140°F). After the barrel has cooled to ambient temperature, warmer/fouling shots shall be fired in accordance with 4.5.3.5 prior to continuation of the test.

4.5.3.8 Examinations. All fired cartridge cases and primers shall be visually examined to determine compliance with the applicable requirements of Table V. In the event that fired case or primer defects are encountered, or if a misfire occurs, then the test weapon shall be examined to determine if the defect or misfire is attributable to the weapon. If the weapon is at fault, then the test shall be disregarded and the weapon shall be repaired or replaced prior to performing a

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retest. If the defect cannot be attributed to the weapon, then the defect shall be attributed to the cartridge.

4.5.4 Velocity. The test shall be conducted at nominal conditions. The test shall be conducted in conjunction with chamber pressure test in accordance with 4.5.3.

4.5.5 Bullet extraction. The test shall be conducted in accordance with the DTL13038145, Appendix E, Bullet Extraction Test Procedure.

4.5.6 Function and casualty test. Function and causality testing shall be conducted using the rifles as specified in the contract. The ammunition shall be temperature conditioned per section 4.5.6.3. The test shall be conducted in accordance with the following:

4.5.6.1 Test weapons. Test weapons shall be the ASR/PSR and Light Weight Machine Gun weapon systems. No alterations to the test weapons, beyond the requirements and specifications of the original manufacturer or supplier, shall be permitted.

4.5.6.2 Cartridge examination. If visual defects are found in the test cartridges prior to testing, the defective cartridge(s) shall be replaced. The defective cartridge shall be counted against Table V defects.

4.5.6.3 Cartridge conditioning. Test cartridges shall be conditioned at the specified temperatures in the table below and shall be fired within two minutes after removal from the controlled temperature room or container.

TABLE VII. Condition requirements.

70°F ± 2°F	160°F ± 2°F	-40°F ± 2°F
4 hours minimum	4 hours minimum	4 hours minimum

4.5.6.4 Weapon preparation. Test weapons shall be thoroughly cleaned prior to the beginning of testing and when switching to the next temperature range. The bore of each weapon shall be thoroughly cleaned after every 50 rounds. The test weapons shall be lubricated using Cleaner, Lubricant and Preservative MIL-PRF-63460. The weapon shall be wiped with a cloth that was sprayed with CLP prior to assembly. The weapons shall be maintained at room temperature (70 ± 15°F) for a minimum of two hours prior to the start of testing. The test sequence shall be unsuppressed, cold temperature condition first, hot temperature condition second and ambient temperature condition last, for each test weapon.

4.5.6.5 Firing procedure.

4.5.6.5.1 The firing procedure for each weapon shall be as follows:

a. The bolt shall be retracted and three cartridges placed in the integral magazine. All cartridges shall be locked under the magazine lip.

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b. The bolt shall be pushed forward, feeding and chambering the cartridge.

c. The rifle shall be fired, from the shoulder in a standing or bench rest position. A firing fixture may be utilized (see 6.5).

d. After firing, the spent case shall be ejected by vigorously moving the bolt to the open position.

e. Paragraphs 4.5.6.5.1.a through 4.5.6.5.1.d shall be repeated until all cartridges are expended.

4.5.6.5.2 The firing sequence of 4.5.6.5.1 shall be repeated for each test weapon for each temperature range.

4.5.6.5.3 In the event of a weapon stoppage during the test, the test weapon shall be examined to determine if the stoppage is attributable to the weapon. If the weapon is at fault, then the test shall be disregarded and the weapon shall be repaired or replaced prior to performing a retest. If the stoppage cannot be attributed to the weapon, then the defect shall be attributed to the cartridges. Weapon stoppages attributable to the cartridge shall include but not be limited to:

(a) Failure of the manually chambered cartridge to fully chamber in the barrel of the weapon.

(b) Failure of any cartridge to completely chamber, fire and completely eject due to residue build-up in the weapon mechanism from previous firings.

4.5.6.5.4 Misfired cartridges and fired cartridge cases and primers shall be retained for further examination.

4.5.6.6 Examinations. All fired cartridge cases and primers shall be visually examined to determine compliance with the applicable requirements of Table VI. In the event that fired case or primer defects are encountered, or if a misfire occurs, then the test weapon shall be examined to determine if the defect or misfire is attributable to the weapon. If the weapon is at fault, then the test shall be disregarded and the weapon shall be repaired or replaced prior to performing a retest. If the defect cannot be attributed to the weapon, then the defect shall be attributed to the cartridge. Misfired cartridges shall be disassembled to determine the cause of the misfire.

4.5.7 Workmanship. Visually verify that all parts and assemblies meet requirements of 3.9.

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4.5.8 Hardness testing. The bullets shall be extracted, propellant removed and the primers extracted. Each cartridge case of the sample shall be cross-sectioned and prepared in accordance to ASTM E3 Vickers microhardness testing in accordance with ASTM E384.

4.5.8.1 Case sidewall. The average of the hardness values of the sample cases for each prescribed point along the sidewall location shall be computed and evaluated in accordance with Drawing 13101227.

4.5.8.2 Case head. The individual hardness value for each prescribed point on the head section of each sample case shall be observed. Any value failing to meet the drawing requirement at a prescribed point(s) shall be cause for re-measurement of hardness at the corresponding point(s) on the opposite side of the primer pocket of the same head section from which the initial value was obtained. The higher of the two measurements shall be observed as the value of record for determination of conformance to Drawing 13101227.

4.5.9 Ammunition lot numbering. Visually verify that an ammunition lot number has been applied to each lot as described in MIL-STD-1168.

4.5.10 Waterproofness. After cartridges have been submerged in ambient water for 24 hours (minimum one inch of water above the cartridge), and then fired, the cartridges shall have a mean velocity that does not vary by more than ± 98 ft/s (± 30 m/s) from the mean baseline velocity at ambient.

5. PACKAGING

5.1 Packaging. For acquisition purposes, packaging requirements shall be as specified in the solicitation (see 6.2.j.). When actual packaging of material is to be performed by DOD personnel, DOD 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 contracting 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 cartridge covered by this specification is intended for use in a belt fed machinegun chambered for .338 Norma Magnum cartridges.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification, and of all documents cited in Section 2 and identified in Section 6.
- b. Requirements for submission of first article.
- c. Requirements for submission of conformance samples.
- d. Requirement and provisions for submission of test data.
- e. Requirements for submission of component lot sizes.
- f. Government furnished materiel or equipment (if applicable).
- g. Certificate of conformation of each lot or product of shipments.
- h. Record of serial numbers of weapons used during test.
- i. Requirements for submission of proposed testing procedures.
- j. Packaging, packing, palletizing, marking and labeling requirements: See 5. Solicitation should specify that packaging, packing, palletizing, marking and labeling should be in accordance with MIL-DTL-15011 and MIL-STD-644.

6.3 Definitions.

6.3.1 Objective evidence. Records of the contractor's quality control and inspections, which can be verified.

6.3.2 Non-conforming product. A non-conformance is defined as product, material components, missing components or cartridges that exhibit defects in material, workmanship or otherwise not conforming to the requirements of this detail specification and the drawings used for production. Nonconforming product is subject to the provisions of MIL-STD-1916 paragraphs 4.2 - 4.5.

6.3.3 Critical characteristic. A characteristic that judgment and experience indicate should be met to avoid hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product; or that judgment and experience indicate should be met to assure performance of the tactical function of a major item such as a ship, aircraft, tank, missile, or space vehicle.

6.3.4 Major characteristic. A characteristic, other than critical, that should be met to avoid failure or material reduction of usability of the unit of product for intended purpose.

6.3.5 Minor characteristic. A characteristic, other than critical or major, whose departure from its specification requirement is not likely to reduce materially the usability of the unit of product for its intended purpose or whose departure from established standards has little bearing on the effective use or operation of the unit.

6.4 Critical characteristics justification matrix.

<u>Critical characteristic</u>	<u>Rationale</u>
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<u>Firing Defect:</u> Bullet remaining in bore	If a bullet in bore is encountered, firing the next round would result in an excessive amount of pressure build-up that could blow the receiver apart and cause injury to the shooter. The weapon could even experience disassembly from hot propellant gas and produce shrapnel. Blockage in the barrel could send hot gas out through the breech and into the user's face. On most guns the bolt being closed after the shot will not completely seal off the gas. Gas could also vent out the back through the clearance between the bolt and the receiver. Some of this gas could also escape from the ejection port.
<u>Firing defect:</u> Longitudinal split through the case head (M) & case base (L)	A longitudinal split in the L and M results in gas escapement to the rear of the cartridge, towards the operator, which can injure the operator, and cause excessive weapon damage/wear resulting in decreased weapon performance (increased rate of weapon stoppages). Injury to the operator would be a result of the high velocity hot gas escapement towards the operator. This high velocity hot gas, when vented, would be directed towards the operator's face. The closer the splits are to the head (primer area), the more critical this defect could become when functioned. In these instances there is a chance of a blown weapon, at this point; fragmentation is an issue of concern which could also result in injury to the operator.
<u>Firing defect:</u> Circumferential rupture, complete & partial head (L)	A complete circumferential case rupture would result in the cartridge case separating into two parts after firing. The gas escapement and pressure on the chamber walls may be severe enough to cause a catastrophic failure of the weapon. If this round goes unnoticed and the next round is fired this can also cause a catastrophic failure. The front part of the case may also get lodged in the chamber and would be difficult to remove. A Circumferential rupture (Partial Head, L) results in gas escapement to the rear of the cartridge and fragmentation resulting in injury to the operator. Past events have illustrated that gas escapement from ruptures in the head region can be very dangerous and cause damage to the weapon or create catastrophic failure in the form a blown weapon. The escape of gas due to ruptures at the head can also affect the performance of the cartridge resulting in reduced velocity, and erosion of the weapon.
<u>Inspection defect:</u> Propellant weight under minimum	Low propellant weight could cause a projectile to fail to exit the bore – BIB. Firing the next round would result in an excessive amount of pressure build-up that could blow the receiver apart and cause injury to the shooter. The weapon could even experience disassembly from hot propellant gas and produce shrapnel.

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<u>Inspection defect:</u> Perforated case	A perforated case could result in loss of propellant. Loss of propellant results in a low propellant weight. Low propellant weight could result in a sufficiently low pressure buildup within the cartridge to cause the projectile to de-bullet and get lodged in the rifling. This will result in a bullet remaining in bore.
<u>Inspection defect:</u> Case split in K, L or M location	Split in this area presents risk of critical injury by significant amounts of hot gas and/or burning propellant escaping from weapon ports. This gas is vented out of the weapon in the area of the shooter's face. Worst case is risk of catastrophic injury from potential events following Bullet-in-Bore. Case split in these locations could result in loss of propellant.
<u>Inspection defect:</u> Case split in I, S, or J location w/ loss of powder	Split in this area wide enough to leak powder presents the risk of loss of sufficient energy to result in Bullet-in-bore. Also, this can cause potential of friction ignition of loose powder in operating mechanism of weapon.
<u>Inspection defect:</u> Cartridge type, incorrect	Occurrence of incorrect type (tracer ammunition) mixed with sniper rounds can be mission critical since it can disclose the sniper's location. However, there is currently no tracer ammunition within this caliber family, and the likelihood of tracer ammunition mixed into the sniper ammunition is very low and/or zero. Given the current state, this defect is classified as Major with 100% inspection. Once a tracer ammunition is planned to be made for this given caliber then a defect classification will need to be reassessed and presented to CCDC Critical Characteristic Review Panel.

6.5 Submission of inspection equipment designs for approval. Submit equipment designs as required to USSOCOM, PM SL, MacDill AFB, FL 33621. Request letter of submittal should state the contractor, contract number, specification number, item nomenclature and classification of defects or tests. This address will be specified on the Contract Data Requirements List in the contract.

6.6 Submission of test data. In addition to the normal distribution of records, when the cartridge is procured by the US CCDC, one (1) copy of all ballistic data and the ammunition data card for each lot should be forwarded to USSOCOM, PM SL, MacDill AFB, FL 33621.

6.7 Hazard notice. The cartridge described herein and some of its components are flammable and explosive and consequently present hazards in manufacture, handling, storage and shipment. The contractor should recognize these hazards and take appropriate measures to guard and protect against fire, explosion adverse environment, corrosive atmosphere, rough handling and electrically induced incidents.

6.8 Shipping. When cartridges from more than one lot are shipped at one time, each lot should be kept separate and the division between lots clearly indicated to prevent mixing of the lots in transit.

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6.9 First article rejection. The Government reserves the right to terminate inspection upon any failure of an assembly, component or test specimen to comply with any of the requirements.

6.10 Recording of data. Test data sheets should include the following information:

a. ALL MALFUNCTIONS AND WEAPONS STOPPAGES SHOULD BE RECORDED AND THE CAUSE DESCRIBED, INCLUDING UNUSUAL OCCURRENCES IN WEAPON FUNCTION. The data should include weapon identification (serial number), test round number and temperature conditioning range of the cartridges. In the event of misfires, the results of laboratory examination and disassembly of the misfired cartridge(s) should be described in detail.

b. All cartridge case and primer defects found during visual examination of fired cases should be described in detail. The data should include weapon identification (serial number) and temperature conditioning range of the cartridges.

c. Test weapon serial numbers and number of cartridges fired through each test weapon prior to test.

d. All cartridge defects found during visual examination of cartridges prior to testing should be described in detail.

6.10.1 Government Furnished Equipment (GFE). If Function and Casualty Test weapons are supplied as Government Furnished Equipment in accordance with the requirements of the contract or purchase order, then the Contractor should maintain detailed records (log books) of all cartridges fired through each weapon. These records should include type of ammunition, lot number, date of firing, personnel conducting the firing, brief summary of firing results, and any unusual occurrence or parts breakage. The log book record should also include notations each time the weapon is cleaned, when parts are replaced, results of inspections, etc. The log book record should remain with each weapon throughout the course of the contract and should be returned to the Government with the weapon when the contract is completed (in accordance with the terms of the contract).

6.10.2 Test barrel "break-in" data collection. Pressure and velocity for all rounds should be recorded.

6.11 Propellant. The contractor should establish and submit minimum propellant charge weight. In addition, rationale for each established characteristic should be included. All contractor proposed requirements will be submitted to the Government for evaluation/approval

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as directed by the contracting activity. Submit information as required to USSOCOM, PM SL, MacDill AFB, FL 33621.

6.12 Definitions.

a. Misfire: Failure of a cartridge to fire after the initiating impulse has been applied to the primer, normally due to:

(1) Primer fails to fire when struck by firing pin.

(2) Propellant does not ignite when primer fires.

b. Hangfire: Any perceptible delay (one second or more) in the functioning of a cartridge of a cartridge after the initiating impulse has been applied to the primer.

c. Longitudinal split: A longitudinal separation of the metal in the cartridge case wall produced by firing.

d. Circumferential rupture: A circumferential separation of the cartridge case wall produced by firing. A partial rupture is one that extends less than 360 degrees around the case. A complete rupture is one that extends entirely around the case, separating the case into two parts.

6.13 Subject term (key word) listing.

Function and Casualty Tests
Small Arms Ammunition
Munitions

6.14 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as 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.

Custodians:
Army – AR
Navy – OS
Air Force – 99

Preparing activity:
Army – AR
(1305-2019-034)

Review Activity:
Army – AV, MI, MR,
Navy – AS, MC, SH,
Air Force – 70

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NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.